HERCULES INCORPORATED'S

RESPONSE TO THE MULTIMEDIA INSPECTION OF THE HATTIESBURG, MISSISSIPPI PLANT (June-July 1999)

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INTRODUCTION

From June 29 through July 1, 1999, the Environmental Protection Agency ("EPA") and Mississippi Department of Environmental Quality ("MDEQ") conducted a multimedia compliance investigation at the Hercules Incorporated ("Hercules") plant located in Hattiesburg, Mississippi. This Response addresses: (1) EPA's September 21, 1999 Clean Air Act Compliance Inspection Report; (2) MDEQ's January 6, 2000 Clean Air Act Compliance Evaluation Inspection Report; (3) MDEQ's July 26, 1999 Resource Conservation and Recovery Act ("RCRA") Inspection Report; and (4) EPA's December 3, 1999 Water Compliance Inspection Report. Hercules prepared this response to explain what actions it has taken to address concerns raised in the above-mentioned reports and, as necessary, to clarify the facts and the legal requirements relating to various issues. The information being submitted should be considered preliminary; it will be supplemented as new, relevant information becomes available. Further, since an enforcement action is being considered, this response is being submitted for purposes of settlement discussion only. To facilitate review, an Executive Summary in chart form follows.

EXECUTIVE SUMMARY

STATUTE AON, AOC AOD or SAON[1]	SUMMARY OF AON, AOC, AOD or SAON	SUMMARY OF RESPONSE
CAA - AOC (1)	Recommendation that Hercules verify that Zeon is not sending HON wastewater to Hercules' Water Treatment Plant	Zeon verified that it is not sending HON wastewater to Hercules' Water Treatment Plant
CAA - AOC (2-3)	Lack of notification that Hercules has removed Emission Point AD003 Lack of notification that the Air Emission Point for the Wastewater Furnace is no longer in use	Hercules reported to MDEQ that the Nuephor Process Storage Tank, Emission Point AD003 was removed While it is not currently in use, Hercules prefers to maintain the Air Emission Point for the Wastewater Furnace as part of its Title V Permit
CAA - AOC (4) and AON (6-7)	Failure to perform weekly visual inspection of the agitator for week of April 14, 1999 Failure to perform weekly inspection of three pumps for the week of April 14, 1999	Weekly inspection was performed Records attached Weekly inspection was performed Records attached
CAA - AOC (5); AON (16); and SAON (9)	Failure to maintain CFC service records	Hercules is currently implementing a comprehensive CFC program to eliminate EPA's issues regarding Hercules' CFC maintenance and recordkeeping in Hattiesburg
CAA - AOC (6-7); AON (8-10); and SAON (5-6)	Failure to repair a visual leak on the agitator within 15 days Failure to maintain records regarding the repair of the identified leak Failure to maintain a written work order or maintenance request system to document leaks, attempts at repair, or re-monitoring in the Kymene unit	The LDAR agitator was not leaking and, thus, did not require repair Repair of the LDAR agitator was unnecessary; and thus, records were not kept regarding the alleged leak Hercules uses a logbook-based maintenance request system to document leaks and attempts at repair in the Kymene unit Moreover, Hercules is implementing a new electronic work order and maintenance request system to further ensure and document compliance with LDAR regulations

[1] AON = Area of Non-Compliance
AOC = Area of Concern
AOD = Area of Deficiency
SAON = Area of Non-Compliance alleged by MDEQ

STATUTE AON, AOC AOD or SAON[1]	SUMMARY OF AON, AOC, AOD or SAON	SUMMARY OF RESPONSE
CAA - AOC (8); AON (2); and SAON (1)	Failure to repair and re-monitor Connector, Tag No. 0022.00, within 15 days	Connector, Tag No. 0022.00, was repaired within 15 days Although re-monitoring was not performed within 15 days, Eco-Systems, Inc. concluded that the Connector was not leaking during re-monitoring performed in February 1999
CAA - AOC (9); AON (1, 3-5); and SAON (2-3)	Eco-Systems, Inc. used an inappropriate concentration of calibration gases for the monitoring it performed on January 14, 1999, March 25, 1999 and April 14, 1999 Eco-Systems, Inc. failed to perform calibrations on the LDAR monitoring instrument on February 25, 1999 Inquiry regarding appropriate leak definition for pump	Reviewed proper procedure with contractor Concentration used by Eco did not result in any harm to the environment because readings were 0.0 ppm even with the lower than required calibration range that was used Bocage Specialty Company performed calibrations on the instrument 48 hours before the LDAR monitoring on February 25, 1999 5,000 ppm is the appropriate leak definition for pumps at Hattiesburg
CAA - AOC (10); AON (11); and SAON (7)	Failure to close the valve on the reactor side of the defoamer charging equipment	This requirement does not apply because the open valve on the Kymene defoamer charging equipment does not satisfy the definitional requirement of "open-ended line" Even assuming the valve on the reactor side constitutes an open-ended line, Hercules complied with 40 C.F.R. § 63.167
CAA - AOC (11); AON (12-14); and SAON (8)	Recirculating Sample Port was not identified as part of the LDAR program Recirculating Sample Port is an open-ended line without a cap, flange, plug or second valve Recirculating Sample Port is a valve which has not been monitored	Sample Port is not subject to requirements of Subpart H or W because the equipment is in HAP service less than 300 hours per calendar year Although Sample Port is exempt, Hercules added a cap to the Sample Port Sample Port is exempt
CAA - AOC (12); AON (15); and SAON (8)	Failure to comply with 40 C.F.R. § 63.167(a)(1) regarding an open-ended line identified near a pump, Tag No. 0010.00, in the Kymene unloading area	Hercules added a plug to the open-ended line near the pump, Tag No. 0010.00
CAA - AOC (13); AON (17); and SAON (4)	Failure to possess on-site replacement filter bags for the Adipic Acid Shaker	Hercules has subsequently ordered replacement filter bags for the Adipic Acid Shaker

STATUTE AON, AOC AOD or SAON[1]	SUMMARY OF AON, AOC, AOD or SAON	SUMMARY OF RESPONSE
SAON (10)	Failure to identify all instances of deviations of permit requirements during semi-annual reports	Section 5.A.4 of Hercules' Title V Permit does not require semi-annual reporting of all instances of deviations of permit requirements; rather, Section 5.A.4 merely requires semi-annual reporting of required monitoring and deviations from such monitoring Hercules timely submitted its semi-annual monitoring report in accordance with the Permit
CAA - AOC 5(14)	Visual emissions in excess of 40% opacity	The emission was not regulated because it was steam
RCRA - SAON 10(a)	Failure to close one container holding hazardous waste in laboratory No. 1	Hercules trains its employees on the importance of closing containers holding hazardous waste
RCRA - SAON 10(b)	Failure to label a container with words "Used Oil"	Hercules' primary used oil storage container is clearly marked "Used Oil" The drum observed by EPA was in use for less than a week at the time of Inspection Hercules conducted proper training and will continue to remind employees of the necessity to label or mark above ground storage tanks and containers properly
RCRA - SAON 10(c)	Failure to obtain the date and handwritten signature of the initial transporter on a Manifest	This was due to an error by the transporter and the Hercules operator handling the shipment records No other errors were made in three years of Manifests
RCRA - SAON 10(d)	Failure to inspect containers holding hazardous waste on a weekly basis for leaks, corrosion, deterioration, and maintain a written log of the inspections	Hercules has a history of consistently performing weekly inspections and maintaining a written log Hercules has implemented a procedure by which the hazardous waste log will be kept in a weather resistant box located near the containers After the Inspection, Hercules wrote and implemented a formal procedure to ensure that weekly inspections and logs are completed in the event of employee absence
CWA - AOD(1)	Failure to use proper procedure with regard to the pH probe	Hercules provides its employees with information regarding the proper analytical techniques to use with regard to the pH probe The improper action was due to operator error Operator has used proper analytical technique since the Inspection

STATUTE AON, AOC AOD or SAON[1]	SUMMARY OF AON, AOC, AOD or SAON	SUMMARY OF RESPONSE
CWA - AOC(1)	Failure to have both oil skimmers in service at the time of Inspection	Two oil skimmers are not specifically required in the POTW Permit
CWA - AOC(2)	Failure to have backup power or shut down procedures in the event of main power interruption at the plant	Although not formally documented, Hercules had a procedure in place for backup power or shut down in the event of main power interruption After the Inspection, Hercules formally documented its procedure for backup power or shut down

I. CLEAN AIR ACT

A. HON Wastewater - Area of Concern No. 1

EPA's September 21, 1999 Clean Air Act Compliance Inspection Report (the "CAA Report") suggests that Hercules check with Zeon to determine whether Zeon is sending HON wastewater to Hercules' water treatment plant. After EPA's investigation, Hercules contacted Zeon, and Zeon verified orally and in writing that it was not sending HON wastewater to Hercules' water treatment facility. *See* Exhibit 1.

B. Notification of Unused Emission Points - Areas of Concern Nos. 2 and 3

In the CAA Report, EPA recommends that Hercules notify MDEQ that it has removed Emission Point AD003 and that the Air Emission Point for the Wastewater Furnace is no longer in use. Per EPA's suggestion, Hercules reported to MDEQ that the Nuephor Process Storage Tank, Emission Point AD003, was removed. *See* Exhibit 2. Unlike Emission Point AD003, Hercules reserves the right to resume operation of the Air Emission Point for the Wastewater Furnace; thus, at this time, Hercules prefers to maintain the Air Emission Point for the Wastewater Furnace as part of its Title V Permit.

C. Visual Inspection - Area of Concern No. 4 and Areas of Non-Compliance Nos. 6 and 7

EPA alleges that, during the week of April 14, 1999, Hercules failed to perform the required weekly visual inspection of an agitator and three pumps. EPA's conclusion is in error. It is possible that a conversation with Hercules' Environmental Coordinator, Charlie Jordan, may have caused the Inspector to believe that the Kymene area supervisor may not have performed the visual inspection during the week of April 14, 1999 because the area supervisor was absent from work during that time. However, a review of the Inspection Log, attached hereto as

Exhibit 3, reveals that the above-mentioned visual inspections were performed by two of the Kymene Operators. *See* Exhibit 3, p. 4.

D. CFC Maintenance and Recordkeeping Issues - Area of Concern No. 5; Area of Non-Compliance No. 16; and Area of Non-Compliance No. 9 Alleged by MDEQ

The CAA Report and MDEQ Clean Air Act Compliance Evaluation Inspection Report (the "MDEQ Report") claim that Hercules failed to keep service records documenting the date and type of refrigerant service, as well as the quantity of refrigerant added to its six appliances with refrigerant charges greater than fifty pounds. After the Inspection, Hercules implemented a system to keep on site records of repair work performed on the chillers and freon additions, including the amount of freon used in the repair. *See* Exhibit 4. In addition, Hercules is in the process of implementing a comprehensive CFC Program, which includes follow-up monitoring procedures. *See* Exhibit 5. Hercules has trained its relevant employees on the CFC Program to eliminate EPA's issues regarding Hercules' CFC Maintenance and Recordkeeping in Hattiesburg. *See* Exhibit 5, p. 1.

E. Repair and Documentation of Agitator Leak Repair in January 1999 - Areas of Concern Nos. 6 and 7; Areas of Non-Compliance Nos. 8, 9 and 10; and Area of Non-Compliance Nos. 5 and 6 Alleged by MDEQ

Area of Concern No. 6, Areas of Non-Compliance Nos. 8 and 9, and State Area of Non-Compliance No. 5 allege that Hercules violated 40 C.F.R. § 63.173(c)(1) by failing to repair a leak on a regulated Reactor within the requisite fifteen-day period. Area of Non-Compliance No. 10 and State Area of Non-Compliance No. 6 claim that Hercules violated 40 C.F.R. § 63.181(d) by failing to maintain records of the repair. Upon investigation, the best information available revealed that Hercules did not violate either Section 63.173(c)(1) or Section 63.181(d) because the January leak occurred on a non-regulated Reactor. After the CAA Inspection, Hercules

discussed the above-mentioned Areas of Concern and Areas of Non-Compliance with relevant personnel. The two Kymene Operators who checked the box indicating a "leak," were separately interviewed. Both men stated that they do not recall a leak in the regulated 401 Reactor and believe that they inadvertently checked the wrong box. As Mr. Page's memorandum indicates, he mistakenly checked the box for the regulated 401 Reactor unit when, in fact, the non-regulated 100 Reactor unit was leaking. *See* Exhibit 6, p. 1. In addition, the pump mechanic for the Hattiesburg plant verbally confirmed in a discussion with Hercules' Environmental Coordinator that repairs were not made to the agitator on the 401 Reactor during the relevant time. *See* Exhibit 6, p. 2.

Independent tests of the 401 Reactor by Eco-Systems, Inc. ("Eco") in January and February 1999 substantiate that the 401 Reactor was not leaking. *See* Exhibit 7. If the 401 Reactor had been leaking and left unrepaired, Eco's test would have revealed a leak in either January or February 1999, or both. Notably, Eco did not detect a leak in the 401 Reactor. The clerical error of the two Kymene Operators did not result in any unwanted emission or cause any harm to the environment.

Hercules has reminded its employees of the significance of maintaining records free from clerical errors. Moreover, Hercules provided follow-up instruction on the importance of correctly documenting a leak, identifying its existence, repairing the leak in accordance with the regulations, and re-testing the equipment within the requisite period. In an effort to prevent future clerical errors, Hercules added a second verification column to its Weekly Visual Pump and Agitator Inspection Records. The second column requires an additional operator to confirm whether the inspected equipment is leaking.

Area of Concern No. 7 claims that Hercules does not have a written work order or maintenance request system to document leaks, attempts at repair or re-monitoring in the Kymene Unit. At the time of the Inspection, Hercules used, and continues to use, a series of log books to document leaks and attempts at repair. Specifically, if an operator notes a leak in the Kymene Area, he documents the leak in the Operations Log Book, as well as in the Title V Maintenance Log. Thereafter, Maintenance is informed of the leak, and the appropriate mechanic is contacted. After the mechanic repairs the leak within the requisite time, the repair is documented in the Area II Shop Log. The Environmental Coordinator is notified of any regulated leaks and is responsible for ensuring that timely re-monitoring is performed.

To demonstrate Hercules' commitment to compliance, after the Inspection, Hercules implemented an additional maintenance request system to further ensure and document that Hercules is in compliance with the Leak Detection and Repair ("LDAR") regulations. Hercules' new system uses a Microsoft Access database to document work orders and attempts at repairs. Hercules is continuing to train its employees on the Access system and plans to begin implementing a new Systems Applications Products ("SAP") electronic database later this year.

F. Repair and Requirement to Re-Monitor Connector Tag Number 0022.00 - Area of Concern No. 8; Area of Non-Compliance No. 2; and Area of Non-Compliance No. 1 Alleged by MDEQ

The CAA Report and MDEQ Report state that Connector Tag Number 0022.00 was identified with a leak on January 14, 1999. The Agencies claim that the leak was not repaired and re-monitored within the requisite fifteen-day period. Exhibit 8, attached hereto, verifies that Hercules repaired the leaking flange, Connector Tag Number 0022.00, on January 15, 1999, within the requisite fifteen-day period. *See* Exhibit 8. Although the flange was not re-tested during the fifteen-day period, Eco confirmed that it was not leaking during a routine inspection

on February 25, 1999. *See* Exhibit 9. Hercules did not perform any additional repairs on the flange from January 15, 1999 until Eco's test on February 25, 1999. Therefore, any re-test on or before the statutory fifteen-day period would have demonstrated that the new flange was not leaking, consistent with Eco's conclusions during its February 25, 1999 test. Hercules recognizes and accepts the fifteen-day repair and re-monitoring requirement.

G. LDAR Calibrations Performed by Eco-Systems, Inc. - Area of Concern No. 9; Areas of Non-Compliance Nos. 1, 3, 4 and 5; and Area of Non-Compliance Nos. 2 and 3 Alleged by MDEQ

Area of Concern No. 9 requests that Hercules verify that the correct leak rate for pumps at its facility is 5,000 ppm. Area of Non-Compliance No. 3 and State Area of Non-Compliance No. 2 allege that Eco failed to perform calibrations on the LDAR monitoring instrument on February 25, 1999. Areas of Non-Compliance Nos. 1, 4 and 5 and State Area of Non-Compliance No. 3 claim that Eco used an inappropriate concentration of calibration gases for the monitoring it performed for Hercules on January 14, 1999, March 25, 1999 and April 14, 1999.

First, Hercules confirms that currently 5,000 ppm is the appropriate "leak" definition for Hattiesburg's pumps. *See* Exhibit 10. Second, although Eco did not calibrate its instruments immediately before use on February 25, 1999, Bocage Specialty Company performed calibrations on the instrument approximately forty-eight hours before Eco performed the LDAR monitoring at Hercules. *See* Exhibit 11. Third, Eco used an appropriate concentration of calibration gas for the monitoring performed on January 14, 1999. On January 14, 1999, Eco calibrated at a concentration of zero and 10,000 ppm. In January 1999, Hercules was in Phase I, which requires an entity to screen all regulated equipment using "a mixture of methane or other compounds . . . at a concentration of approximately, but less than, 10,000 parts per million." 40 C.F.R. § 63.180(b)(4)(ii)(A). Under C.F.R. § 63.180(b)(4)(ii)(A), the calibration instrument may

be calibrated "at a higher methane concentration than the concentration specified for that piece of equipment" so long as the concentration of calibration gas does not exceed the concentration specified as a leak by more than 2,000 ppm. Thus, Eco's calibration in January 1999 was correct under the regulations.

Hercules began Phase II on March 8, 1999. In March and April 1999, Eco calibrated at zero, 95 ppm and 980 ppm. *See* Exhibit 12. Although the concentration was less than the regulatory requirement, March and April 1999 monitoring detected 0.0 ppm at the screened equipment. *See* Exhibit 12. Therefore, Eco's decision to calibrate using a concentration of zero, 95 ppm and 980 ppm did not result in an undetected leak nor did the calibrations cause any harm to the environment.

During the 1999 calendar year, Hercules relied on Eco to implement the LDAR program for the Epichlorohydrin ("Epi") process in compliance with all applicable regulations. In response to the issues that EPA alleged regarding Eco's leak detection procedures, Hercules terminated its relationship with Eco. Thereafter, Hercules retained Fugitive Compliance Corporation ("FCC") as its new contractor. *See* Exhibit 13.

H. Open-Ended Line - Areas of Concern Nos. 10 through 12; Areas of Non-Compliance Nos. 11 through 15; and Areas of Non-Compliance Nos. 7 and 8 Alleged by MDEQ

In Area of Concern No. 10; Area of Non-Compliance No. 11; and State Area of Non-Compliance No. 7, the Agencies claim that they identified an open-ended line in connection with the defoamer charging equipment on the 401 Reactor. Notably, the defoamer charging equipment on the 401 Reactor has two valves. *See* Exhibit 14, attaching a diagram prepared by Charlie Jordan, Hercules' Environmental Coordinator. The first valve has one side of the valve seat in contact with the process; however, the first valve does not have the other side open to the

atmosphere, either directly or through open piping. The second valve, which remains closed while the first valve is in the open position, prevents venting to the atmosphere. Therefore, the open valve on the 401 Reactor does not fall within the definition of "open-ended line or valve" set forth in 40 C.F.R. § 63.161 (defining an open-ended line as "any valve, except pressure relief valves, having one side of the valve seat in contact with the process fluid and one side open to the atmosphere, either directly or through open piping.").

Even if we were to assume that the open valve constituted an open-ended valve under the definition set forth in 40 C.F.R. § 63.161, Hercules complied with Sections 63.167(a)(2) and 63.167(b). The second valve satisfies the requirement of Section 63.167(a)(2) because the second valve "seal[s] the open end at all times except during operations requiring process fluid flow through the open-ended valve or line, or during maintenance or repair." *See* 40 C.F.R. § 63.167(a)(2).

Moreover, the valve system on the defoamer unit is in compliance with Section 63.167(b). Specifically, Section 63.167(b) requires that "[e]ach open-ended valve or line equipped with a second valve shall be operated in a manner such that the valve on the process fluid end is closed before the second valve is opened." When an operator adds defoamer to the reactor vessel, the operator closes the first valve on the process fluid end, and thereafter, opens the second valve. While opening the second valve, the operator places a jar of defoamer above the second valve. After the defoamer drains out of the jar into the small chamber between the two valves, the second valve is closed and the first valve is opened. Thus, Hercules complies with the requirements of Section 63.167(b).

Using the procedure described above, Hercules emissions, if any, are *de minimis* because only the vapor trapped between the first valve and the second valve will escape into the

atmosphere. Although the valve at issue fails to meet the definition of open-ended line under Section 63.161, Hercules purchased and installed two spring-loaded valves to ensure that both valves remain closed at all times unless an employee is in the process of adding defoamer to the 401 Reactor.

Areas of Concern Nos. 11 and 12, Areas of Non-Compliance Nos. 12, 13, 14 and 15, and State Area of Non-Compliance No. 8 allege that Hercules violated 40 C.F.R. §§ 63.167(a)(1), 63.168(b), and 63.162(c). However, the Sample Port identified in Area of Concern No. 11, Areas of Non-Compliance 12, 13 and 14, and State Area of Non-Compliance No. 8 is exempt from complying with Subparts H and W because the equipment is in HAP service less than 300 hours per calendar year. *See* 40 C.F.R. § 63.162(e). *See* Exhibit 15. In 1999, the 401 Recirculating Loop, Mix Cooler and Sample Port were in HAP service 168 hours. *See* Exhibit 15.

Although the equipment is exempt, as depicted in Exhibit 16, Hercules added a plug to the Sample Port as recommended by EPA. Similarly, Hercules added a plug to the open-ended line near the pump, Tag Number 0010.00. *See* Exhibit 17.

I. On-Site Replacement Filter Bags for the Adipic Acid Shaker - Area of Concern No. 13, Area of Non-Compliance No. 17, and Area of Non-Compliance No. 4 Alleged by MDEQ

The CAA Report and MDEQ Report claim that there were no on-site replacement filter bags for the Adipic Acid Shaker filter. After the Inspections, Hercules ordered replacement filter bags for the Adipic Acid Shaker. *See* Exhibit 18. Currently, the filter bags are retained on-site.

J. Identification of Permit Deviations - Area of Non-Compliance No. 10 Alleged by MDEQ

In the MDEQ Report, the Agency alleges failure to clearly identify all deviations from permit requirements in semi-annual reports required by Section 5.A.4 of the facility's Title V Permit to operate. Section 5.A.4 is not the annual compliance certification provision for all terms and conditions of the Permit and does not require identification of all deviations from permit requirements. Annual compliance certification is governed by Section 4 of the Permit, and Hercules will be filing its certification for 1999 on January 31, 2000.

Section 5.A.4 requires semi-annual reporting of required monitoring and deviations from such monitoring. On July 23, 1999, prior to the Permit deadline of July 31, 1999, Hercules submitted the required semi-annual monitoring report specified by the Permit. The report was properly certified by a responsible corporate official. Section 5.A.4 does not require the reporting of non-compliance with permit terms other than those associated with the required monitoring addressed in the semi-annual report. In its semi-annual report, Hercules provided the information specified in the Permit with regard to fuel and product usage for the various units for which monitoring is required under Section 5. In addition, at the time the report was filed, Hercules relied on the report of its LDAR contractor, Eco, with regard to LDAR monitoring requirements. The specific concerns EPA and MDEQ have with regard to Hercules' LDAR program are addressed elsewhere in this Response. *See supra* Sections B and E-H.

K. Visual Emissions in Excess of 40% Opacity During RCRA Inspection - Area of Concern No. 14

In the CAA Report, EPA claims that a visual emission in excess of 40% opacity was observed during the RCRA portion of the Inspection. The visual emission observed during the

RCRA Inspection on June 30, 1999[1] was steam emanating from a rosin line. After rosin flows through a line at Hercules, operators attach a steam blow-out to the line. Thereafter, steam pressure is used to clear the line. Thus, the observation noted in the CAA Report was caused by uncombined water droplets. *See* Exhibit 19, attaching Title V Permit 3.A.2. Hercules' Title V Permit states that:

> [T]he permittee shall not cause, allow, or permit the discharge into the ambient air from any point source or emissions, any air contaminant of such opacity as to obscure an observer's view to a degree in excess of 40% opacity . . . **[t]his shall not apply to vision obscuration caused by uncombined water droplets.**

(Emphasis added). Thus, as provided in the Permit, such steam cannot be a basis for an opacity violation.

[1] The CAA Report does not confirm that the observation was made by a certified smoke reader.

ZEON
CHEMICALS
INCORPORATED

1301 W. SEVENTH STREET
HATTIESBURG, MISSISSIPPI
39401-2800

PHONE 601/583-6020
FAX 601/583-6032

August 8, 1999

Charles Jordan
Hercules, Inc.
613 West 7th Street
Hattiesburg, MS 39401

Re: Applicable Air Regulations for Zeon Chemicals Wastewater

Dear Mr. Jordan:

Emissions from wastewater at Zeon Chemicals is covered under 40 CFR 63 Subpart U, Polymer & Resins Group 1 (MACT standard). The wastewater from our plant is classified as Group 2 under this standard. 40 CFR 63 Subpart U is not included under the HON Rule.

The only HON Rule subpart that applies to our facility is 40 CFR 63 Subpart H (LDAR). This subpart does not apply to our wastewater.

Sincerely,

David J. McDonald
Process Engineer

Pc: Ron Tarlton, Zeon Chemicals
Bob Barlow, Zeon Chemicals
W.G. Miller, Zeon Chemicals

HERCULES

Hercules Incorporated
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January 4, 2000

CERTIFIED MAIL – RETURN RECEIPT REQUESTED
Cert. # P 443 543 577

Earl Mahaffey
Environmental Compliance and Enforcement Division
Office of Pollution Control
P. O. Box 10385
Jackson, Ms 39289-0385

RE: Permit # 0800-00001, Emission Unit # AD 003
(Storage tank NT-180).

Part 70 Flexibility Notifications
Operational Flexibility Changes (502(b)(10), trading under SIP emissions cap, trading under a permit allowable cap).

Dear Mr. Mahaffey:

The facility has completed the following change, pursuant to APC-S-6, Section 4, (F).

1) Brief description of the change.
The existing tank and associated equipment has been demolished and is no longer in service.

2) Change in emissions as a result of the change.
Any emissions have been reduced to zero.

3) Any permit term or condition that is no longer applicable as a result of the change.
Emission point AD-003 no longer exists.

This change does not constitute a Title I modification and does not exceed the allowable emission rate. This change does not violate applicable requirements or contravene federally enforceable permit terms and conditions that are monitoring, recordkeeping, reporting or compliance certification requirements.

Based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

Sincerely,
Responsible Official for Title V

Walter D. Langhans, Plant Manager

WDL/vrf

cc: U. S. EPA Region 4
Operating Source Section
Air and Radiation Technology Branch
Atlanta Federal Center
100 Alabama Street S. W.
Atlanta, Georgia 30303

HERCULES INCORPORATED
KYMENE® PLANT -- HATTIESBURG, MS

WEEKLY VISUAL PUMP & AGITATOR INSPECTION (EPICHLOROHYDRIN)

LEAK DETECTION AND REPAIR FOR EPICHLOROHYDRIN (MAXIMUM AVAILABLE CONTROL TECHNOLOGY)

*** Three drips per minute from pump seal determines a leak.
*** Agitator leaks are by visual dripping, audible, or olfactory.
*** For leaks - contact ECO Systems, at 601-936-4440, to report leak.
*** Retain all recorded documentation a minimum of 5 years.

DATE	TRUCK UNLOADING STATION				REACTOR 401				
	PUMP - 110		PUMP - 400		PUMP 401		AGITATOR 401		
WEEK OF	Leaking	No Leak	Leaking	No Leak	Leaking	No Leak	Leaking	No Leak	Initials
9/28/99		✓		✓		✓		✓	E.P.
9-28-99		✓		✓		✓		✓	B.H

HERCULES INCORPORATED
KYMENE® PLANT -- HATTIESBURG, MS

WEEKLY VISUAL PUMP & AGITATOR INSPECTION (EPICHLOROHYDRIN)

LEAK DETECTION AND REPAIR FOR EPICHLOROHYDRIN (MAXIMUM AVAILABLE CONTROL TECHNOLOGY)

*** Three drips per minute from pump seal determines a leak.
*** Agitator leaks are by visual dripping, audible, or olfactory.
*** For leaking seal contact Team, Inc. At 504-673-9200 to report leak.
*** Retain all recorded documentation a minimum of 5 years.

DATE 99	TRUCK UNLOADING STATION				REACTOR 401				
	PUMP - 110		PUMP - 400		PUMP 401		AGITATOR 401		
WEEK OF	Leaking	No Leak	Leaking	No Leak	Leaking	No Leak	Leaking	No Leak	Initials
8-2		✓		✓		✓		✓	BH
8-9		✓		✓		✓		✓	BH
8/9		✓		–		–		✓	[illegible]
8/16/99		–		–		–		–	gm
8/19/99		✓		✓		✓		–	K.S.
8/21/99		✓		✓		✓		✓	E.P.
8/23/99		✓		✓		✓		✓	K.S.
8/27/99		✓		✓		✓		✓	K.S.
8-30-99		✓		✓		✓		✓	BH
9/3/99		✓		✓		✓		✓	E.P.
9-6-99		✓		✓		✓		✓	BH
9/7/99		✓		–		–		–	gm
9/12/99		✓		–		–		✓	[illegible]
9/19/99		✓		✓		✓		✓	E.P.
9/20/99		✓		✓		✓		✓	K.S.

HERCULES INCORPORATED
KYMENE® PLANT -- HATTIESBURG, MS

WEEKLY VISUAL PUMP & AGITATOR INSPECTION (EPICHLOROHYDRIN)

LEAK DETECTION AND REPAIR FOR EPICHLOROHYDRIN (MAXIMUM AVAILABLE CONTROL TECHNOLOGY)

*** Three drips per minute from pump seal determines a leak.
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*** Retain all recorded documentation a minimum of 5 years.

DATE	TRUCK UNLOADING STATION				REACTOR 401				
	PUMP - 110		PUMP - 400		PUMP 401		AGITATOR 401		
WEEK OF	Leaking	No Leak	Leaking	No Leak	Leaking	No Leak	Leaking	No Leak	Initials
5/31/99		✓		✓		✓		✓	L.S.
6/4/99		✓		--		--		--	J.M.
6/7/99		✓		✓		✓		✓	E.P.
6-7-99		✓		✓		✓		✓	B.K.
6/14/99		-		--		-			J.M.
6-15-99		✓		✓		✓		✓	B.K.
6/21/99		-		-		-		-	J.M.
6/27/99		✓		✓		✓		✓	E.P.
6/28/99		✓		✓		✓		✓	L.S.
7-6-99		✓		✓		✓		✓	B.K.
7/9/99		✓		✓		✓		✓	E.P.
7-13		✓		✓		✓		✓	B.K.
7/19/99		✓		-		-		-	J.M.
7/20/99		✓		✓		✓		✓	L.S.
7-26-99		✓		✓		✓		✓	L.S.
7/29/99		✓		✓		✓		✓	E.P.

HERCULES INCORPORATED
KYMENE® PLANT -- HATTIESBURG, MS

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DATE	TRUCK UNLOADING STATION				REACTOR 401				
1999	PUMP - 110		PUMP - 400		PUMP 401		AGITATOR 401		
WEEK OF	Leaking	No Leak	Leaking	No Leak	Leaking	No Leak	Leaking	No Leak	Initials
4/5/99		✓		✓		✓		✓	L.S.
4/12/99		✓		✓		✓		✓	E.P.
4-12-99		✓		✓		✓		✓	B.H.
4-19-99		✓		✓		✓		✓	B.H.
4/19/99		✓		✓		✓			B.H.
4/26/99		✓		✓		✓		✓	B.H.
4/27/99		✓		✓		✓		✓	L.S.
4-30-99		✓		✓		✓		✓	E.P.
5/3/99		✓		✓		✓		✓	L.S.
5-10-99		✓		✓		✓		✓	B.H.
5-15-99		✓		✓		✓		✓	L.M.
5/17/99		✓		✓		✓		✓	B.H.
5-18-99		✓		✓		✓		✓	B.H.
5/24/99		✓		✓		✓		✓	B.H.
5/24/99		✓		✓		✓		✓	L.S.
5/28/99		✓		✓		✓		✓	E.P.

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	PUMP - 110		PUMP - 400		PUMP 401		AGITATOR 401		
WEEK OF	Leaking	No Leak	Leaking	No Leak	Leaking	No Leak	Leaking	No Leak	Initials
2/3/99		✓		✓		✓		✓	L.S.
2/10/99		✓		✓		✓		✓	E.P.
2-18-99		✓		✓		✓		✓	B/K
2/19/99		✓		✓		✓		✓	E.P.
2-22-99		✓		✓		✓		✓	B/K
2/23/99		—		—		—		—	B/K
3/1/99		—		—		—		—	M
3/3/99		✓		✓		✓		✓	L.S.
3/8/99		✓		✓		✓		✓	M.
3/9/99		✓		✓		✓		✓	E.P.
3-16-99		✓		✓		✓		✓	B/K
3/18/99		✓		✓		✓		✓	E.P.
3/22/99		✓		—		—		—	M
3-27-99		✓		✓		✓		✓	B/K
3/29/99		—		—		—		—	M
3/30/99		✓		✓		✓		✓	L.S.

HERCULES INCORPORATED
KYMENE® PLANT -- HATTIESBURG, MS

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DATE 1998	TRUCK UNLOADING STATION				REACTOR 401				
	PUMP - 110		PUMP - 400		PUMP 401		AGITATOR 401		
WEEK OF	Leaking	No Leak	Leaking	No Leak	Leaking	No Leak	Leaking	No Leak	Initials
11-30		✓		✓		✓		✓	
1/30/98		✓		✓		✓		✓	
12/7/98		✓		✓		✓		✓	
12/7/98		✓		✓		✓		✓	
12/14/98		✓		✓		✓		✓	
12/17/98		✓		✓		✓		✓	
12/22/98		✓		✓		✓		✓	
12/28/98		✓		✓		✓		✓	
1/4/99		✓		✓		✓		✓	
1/11/99		✓		✓		✓		✓	
1-13-99		✓		✓		✓		✓	
1-7-99		✓		✓		✓		✓	
1-13-99		✓		✓		✓		✓	
1-21-99		✓		✓		✓	✓		
1-25-99		✓		✓		✓	✓		
2/2/99		✓		✓		✓		✓	

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DATE	TRUCK UNLOADING STATION				REACTOR 401				
	PUMP - 110		PUMP - 400		PUMP 401		AGITATOR 401		
WEEK OF	Leaking	No Leak	Leaking	No Leak	Leaking	No Leak	Leaking	No Leak	Initials
9/30/98		✓		✓		✓		✓	E.P.
9-30-98		✓		✓		✓		✓	[illegible]
10-4-98		✓		✓		✓		✓	[illegible]
10/5/98		✓		✓		-		-	[illegible]
10/13/98		✓		✓		-		-	[illegible]
10/19/98		✓		✓		✓		✓	[illegible]
10/22/98		✓		✓		✓		✓	E.P.
10/26		✓		✓		✓		✓	E.P.
10-27		✓		✓		✓		✓	[illegible]
11-1		✓		✓		✓		✓	[illegible]
11/2/98		✓		-		-		✓	[illegible]
11/11/98		✓		✓		✓		-	[illegible]
11/16/98		✓		✓		✓		✓	[illegible]
11/18/98		✓		✓		✓		✓	E.P.
11-18-98		✓		✓		✓		✓	[illegible]
11-27-98		✓		✓		✓		✓	E.P.

HERCULES INCORPORATED
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	PUMP - 110		PUMP - 400		PUMP 401		AGITATOR 401		
WEEK OF	Leaking	No Leak	Leaking	No Leak	Leaking	No Leak	Leaking	No Leak	Initials
5-4-98		X		X		X		X	
8-10-98		X		X		X		X	
8/16/98		--		--		--		--	
8/17/98		✓		✓		✓		✓	
8-17-98		✓		✓		✓		✓	
8/24/98		✓		✓		✓		✓	
8/27		✓		✓		✓		✓	
9-2-98		✓		✓		✓		✓	
9-6		✓		✓		✓		✓	
9/7/98		✓		✓		✓		✓	
9-15-98		✓		✓		✓		✓	
9/15/98		✓		✓		✓		✓	
9/21		✓		✓		✓		✓	
9/22		✓		✓		✓		✓	

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DATE	TRUCK UNLOADING STATION				REACTOR 401				
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WEEK OF	Leaking	No Leak	Leaking	No Leak	Leaking	No Leak	Leaking	No Leak	Initials
6/5/98		✓		✓		✓		✓	
6-5-98		✓		✓		✓		✓	
6/11/98		✓		✓		✓		✓	
6-15-98		✓		✓		✓		✓	
6/22/98		✓		✓		✓		✓	
6/23/98		✓		✓		✓		✓	
6/29/98		✓		✓		✓		✓	
7-6-98		✓		✓		✓		✓	
7-7-98		✓		✓		✓		✓	
7-12-98		✓		✓		✓		✓	
7/14/98		✓		✓		✓		✓	
7/20/98		✓		✓		✓			
7/20/98		✓		✓		✓		✓	
7/27/98		✓		✓		✓		✓	
7/29		✓		✓		✓		✓	
8/3/98		✓		✓		✓		✓	

HERCULES INCORPORATED
KYMENE PLANT --- HATTIESBURG MS

WEEKLY VISUAL PUMP INSPECTION
(EPICHLOROHYDRIN)

LEAK DETECTION AND REPAIR FOR EPICHLOROHYDRIN
(MAXIMUM AVAILABLE CONTROL TECHNOLOGY)

***Three drips per minute from pump seal determines a leak.
***For leaking seal contact Team, Inc. At 1-800-245-9211 to report leak.
***Retain all recorded documentation a minimum of 3 years.

Date Week of	TRUCK UNLOADING STATION				Initials
	PUMP-110		PUMP-400		
	Leaking	No Leak	Leaking	No Leak	
5/4/98		✓		✓	
5/11/98		✓		✓	
5/18/98		✓		✓	
5/25/98		-		-	
6/1/98		✓		✓	

csj:ml 0685Y

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KYMENE PLANT — HATTIESBURG MS

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Date Week of	TRUCK UNLOADING STATION				Initials
	PUMP-110		PUMP-400		
	Leaking	No Leak	Leaking	No Leak	
2/2/98		✓		✓	Tim.
2/9/98		✓		✓	L.L.
2/16/98		✓		✓	E.P.
2-23-98		✓		✓	K.H.
3/2/98		✓		✓	Jm
3/17/98		✓		✓	E.P.
3-24-98		✓		✓	K.H.
3/30/98		✓		✓	Jmiller
4/6/98		✓		✓	L.L.
4/14/98		✓		✓	E.P.
4-20-98		✓		✓	K.H.
4/27/98		✓		✓	Jmiller
5/4/98		On Next Shift			

csj:ml 0685Y

Refrigerant Usage Log 1999

Date	Area	Equipment Number	Problem	Corrective Action	Refrig. Type	Amt.Used Lbs._Oz.	Ref.Chg. Cap.Lbs	Initials	Comments
07/09/99	RAD E.O.	80056	Leaking valve	Tightened packing	R22	13lbs 1oz	30 lbs	AER	
07/09/99	HRA C/R	00384	Possible internal leak	Checked for leaks	R22	10oz	3.8 lbs		No leaks found
			in water cooled coil					AER	possibly internal.
07/09/99	West office	00300	Not operating	Checked for leaks	R22	6lbs 5oz	40 lbs	AER	No leaks found
	North comp								
07/24/99	HRA C/R	00384	Possible internal leak	Checked for leaks	R22	10oz	3.8 lbs		
			in water cooled coil					AER	No leaks found
07/26/99	Mid office	00301	Cooling tower down	Reset breaker	R22	4lbs 12oz	11 lbs	AER	Optimized East&West
							11 lbs		compressors
08/09/99	HRA C/R	00384	Compressor would	Check for leaks	R22	7oz	3.8 lbs	RA	No leaks found
			not run	none found					possibly internal.
08/10/99	Poly Pale	80059	Broken weld joint	Repaired weld	R22	24lbs3oz	25 lbs	AER	
	Vandorn #1								
08/10/99	Poly Pale	80060	Leaking valve	Replaced value	R22	23lbs 9oz	25 lbs	AER	
	Vandorn#2								
08/20/99	Paracol	80042	Leaking value & gauges	Replaced value &	R22	90lbs	150 lbs	RA&KT	
	Patterson			plugged gauge taps					
08/31/99	Poly Pale	80059	Flex joint broken	Replaced flex joint	R22	27lbs 1oz	25 lbs	RA&KT	
	Vandorn								
09/24/99	HRA C/R	00384	Compressor would	Checked for leaks	R22	8oz	3.8 lbs	AER	No leaks found
			not run	none found					possibly internal.
10/11/99	West office	00300	Packing leaking on	Repaired packing	R22	18lbs	40 lbs	RA	
	South com		value						
10/20/99	Rad E. O.	80056	Compressor cycling	Searched for leaks	R22	23lbs 4oz	30 lbs	AER	Suspect oil system
				none found					

Hercules Hattiesburg Refrigerant Maintenance Program Review

Date: Tuesday, January 18, 2000
Conducted by: Rick Hosey, Marlin Taylor
In Attendance:

Hattiesburg Maintenance Work Instruction	STATUS: Not Approved – Interim Document
TITLE: Refrigerant Program	ISSUED: January 12, 2000
DOCUMENT NUMBER:	REVISION: 0
DOCUMENT REFERENCE:	OWNER: Rick Hosey

Hercules Hattiesburg Refrigerant Maintenance Program

1.0 Scope:

The scope of this program covers the responsibilities and duties for the maintenance, disposal and record keeping of refrigerant containing equipment operated at the Hattiesburg Plant. Specific program elements include.

- Maintenance, Service and Charging
- Leak Rate Determination and Repair
- Appliance Disposal
- Motor Vehicle Air Conditioning Maintenance, Service and Charging (not applicable at Hattiesburg)
- Specific Applicable Equipment On Site
- Required Documentation Forms

2.0 Applicable Requirements:

This program has been developed to comply with the following requirements:

- Title V Permit to Operate
- Code of Federal Regulations 40 CFR 82.10 – 166
- Subpart F – The purpose of this subpart is to reduce emissions of Class I and Class II refrigerants to the lowest achievable level during the service, maintenance, repair, and disposal of appliances in accordance with section 608 of the 1990 Clean Air Act. This subpart also applies to recycling and recovery equipment. The air conditioning systems on the Hattiesburg Plant are serviced and repaired by plant craftsmen or an outside contractor. The same selected plant craftsman or contractor will be responsible for reclaiming, recovering and preparing units for disposal in accordance with this procedure.
- Subpart H – This subpart applies to any person testing, servicing, maintaining, repairing or disposing of halons. The Hattiesburg Plant has some halon portable fire extinguishers.
- Hercules Internal Requirements:
  - Hercules Incorporated EMS Standard concerning the development, documentation and maintenance of this program, biennial responsibility refresher and biennial program assessment.
  - Hercules Environmental Records Retention / Destruction Guidelines concerning the retention and destruction of records and documentation associated with this program.

3.0 Facility Best Management Practices:

The Hattiesburg Plant has implemented the following Best Management Practices (BMP):

- Recycling and recovery practices are to be activated with all refrigerant-containing appliances, and intentional venting of refrigerant to the atmosphere is prohibited at all times. Only the refrigeration units containing more than 50 pounds of refrigerant per individual circuit are required to conduct leak rate determinations and both initial and follow-up leak inspections.

- The required time frame to conduct a follow-up verification test is 30 days. The Hattiesburg Plant has implemented a 14-day time frame to perform a follow-up verification test as to provide enough back-up time to repair any failed follow-up verification test. The same logic is to be implemented of any unit requiring a process unit shutdown for repairs. The required time frame to repair a refrigerant-containing unit that requires a process shutdown is 120 days. The Hattiesburg plant has implemented a 100 day time frame to conduct the required repairs.

4.0 Terms, Definitions and Abbreviations:

Appliance	Any device that contains and uses a class I or a class II substance as a refrigerant and is used for household, commercial, or industrial purposes, including any air conditioner, refrigerator, chiller or freezer. Essentially any sort of cooling equipment that uses a class I or a class II substance as a refrigerant is an appliance.
CFC	Chlorofluorocarbon or Refrigerant
Class I Refrigerant	A complete listing of Class I substances can be found at 40 CFR 82 Subpart A. Appendix A.
Class II Refrigerant	A complete listing of Class I substances can be found at 40 CFR 82 Subpart A. Appendix B.
Follow-up Verification	Those tests that involve checking the repairs within 30 days of returning the system to normal operating characteristics or condition. Follow-up verification tests for equipment from which the refrigerants charge has been evacuated means a test conducted after system or portion of the system has resumed operation at normal operating characteristics or conditions of temperature and pressure, except in cases where sound professional judgement dictates that these tests will be more meaningful if performed prior to the return to normal operating characteristics and conditions. A follow-up verification test for a system that has not been evacuated means a re-verification test conducted after the initial verification test and usually within 30 days of normal operating conditions. Where a system is not evacuated, it is only necessary to conclude any required changes in pressure, temperature, or other conditions to return the system to normal operating conditions.
Full Charge	The amount of refrigerant required for normal operating characteristics or conditions of industrial process refrigeration systems as determined by using one or a combination of the following 4 methods: • Using the systems manufacturer's determination of the correct full charge for the system. • Determining the full charge by appropriate calculations based on component sizes, density of refrigerant, volume of piping and all other relevant considerations. • Using actual measurements of the amount of refrigerant added or evacuated from a refrigeration system. • Using an established range based on the best available data, regarding the normal operating characteristics and conditions for the system, where the midpoint of the range will serve as the full charge and where records are maintained in accordance with 40 CFR 82.166(q).
Process Shutdown	A process or facility temporarily ceases to operate or manufacture whatever is being produced at the facility.

Initial Verification Test	Those leak tests that are conducted as soon as practicable after the repair is completed. If the system or isolated portion is evacuated, it means a test conducted prior to replacing of the full charge and before the system or portion of the system has reached operation at normal operating characteristics or conditions of temperature and pressure. An Initial verification test conducted without the evacuation of the refrigerant charge means a test is conducted as soon as practicable after the completion of the repair work.
MVAC	Motor vehicle air conditioning systems.
Normal Operating Characteristics	Temperatures, pressures, fluid flows, speeds, and other characteristics that would normally be expected for a given process load and ambient condition during operation. Normal operating characteristics or conditions are marked by the absence of abnormal conditions affecting the operation of the refrigeration system.
Opening	Any service, maintenance, or repair on an appliance that would release Class I or Class II refrigerant from the appliance to the atmosphere unless the refrigerant were recovered previously from the appliance. Connecting and disconnecting hoses and gauges to and from the appliance to measure pressures within the appliance and to add refrigerant to or recover refrigerant from the appliance shall **not** be considered opening.
Reclaim refrigerant	Reprocess refrigerant to at least the purity specified In appendix A of 40 CFR part 82, subpart F (based on ARI Standard 700-1993, Specifications for Fluorocarbon and other refrigerants) and to verify the purity using the analytical methods presented in Appendix A.
Recover refrigerant	To remove refrigerant in any condition from an appliance without necessarily testing or processing it in any way.
Refrigerant unit	The parts of an appliance that are normally connected to each other (or separated only by Internal valves) and are designed to contain refrigerant.
Technician	Any person who performs maintenance, service or repair that could reasonably be expected to release class I or class II refrigerants from appliances, except MVACs and MVAC like appliances. Technicians include but are not limited to installers, contractor employees, and plant E & I craftsmen.

5.0 Required Documentation:

Documentation Requirement	Who and Where	How Long
All maintenance, service, refrigerant additions, refrigerant recovered, refrigerant reclaimed, and repairs are to be documented and issued on the day in which the repair work is completed. Hercules Incorporated has an attached form to be completed for each job. CFC-1	Outside contractor Or plant craftsmen	All repairs are to documented on Form CFC 1 The documents are to be kept on file and available for inspection for 5 years
All documents issued by the outside contractor, or plant E & I craftsmen, are to be filed in a manner suitable for inspection	E&I Supervisor's Office And E&I Shop	The documents are to be kept on file and available for Inspection for 5 years
All % leak rates are to be calculated immediately following the addition of refrigerant to any refrigerant-containing appliance on the Hattiesburg site.	Outside contractor, or plant E & I craftsmen are to document leak rate % on Form CFC 1	Until procedure changes
All refrigerant removed from the Hattiesburg site must be documented and approved before leaving the facility.	E&I Supervisor And Environmental Coordinator	Until approved changes have been made with this guideline
All terminated refrigerant-containing appliances must be evacuated and labeled in accordance with the requirements of this procedure.	Outside contractor, or plant E&I craftsmen are to document disposal of equipment on Form CFC 2	Until approved changes have been made with this guideline
All routine and non-routine maintenance, service, disposal, refrigerant additions or recovery work must be recorded in the Hattiesburg Plant Refrigerant Use Log or Refrigeration Unit/Appliance Log spreadsheets on network drive "P".	Plant E&I craftsmen E & I Specialist	5 years

A record of all refrigerant-containing items designated for disposal s required to be documented.	Outside contractor and plant E&I craftsmen, are to document disposal of equipment on Form CFC 2	5 years
A record of all pounds o' refrigerant purchased and accepted on the Hattiesburg site.	SAP Computer System	5 Years
All certifications of technicians that will be conducting refrigerant related service and repair work on the Hattiesburg site are to be kept on file.	E&I Shop and/or H/R File	5 Years
An up to date inventory of all refrigerant-containing equipment will be maintained on site in the Plant CFC Containing Equipment Inventory Log Spreadsheet on network drive "P".	E&I Specialist and E&I craftsmen	Continuous

6.0 Requirec Training:

Training Requirement	Who and Where	How Often
An acceptable certified program that is acknowledged by the regulatory authority	All personnel required to handle CFC related equipment	Prior to any Plant CFC related maintenance assignment
Responsibility refresher	Anyone with servicing responsibilities associated with this program	Every 5 Years

7.0 Associated support tools, checklist and work instructions:

1) Refrigerant Use Log spreadsheet developed in-house
2) Refrigeration Unit/Appliance Disposal Log spreadsheet developed in-house
3) Plant CFC Containing Equipment Inventory Log spreadsheet developed in-house
4) Form CFC 1 and Form CFC 2

8.0 Procedures:

Refrigerant Maintenance, Service and Charging Procedure:

No Hercules employee or contractor is to perform any maintenance or repairs to refrigerant containing appliances without being certified.

Action	When	Who	How (additional info)
Acquire copies of all certifications of technicians conducting refrigerant related services on the Hattiesburg Plant.	Before technician performs any refrigerant related maintenance on site	E&I Supervisor	From selected outside contractor and plant E&I craftsmen
Generate work order for CFC-containing equipment requiring service.	Whenever equipment requires servicing, maintenance or repairs	E&I group Maintenance Supervisors and Operating personnel. Anyone noticing requirement.	

Refrigerant Maintenance, Service and Charging Procedure cont:

Conduct maintenance, service or repair work on selected equipment and provide documented service Form CFC1.	As designated by the E&I Maintenance Supervisor	Selected contractor or plant E&I craftsmen	In accordance with this procedure.
Acquire completed service report for each refrigerant unit in which work was performed	On the day the work was performed	E&I craftsman, contractors, E&I Specialist	The selected contractor is to provide a hard copy of work performed to both departments
Input repair data into the network spreadsheet log (Drive "P").	On the day the work was performed	E&I craftsmen, E&I Specialist	Manually inputting data from contractor or E&I craftsmen service reports
Conduct internal quarterly audits to verify all reporting requirements are being met.	Quarterly due 1/30, 4/30, 7/30 and 10/30 of each calendar year	Environmental Coordinator, Facilities Supervisor	Compare contractor or plant E&I craftsmen service reports, refrigerant additions and computer database records

Refrigerant Leak Rate Determination and Repair Procedure:

Action	When	Who	How (additional info)
Conduct % leak Rate calculation	Whenever refrigerant is added to any CFC-containing equipment	Selected contractor or plant E&I craftsmen	Based on the approved equation in this procedure*
Determine if leak rate exceeds 35% for units with full charges over 50 pounds	Whenever refrigerant is added to units with full charges greater than 50 pounds	Selected contractor or plant E&I craftsmen	Based on the approved equation in this procedure
Contact Environmental Coordinator if the leak rate is above 35% for units containing more than 50 lb of refrigerant. All other units submit leak rate % with hard copy service report	Same Day service is provided	Selected contractor or plant E&I craftsmen	Hard Copy of report, phone, E-mail etc.
Locate and repair source of leak	ASAP but before 14 days after discovery. If a process unit shutdown is required in order to repair then 100 days is the allowable time limit	Selected contractor or plant E&I craftsmen	Best engineering judgment to eliminate CFC emissions
Verify equipment is leak free	Before putting the selected unit back in service. If the unit is taken off line, or before refrigerant is added back into the system.	Selected contractor or E&I craftsmen	Soap Bubble Test Electronic Leak detectors Ultrasonic leak detector Pressure Test Vacuum Test Dye and Black Light Test Infrared Test Near Infrared Test
Follow-up verification to insure repaired equipment is leak free	Within 14 days from the date the equipment was initially repaired.	Selected contractor or plant E&I craftsmen	Soap Bubble Test Electronic Leak detectors Ultrasonic leak detector Pressure Test Vacuum Test Dye and Black Light Test Infrared Test Near Infrared Test

Refrigerant Leak Rate Determination and Repair Procedure cont:

Failed Follow-up verification test (notify environmental coordinator of failed follow-up test on the same day of service) Repair leak and initially verify no leaks exist as well as perform follow-up verification test	Within 30 days from the original repair date	Selected contractor or plant E&I craftsmen	Soap Bubble Test Electronic Leak detectors Ultrasonic leak detector Pressure Test Vacuum Test Dye and Black Light Test Infrared Test Near Infrared Test
After 30 days from the original repair date, if leak rates greater than 35% for units containing more than 50 pounds of refrigerant exist **notify the environmental coordinator.**	ASAP	E&I craftsmen, E&I Specialist or E&I Supervisor	Hard Copy, E-mail
Notify EPA of failed follow-up verification test	Within 30 days of failed test	Environmental Coordinator	Certified Letter
Develop retrofit / retirement plan for the unit that failed the follow-up verification test	Within 30 days of failed test	E&I Supervisor	Based upon requirements of 40 CFR 82.166
Implement and maintain documentation of retrofit / retirement plan	Within 12 months of the failed test date	E& I Supervisor and Environmental Coordinator	Based upon requirements of 40 CFR 82.166

*Approved Leak Rate Calculation

$$\text{*Leak Rate \%} = \left[\frac{\text{\# lbs refrigerant added}}{\text{\# lbs refrigerant in normal full charge}}\right] \times \left[\frac{365 \text{ days}}{\text{\# days since refrigerant last added}}\right] \times 100\%$$

Disposal Procedure:

Action	When	Who	How (additional info)
Any equipment items containing refrigerant, that is designated for disposal must first be evacuated of all refrigerant. Items serviced for disposal are to be documented on Form CFC 2.	Before appliance is disposed of	Selected contractor or plant E&I craftsmen	Via EPA approved evacuation equipment 1) Remove 90% of refrigerant when the compressor s operating or 80% of the refrigerant when the compressor is not operating or 2) Evacuate the small appliance to 4 inches of mercury vacuum. 3) Evacuate non small appliances to 10 inches of mercury
Any equipment items containing refrigerant, that are designated for disposal and have been evacuated to remove the maximum amount of refrigerant possible must be labeled a **Refrigerant Free** appliance.	Before appliance is placed in the disposal area	Selected contractor or E&I craftsmen	Labels will be provided by the E&I Supervisor
Issue Service and Form CFC 2 report to E&I Supervisor and Environmental Coordinator.	After Completion	Selected contractor or plant E&I craftsmen	Hard Copy

CFC Recovery Equipment:

Action Item	When	Who	How (additional Info)
All manufacturer instructions are to be followed when operating certified recovery equipment.	When servicing CFC-containing equipment	All employees designated to work on CFC-containing equipment	
All recycling and recovery equipment is required to be registered with the EPA.	Before equipment is put in service	Environmental Coordinator	Certified Letter
Verify that recovery or recycling equipment is certified.	Before equipment is put in service	Environmental Coordinator	The equipment is required to have a label that reads the equipment has been certified by an approved equipment organization to meet the EPA's minimum requirement for recycling or recovery intended for use with CFC-containing appliances.

Specific Applicable Equipment on Site:

Greater than 50 Lbs Full Charge

Location	Manufacturer/ Serial Number	Model Number	Full Charge	Refrigerant Type	Cost Code
Kymene	Vilter 30588	M16K355ESB J410	650 lbs.	R22	1042100039
Paracol	Patterson	J-323-1A MCM 4B	150 lbs.	R22	1042100022
Paracol	Lewis Cimco	J-407-1 M185017	250 lbs.		1042100022
Rosin Amine	York YCWI33AB0-46	96-153359-01	2-Circuits 60 60	R22 R22	1042100044
Lab	York YCWZ88LMO	YLAM947735	2-Circuits 80 80	R22 R22	1042030352

HERCULES – HATTIESBURG PLANT
Form CFC-1
(Service Report)

Location /Area _____ **Date** _____

Equipment Name and Service No. _____

Technician Name _____

Leak Test Results/Was there a leak? ❑ Yes ❑ No

Source of Leak	Corrective Actions Taken	Recommendations

Refrigerant Added? ❑ Yes ❑ No

Type _____
Date Last Replenished _____
Total Refrigerant Added This Service Date _____
Total Days Since Last Replenished _____
Equipment Rated Full Charge _____
Leak Rate (%)* = _____

$$\text{*Leak Rate \%} = \left[\frac{\text{\# lbs refrigerant added}}{\text{\# lbs refrigerant in normal full charge}}\right] \times \left[\frac{\text{365 days}}{\text{\# days since refrigerant last added}}\right] \times 100\%$$

Is annual total leak rate to date greater than 35%? ❑ Yes ❑ No

If No, then OK.
If Yes, (1) then *notify Environmental Department immediately*, and
(2) repair leak(s) and retest within 30 days. ----------> Retest Date _____

Refrigerant Recovered or Recycled? ❑ Yes ❑ No If **Yes** how much _____
Comments

_____
_____
_____
_____
_____

☑ Please send copies of this completed form to E&I Shop File and E&I Supervisor File.

HERCULES – HATTIESBURG PLANT
Form CFC-2
(Disposal/Removal Form)

Technician Name _____ Date _____

Has Equipment been designated for disposal? ❑ Yes ❑ No

If **Yes** record the following:

Equipment manufacturer _____

Equipment Type _____

Model Number _____

Serial number _____

Location where equipment removed from._____

Does equipment contain refrigerant? ❑ Yes ❑ No

If YES evacuate refrigerant using approved recovery and recycling equipment.

How much refrigerant was recovered? _____

Was all obtainable refrigerant recovered ? ❑ Yes ❑ No

If yes label the equipment with a **Refrigerant-Free Appliance** label.

Was equipment labeled properly? ❑ Yes ❑ No

☑ Please send copies of this completed form to E&I Shop File and E&I Supervisor File.

HERCULES INCORPORATED

Memo

To: Whom It May Concern

From: Ellis Page

CC: Charlie Jordan

Date: 09/23/99

Re: Epi Check-List

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in checking for Epi leaks, on the Epi Check-list dated 1-21-99, the information given was on the wrong reactor **R-401**. The information given should have been on **R-100** which was leaking around the agitator.

Signature Ellis Page

Date 9-23-99

HERCULES INCORPORATED

Memo

To: Charlie Jordan

From: Willie Ducksworth

CC: Date: 09/24/99

Re: Epi R-401 Reactor

I have checked with Curtis Ducksworth and to my knowledge there has been no work done on reactor **R-401**.

Signature Willie Ducksworth

Date 9-24-99

Eco•Systems, Inc.
Consultants, Engineers and Scientists

March 8, 1999

Mr. Charles Jordan
Environmental Supervisor
Hercules, Inc.
P.O. Box 1937
Hattiesburg, Mississippi 39403-1937

Re: ***Environmental Engineering/Consulting Services***
Leak Detection and Repair
Kymene Process

Dear Mr. Jordan:

Eco·Systems appreciates the opportunity to again provide services to Hercules, Inc. We performed monthly Leak Detection Monitoring services on the affected pumps and agitator of the Kymene process on February 25, 1999. A total of three (3) pumps and one (1) agitator were identified during the initial event in January, 1999. No unit was identified as leaking. A leaking pump is defined in this case as one which has a vapor emission of greater than 5,000 parts per million (ppm). All applicable pumps were tested using a Thermo Environmental Model 680B organic vapor meter. Results of these tests are shown on Table 1 and Table 2 (attached). This report may be placed in the previously provided binder in the First Quarter, 1999 section. Please do not hesitate to contact us at (601) 936-4440 should you have any questions.

Sincerely,
Eco·Systems, Inc.

Wade Steinriede
Staff Scientist

Jeffrey L. Allen, P.E.
Senior Engineer

Enclosures

4294 Lakeland Drive, Suite 200 • Jackson, MS 39208 • Phone (601) 936-4440 • Fax (601) 936-4463

Table 1
Epichlorohydrin Screening Results - Pumps
February, 1999
Hercules. Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0001.00	Pump	Epichlorohydrin	Truck Loading	2/25/99	0.0
0026.00	Pump	Epichlorohydrin	Truck Loading	2/25/99	0.0
0177.00	Pump	Epichlorohydrin	Bottom of R-401	2/25/99	0.0
Percent Leakers					**0%**

Table 2
Epichlorohydrin Screening Results - Agitators
February, 1999
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0176.00	Agitator	Epichlorohydrin	Top of R-401	2/25/99	0.0
Percent Leakers					**0%**

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0001.00	Pump	Epichlorohydrin	Truck Loading	1/14/99	9.4
0001.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0001.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0002.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0003.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0004.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0005.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	32.0
0006.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0006.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0007.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0008.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0009.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0010.01	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0010.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0010.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0011.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0012.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0013.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0014.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.04	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.05	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.06	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.07	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.08	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.09	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.10	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.11	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.12	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.13	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.14	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.15	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.16	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0016.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0017.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0018.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0019.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	20.5
0020.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0021.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0021.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0021.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0021.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0021.04	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0022.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	> 500.0
0023.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0024.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0025.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0025.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0025.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0025.03	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.04	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.05	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.06	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.07	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.08	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.09	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.10	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.11	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.12	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0026.00	Pump	Epichlorohydrin	Truck Loading	1/14/99	0.0
0027.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0028.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0028.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0028.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0029.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0030.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0031.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0032.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.04	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.05	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.06	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.07	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0034.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0035.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	10.7
0035.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0035.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0035.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0036.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0037.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0038.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0039.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0040.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0040.01	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0040.02	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0040.03	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0041.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0042.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0042.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0042.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0043.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0043.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0043.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0044.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.03	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.04	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.05	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.06	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0046.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0046.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0046.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.03	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.04	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.05	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.06	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.07	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.08	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0048.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0049.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0050.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0051.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0052.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0053.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0054.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0055.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0056.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0057.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0058.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0059.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0059.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0059.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0060.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0061.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0062.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0063.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0063.01	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.02	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.03	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.04	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.05	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.06	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.07	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.08	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.09	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.10	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0064.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.03	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.04	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.06	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0065.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0066.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0067.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0067.01	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0067.02	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0068.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0069.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0070.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0071.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0071.01	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0071.02	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0072.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0073.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0073.01	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0073.02	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0074.00	Valve	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0074.01	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0074.02	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0075.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0076.00	Valve	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0077.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0078.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.04	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.05	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.06	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.07	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.08	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.09	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0079.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0079.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0079.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0080.00	Connector	Epichlorohydrin	1st Lvl-Weigh Tks	1/14/99	0.0
0080.01	Connector	Epichlorohydrin	1st Lvl-Weigh Tks	1/14/99	0.0
0080.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0080.03	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0080.04	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0080.05	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0081.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0082.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0082.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0083.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0084.00	Valve	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0085.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0086.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0087.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0088.00	Valve	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0089.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0090.00	Valve	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0091.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0091.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0092.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0093.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0093.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0093.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0094.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0095.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0096.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0097.00	Valve	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0098.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0099.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0100.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0101.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0102.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0103.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0104.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0105.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0106.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0107.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0108.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0109.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0110.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0111.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0112.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0113.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0114.00	Connector	Epichlorohydrin	Grd Level-R401	1/14/99	0.0
0115.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0116.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0117.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0118.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0119.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0120.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0120.01	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0121.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0122.00	Valve	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.01	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.02	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.03	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.04	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.05	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.06	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0123.00	Valve	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0123.01	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0123.02	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0123.03	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.00	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.01	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0124.02	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.03	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.04	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.05	Valve	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.06	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.07	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0125.00	Valve	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0126.00	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0127.00	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0156.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0157.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0157.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0158.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0159.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0160.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0160.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0160.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0160.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0161.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0161.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0161.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0162.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0163.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0164.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0164.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0164.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0164.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0165.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0165.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0165.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0166.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0166.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0166.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0167.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0167.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0167.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0168.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0168.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0168.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0169.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0169.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0169.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0169.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0169.04	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0170.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0170.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0170.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0170.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0171.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0171.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0171.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0171.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0172.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0172.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0172.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0173.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0173.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0173.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0174.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0174.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0174.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0175.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0175.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0175.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0176.00	Agitator	Epichlorohydrin	Top of R-401	1/14/99	0.0
0177.00	Pump	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.02	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.03	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.04	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.05	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0178.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0178.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0178.02	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0179.00	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0179.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0180.00	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0180.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0180.02	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0180.03	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0181.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0181.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0182.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0183.00	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0

Table 1
Epichlorohydrin Screening Results - January, 1999
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0183.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0184.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0184.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0185.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0185.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0186.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0187.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0188.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0189.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0189.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0189.02	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0189.03	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0189.04	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.02	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.03	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.04	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0191.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0191.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0192.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0192.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0192.02	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0192.03	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0193.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0193.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0194.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0194.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0195.00	Valve	Epichlorohydrin	Tank Farm - A408	1/14/99	0.0
0196.00	Connector	Epichlorohydrin	Top of K-110	1/14/99	0.0
0196.01	Connector	Epichlorohydrin	Top of K-110	1/14/99	0.0
0196.02	Connector	Epichlorohydrin	Top of K-110	1/14/99	0.0
0196.03	Connector	Epichlorohydrin	Top of K-110	1/14/99	0.0

Table 1a
Epichlorohydrin Screening Results - Agitators
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0176.00	Agitator	Epichlorohydrin	Top of R-401	1/14/99	0.0
Percent Leakers					**0%**

Table 1b
Epichlorohydrin Screening Results - Connectors
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0001.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0001.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0002.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0003.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0005.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	32.0
0006.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0006.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0007.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0008.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0009.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0010.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0010.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0011.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0012.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0014.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.04	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.05	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.06	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.07	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.08	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.09	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.10	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.11	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.12	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.13	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.15	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.16	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0016.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0018.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0019.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	20.5
0021.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0021.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0021.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0021.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0021.04	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0022.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	**> 500.0**
0024.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0025.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0025.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0

Table 1b
Epichlorohydrin Screening Results - Connectors
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0025.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0025.03	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.04	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.05	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.06	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.07	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.08	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.09	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.10	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.11	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0025.12	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0027.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0028.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0028.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0029.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0031.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0032.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.04	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.05	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.06	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0033.07	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0034.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0035.01	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0035.02	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0035.03	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0036.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0038.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0039.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0040.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0040.01	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0040.02	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0040.03	Connector	Epichlorohydrin	Line from Loading	1/14/99	0.0
0041.00	Connector	Epichlorohydrin	Truck Loading	1/14/99	0.0
0042.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0042.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0042.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0043.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0043.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0

Table 1b
Epichlorohydrin Screening Results - Connectors
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0043.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0044.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.03	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.04	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.05	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0045.06	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0046.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0046.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0046.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.03	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.04	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.05	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.06	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.07	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0047.08	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0048.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0050.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0051.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0053.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0054.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0055.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0057.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0058.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0059.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0059.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0060.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0061.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0062.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0063.00	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0063.01	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.02	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.03	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.04	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.05	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.06	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.07	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0

Table 1b
Epichlorohydrin Screening Results - Connectors
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0063.08	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.09	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0063.10	Connector	Epichlorohydrin	Line from K-110	1/14/99	0.0
0064.01	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.02	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.03	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.04	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.06	Connector	Epichlorohydrin	EPI Storage	1/14/99	0.0
0065.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0066.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0067.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0067.01	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0067.02	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0068.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0069.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0070.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0071.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0071.01	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0071.02	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0072.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0073.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0073.01	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0073.02	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0074.01	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0074.02	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0075.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0077.00	Connector	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0078.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.04	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.05	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.06	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.07	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.08	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0078.09	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0079.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0079.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0079.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0080.00	Connector	Epichlorohydrin	1st Lvl-Weigh Tks	1/14/99	0.0
0080.01	Connector	Epichlorohydrin	1st Lvl-Weigh Tks	1/14/99	0.0

Table 1b
Epichlorohydrin Screening Results - Connectors
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0080.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0080.03	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0080.04	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0080.05	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0081.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0082.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0082.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0083.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0085.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0086.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0087.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0089.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0091.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0091.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0092.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0093.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0093.01	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0093.02	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0094.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0095.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0096.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0098.00	Connector	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0099.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0100.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0102.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0104.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0106.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0107.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0109.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0110.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0112.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0113.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0114.00	Connector	Epichlorohydrin	Grd Level-R401	1/14/99	0.0
0115.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0117.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0118.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0120.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0120.01	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0121.00	Connector	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0122.01	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.02	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.03	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0

Table 1b
Epichlorohydrin Screening Results - Connectors
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0122.04	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.05	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0122.06	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0123.01	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0123.02	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0123.03	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.00	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.01	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.02	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.03	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.04	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.06	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.07	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0126.00	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0127.00	Connector	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0156.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0157.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0157.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0158.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0159.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0160.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0160.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0160.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0161.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0161.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0162.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0163.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0164.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0164.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0164.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0165.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0165.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0165.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0166.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0166.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0166.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0167.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0167.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0168.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0168.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0169.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0169.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0

Table 1b
Epichlorohydrin Screening Results - Connectors
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0169.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0169.04	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0170.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0170.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0170.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0171.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0171.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0171.03	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0172.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0172.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0173.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0173.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0174.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0174.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0175.00	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0175.01	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0175.02	Connector	Epichlorohydrin	Top of R-401	1/14/99	0.0
0177.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.02	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.03	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.04	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0177.05	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0178.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0178.02	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0179.00	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0179.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0180.00	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0180.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0180.02	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0180.03	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0181.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0183.00	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0183.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0184.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0185.01	Connector	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0189.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0189.02	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0189.03	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0189.04	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.02	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.03	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0

Table 1b
Epichlorohydrin Screening Results - Connectors
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0190.04	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0191.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0192.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0192.02	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0192.03	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0193.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0194.01	Connector	Epichlorohydrin	Near P-401	1/14/99	0.0
0196.00	Connector	Epichlorohydrin	Top of K-110	1/14/99	0.0
0196.01	Connector	Epichlorohydrin	Top of K-110	1/14/99	0.0
0196.02	Connector	Epichlorohydrin	Top of K-110	1/14/99	0.0
0196.03	Connector	Epichlorohydrin	Top of K-110	1/14/99	0.0
Percent Leakers					**0.33%**

Table 1c
Epichlorohydrin Screening Results - Valves
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0004.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0010.01	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0013.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0015.14	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0017.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0020.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0023.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0028.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0030.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0035.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	10.7
0037.00	Valve	Epichlorohydrin	Truck Loading	1/14/99	0.0
0049.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0052.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0056.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0059.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0064.00	Valve	Epichlorohydrin	EPI Storage	1/14/99	0.0
0074.00	Valve	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0076.00	Valve	Epichlorohydrin	2nd Lvl-Weigh Tks	1/14/99	0.0
0084.00	Valve	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0088.00	Valve	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0090.00	Valve	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0097.00	Valve	Epichlorohydrin	1st Lvl-Wiegh Tks	1/14/99	0.0
0101.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0103.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0105.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0108.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0111.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0116.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0119.00	Valve	Epichlorohydrin	Grd Level-R-401	1/14/99	0.0
0122.00	Valve	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0123.00	Valve	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0124.05	Valve	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0125.00	Valve	Epichlorohydrin	Loading St. - N Side	1/14/99	0.0
0160.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0161.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0164.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0167.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0168.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0169.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0170.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0171.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0

Table 1c
Epichlorohydrin Screening Results - Valves
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0172.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0173.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0174.00	Valve	Epichlorohydrin	Top of R-401	1/14/99	0.0
0178.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0181.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0182.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0184.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0185.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0186.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0187.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0188.00	Valve	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
0189.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0190.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0191.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0192.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0193.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0194.00	Valve	Epichlorohydrin	Near P-401	1/14/99	0.0
0195.00	Valve	Epichlorohydrin	Tank Farm - A408	1/14/99	0.0
Percent Leakers					**0%**

Table 1d
Epichlorohydrin Screening Results - Pumps
Hercules, Inc.

ESI

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0001.00	Pump	Epichlorohydrin	Truck Loading	1/14/99	9.4
0026.00	Pump	Epichlorohydrin	Truck Loading	1/14/99	0.0
0177.00	Pump	Epichlorohydrin	Bottom of R-401	1/14/99	0.0
Percent Leakers					**0%**

To: Charles S. Jordan/Hercules@HERCULES
cc: Ted B. Rounsaville/Hercules@HERCULES
From: Bruce Sherman/Hercules
Date: 01/15/99 01:45:49 PM EST
Subject: LDAR Repairs

The LDAR inspection on January 14, 1999 identified a leaking flange on the Epi transfer line. This transfer line feeds both the Epi weight tank and the Epi mass flow meter. A new flange was built and installed. Repairs were completed by 9:30 AM on January 15, 1999 The unloading of the Epi tank truck was delayed 2.5 hours on January 15, 1999 until repairs were completed. T

Eco•Systems, Inc.
Consultants, Engineers and Scientists

February 12, 1999

Mr. Charles Jordan
Environmental Supervisor
Hercules, Inc.
P.O. Box 1937
Hattiesburg, Mississippi 39403-1937

Re: ***Environmental Engineering/Consulting Services***
Leak Detection and Repair
Kymene Process

Dear Mr. Jordan:

Eco·Systems appreciates the opportunity to again provide services to Hercules, Inc. We performed Leak Detection Monitoring services on the affected components of the Kymene process on January 14, 1999. One component was identified as leaking. The component was immediately tagged and Hercules personnel were notified of the leak. The leaking component will be re-tested by *Eco·Systems* on its next monthly monitoring event (February, 1998). The enclosed report details the results of the January, 1999 monitoring event. Also enclosed is a binder for this and future reports during the calendar year 1999. The binder is organized in quarters (1st Quarter, 1999 through 4th Quarter, 1999) for easy access to reports. Please do not hesitate to contact us at (601) 936-4440 should you have any questions.

Sincerely,
Eco-Systems, Inc.

Wade Steinriede
Staff Scientist

Ken L. Faulkner, P.E.
Project Manager

Enclosures

4294 Lakeland Drive, Suite 200 • Jackson, MS 39208 • Phone (601) 936-4440 • Fax (601) 936-4463

Eco·Systems, Inc.
Consultants, Engineers and Scientists

July 1, 1999

Mr. Charlie Jordan
Hercules, Inc.
P.O. Box 1937
Hattiesburg, Mississippi 39403-1937

Re: Equipment Leak Monitoring for January and February

Dear Mr. Jordan:

On January 15, 1999, Wade Steinrede of *Eco·Systems* visited the Hercules facility to perform equipment leak monitoring as required by 40 CFR 63, Subpart H. During this monitoring, it was discovered that a connector was leaking. According to your office, the leak was physically repaired within 15 days as required by Subpart H. *Eco·Systems* re-tested the connector on February 25, 1999 and determined that it was in compliance as specified by the standard. We are currently gathering field records that document the February monitoring event and will provide them to Hercules, Inc. as soon as possible.

Sincerely,
Eco·Systems, Inc.

Wade Steinrede
Staff Scientist

Evan Tullos
Project Scientist

Eco·Systems, Inc.
Consultants, Engineers and Scientists

July 13, 1999

Mr. Charlie Jordan
Hercules, Inc.
P.O. Box 1937
Hattiesburg, Mississippi 39403-1937

Re: Equipment Re-Testing Certification for January and February of 1999

Dear Mr. Jordan:

This letter is provided as a follow-up to the letter dated July 1, 1999 regarding the leak monitoring performed during January and February of 1999. On January 15, 1999, Wade Steinrede of *Eco·Systems* visited the Hercules facility to perform equipment leak monitoring as required by 40 CFR 63, Subpart H. During this monitoring, it was discovered that a connector was leaking. *Eco·Systems* re-tested the connector on February 25, 1999 and determined that it was in compliance as specified by the standard.

We have been unsuccessful at locating the field records pertaining to the re-testing of the repaired component. However, we wish to reiterate in this communication our certification that the connector was re-tested on February 25 and determined in compliance, and that the instrument was calibrated prior to measurement as is our standard practice.

Sincerely,
Eco·Systems, Inc.

Wade Steinrede
Staff Scientist

Evan Tullos
Project Scientist

4294 Lakeland Drive, Suite 200 • Jackson, MS 39208 • Phone (601) 936-4440 • Fax (601) 936-4463

Eco•Systems, Inc.
Consultants, Engineers and Scientists

December 21, 1999

Mr. Charles Jordan
Environmental Supervisor
Hercules, Inc.
P.O. Box 1937
Hattiesburg, Mississippi 39403-1937

Re: Environmental Engineering/Consulting Services
Monthly Leak Detection for Pumps, Kymene Process

Dear Mr. Jordan:

Eco·Systems appreciates the opportunity to again provide services to Hercules, Inc. We performed monthly monitoring on the pumps and agitator in the Kymene process on December 16, 1999. A total of three (3) pumps and one (1) agitator were identified during the initial event in January, 1999. A leaking pump or agitator is one which has an organic vapor emission of greater than 5,000 ppm or 10,000 ppm, respectively. All applicable components were tested by *Eco·Systems* using a Thermo Environmental Model 680 organic vapor meter and no leaking units were discovered. Results of these tests are shown on the attached tables..

Eco·Systems appreciates the opportunity to provide environmental assistance to Hercules. Please do not hesitate to contact us at (601) 936-4440 should you have any questions.

Sincerely,
Eco·Systems, Inc.

FOR

Wade Steinriede
Staff Scientist

Evan Tullos
Project Scientist

Attachment

BOCAGE SPECIALTY COMPANY
3501 HOLIDAY DR.,STE. 312
NEW ORLEANS, LA 70114

FAX:(504)366-0003 PHONE:(504)366-0006

DATE: 2/23/99
SUBJECT: P.O.#
or JOB#: Feb LDAR

TO:

Eco-Systems, Inc
Jackson, Ms

Attn: Wade Stringfield

RENTAL

1 HMV/LOGGER MODEL: HVM-680 S/N: 49181
AND ACCESSORIES AS FOLLOWS:
- SAMPLE PROBE W/FILTER ASSEMBLY *
- SPARE FILTER ASSEMBLY
- BATTERY CHARGER S/N: 2810
- SHOULDER STRAP & SOFT SIDE CASE
- OWNERS MANUAL
- ZERO FILTER
- REFILL ASSEMBLY
- HARD SHELL CARRY CASE

* IMPORTANT TO USE SAMPLE PROBE W/FILTER ASSEMBLY AS TO NOT STOP UP INSTRUMENT.

** NOTE: OVER TIGHTENING THE HYDROGEN VALVE ON THIS INSTRUMENT WILL RESULT IN LEAKAGE, MAKING THE INSTRUMENT INOPERABLE. UPON CHECK-IN, IF THIS VALVE IS FOUND TO BE LEAKING, YOUR FIRM IS SUBJECT TO A FACTORY REPAIR CHARGE AS REQUIRED (APPROXIMATELY $300.00). PLEASE DO NOT OVER TIGHTEN WHEN CLOSING THIS VALVE.

SPAN CHECK: 4% on High Span (AG)

RENTAL

1 CALIBRATION KIT

	OUT	IN	
ZERO AIR	100	100	
LOW SPAN	640	620	30 PSI
HIGH SPAN	410	400	30 PSI

RECEIVED BY: Shipped Fed X - Acct #
DATE: 2/23/99 TIME:
RETURNED BY: Sue - Fed X
DATE: 2/26/99 TIME:
2 day rental 24/25

VERIFIED
AG
3-3-99

ESI

Table 1
Epichlorohydrin Screening Results - Pumps
March, 1999
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0001.00	Pump	Epichlorohydrin	Truck Loading	3/25/99	0.0
0026.00	Pump	Epichlorohydrin	Truck Loading	3/25/99	0.0
0177.00	Pump	Epichlorohydrin	Bottom of R-401	3/25/99	0.0
Percent Leakers					**0%**

ESI

Table 2
Epichlorohydrin Screening Results - Agitators
March, 1999
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0176.00	Agitator	Epichlorohydrin	Top of R-401	3/25/99	0.0
Percent Leakers					0%

INSTRUMENT CALIBRATION

Methane Mix	Initial Reading	Final Reading
0 (air)	1.4	0.06
95 ppmv	98.2	94.7
980 ppmv	932	978

Calibration Check

Methane Mix	Reading	Percent
95 ppmv	95.2	100%

ESI

Table 1
Epichlorohydrin Screening Results - Pumps
April, 1999
Hercules, Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0001.00	Pump	Epichlorohydrin	Truck Loading	4/14/99	0.0
0026.00	Pump	Epichlorohydrin	Truck Loading	4/14/99	0.0
0177.00	Pump	Epichlorohydrin	Bottom of R-401	4/14/99	0.0
Percent Leakers					0%

INSTRUMENT CALIBRATION

Methane Mix	Initial Reading	Final Reading
0 (air)	3.5	-1.5
95 ppmv	100	95.2
980 ppmv	958	972

Calibration Check

Methane Mix	Reading	Percent
95 ppmv	95.9	101%

ESI

Table 2
Epichlorohydrin Screening Results - Agitators
April, 1999
Hercules. Inc.

Tag ID	Component Type	Chemical Stream	Location	Screen Date	Screen Reading (ppm)
0176.00	Agitator	Epichlorohydrin	Top of R-401	4/14/99	0.0
Percent Leakers					0%

FUGITIVE COMPLIANCE CORPORATION

October 8, 1999

Mr. Charles S. Jordan
Hercules Incorporated
Resins
613 West Seventh Street
P.O. Drawer 1937
Hattiesburg, Mississippi 39403

RE: **Request For Quotation For Fugitive Emissions Monitoring**
Proposal Number 991051

VIA FAX #: (601) 584-3226

Dear Mr. Jordan:

We appreciate the opportunity to provide this proposal concerning the implementation of a Fugitive Emission program at Hercules Incorporated. Our monitoring program will meet current U.S. Environmental Protection Agency (EPA), State Regulations and can satisfy Hazardous Organic NESHAP's (HON) requirements.

We believe our system of fugitive emission screening has features that will be important to the long-term success of the Leak Detection and Repair (LDAR) program at the Hercules Incorporated Hattiesburg facility and to your long-term satisfaction with our firm as a contractor providing this service. Our key features include:

* Assurance of the highest level of data quality and integrity since direct instrument readings are transferred from the field to the final data repository without any human data transcription or data entry.

* The ability to produce reports, including equipment maintenance lists or required regulatory reports, the same day the components are screened.

* Custom reports easily defined by the customer in a menu-driven database format (F.E.M.S.).

* Efficiency of screening which allows high daily screening rates that minimizes inconvenience by reducing the days spent in each unit.

* Personnel trained on assisting clients with any State, Federal, or Company audits that may occur in their facility.

We believe our approach offers the quality customers will ultimately demand in a successful LDAR program. We look forward to a long and continuing working relationship with Hercules Incorporated. Please contact me at (713) 451-5011 if you have any questions or comments concerning this proposal.

Sincerely,

FUGITIVE COMPLIANCE CORPORATION

James L. Cooper
President

JLC/tls
hercules.pro

cc: File

INITIAL SET UP COST ESTIMATE

Retag EPI Area	
400 sources (Approx.) @ $2.20 per source	$ 880.00
Tag RAD Area	
1200 sources (Approx.) @ $2.20 per source	$2,640.00
Difficult to Monitor Tagging Est. 1 day @ $35.00 x 8	$ 280.00
Total Tagging = 1600 sources. Estimated Time 1 week	
320 sources tagged per day (Two Technicians)	
Hotel @ 5 days - $69.00 per night = $345.00 x 2	$ 690.00
Per Diem @ 5 days - $25.00 per day = $125.00 x 2	$ 250.00
Mileage @ 1 round trip - 324 miles @ 42¢ per mile	$ 136.08
TOTAL SETUP COST ESTIMATE	$4,876.08

QUARTERLY MONITORING

October Monitoring

EPI Area	Monthly Pumps (Less than 300 - Hourly)	$ 35.00
RAD Area	--	$ 0.00
Mileage from Baton Rouge 324 miles roundtrip @ 42¢		$ 136.08
Travel time 5.5 hours @ $35.00 per hour		$ 192.50
TOTAL OCTOBER		$ 363.58

November Monitoring

EPI Area	4th Quarter Monitoring - 400 sources	$ 440.00
RAD Area	4th Quarter (Initial Monitoring) - 1200 sources	$1,320.00
Mileage from Baton Rouge 324 miles roundtrip @ 42¢		$ 136.08
Travel Time 5.5 hours @ $35.00 per hour		$ 192.50
TOTAL NOVEMBER		$2,088.50

December Monitoring

EPI Area	Monthly Pumps (Less than 300 - Hourly)	$ 35.00
RAD Area	Monthly Pumps (Less than 300 - Hourly)	$ 35.00
Mileage from Baton Rouge 324 miles roundtrip @ 42¢		$ 136.08
Travel time 5.5 hours @ $35.00 per hour		$ 192.50
TOTAL DECEMBER		$ 398.58
PROJECTED QUARTERLY COSTS		$2,850.66
20% CONTINGENCY		$ 570.13
TOTAL PER QUARTER		$3,420.79

YEARLY ESTIMATED COST

4th Quarter 1999		
October	$ 363.58	(No RAD Sources)
November	$2,088.50	
December	$ 398.58	
	$2,850.66	
	570.13	20% Contingency
TOTAL	$3,420.79	
1st Quarter 2000		
January	$ 389.58	
February	$2,088.50	
March	$ 398.58	
	$2,885.66	
	577.13	20% Contingency
TOTAL	$3,462.79	
2nd Quarter 2000		
April	$ 398.58	
May	$2,088.50	
June	$ 398.58	
	$2,885.66	
	577.13	20% Contingency
TOTAL	$3,462.79	
3rd Quarter 2000		
July	$ 398.58	
August	$2,088.50	
September	$ 398.58	
	$2,885.66	
	577.13	20% Contingency
TOTAL	$3,462.79	

1ST YEAR TOTAL	$13,809.16
12 MONTHLY PAYMENTS	$ 1,150.76 Per Month

HERCULES

Hercules Incorporated Purchase Order

DELIVERY DATE	PURCHASE ORDER NUMBER	OUTLINE AGREEMENT NUMBER	ORDER DATE	ALT NO:	ALTERATION DATE
01DEC1999	4500204093		22OCT1999		

VENDOR

Attention: JAMES COOPER
FUGITIVE COMPLIANCE CORPORATION
11811 I-10 EAST SUITE 330
HOUSTON TX 77029

EIS

MAIL TWO COPIES OF YOUR INVOICE TO:
HERCULES INCORPORATED
HATTIESBURG PLANT
613 WEST 7TH STREET
HATTIESBURG, MS 39401

X
ATTN: ACCTS. PAYABLE

SHIP TO

HATTIESBURG PLANT
HERCULES INCORPORATED
613 WEST 7TH STREET
HATTIESBURG MS 39401

NOTE: New Purchase Order Terms and Conditions

The items being purchased on this order are subject to the Hercules Year 2000 Warranty (Para. 5) on the Terms and Conditions page which is the last page of this order.

VIA

TERMS
Net 30 Days From Invoice Date

INCOTERMS FOB DELIVERED

ITEM	QUANTITY	PRICE	UNIT	AMOUNT
	PLEASE REFERENCE THE ABOVE PURCHASE ORDER NUMBER ON ANY INQUIRIES OR CHANGES. CALL 601-584-3368 (VOICE MAIL) OR FAX 601-584-3206 ATTENTION: SHELIA JOHNSON			
	EFFECTIVE 7/27/99, YOUR INVOICE FOR PAYMENT SHOULD BE MAILED TO THE HATTIESBURG PLANT AS PER INSTRUCTIONS ABOVE.			
10	LDAR compliance, your proposal 991051			
	9,000.000	EA	1.00 / 1 EA	9,000.00
	Total Net Value Excl. Tax	USD		9,000.00

THIS ORDER EXPRESSLY LIMITS ACCEPTANCE TO THE TERMS AND CONDITIONS STATED HEREIN INCLUDING THOSE PRINTED ON THE LAST PAGE OF THIS ORDER. ANY PROVISIONS TO THE CONTRARY YOU HAVE PROPOSED OR MAY PROPOSE ARE EXPRESSLY REJECTED. TO THE EXTENT NECESSARY TO GIVE EFFECT TO THESE TERMS AND CONDITIONS, THIS PURCHASE ORDER CONSTITUTES A COUNTEROFFER TO ANY OFFER YOU HAVE PROPOSED OR MAY PROPOSE.

REQUISITIONED BY: CHARLES S. JORDAN

ORDERED BY: SC JOHNSON S. C. Johnson

APPROVED BY:

1. RELEASED VALUATION CLAUSE: Where freight is paid by Buyer and the freight rate depends upon value, Seller shall include in the released valuation clause on the bill of lading the statement that the agreed or declared value of the property is not in excess of $1.50 per pound for each distribution package or any higher value permitted under applicable ICC regulation. Except as provided above, where applicable a $.50 per pound article valuation will apply, whichever results in the lowest transportation charges.

2. PAYMENT: Unless otherwise agreed, time for calculation of payment shall be computed from date of receipt by Buyer of acceptable invoice.

3. TAXES: Prices stated on the face of this order include all local, State and Federal taxes, if any, applicable to this order unless otherwise expressly stated herein.

4. QUALITY: Buyer shall have the right to inspect and test all material at destination before acceptance. Payment to Seller shall not constitute acceptance of material. Seller shall pay the cost of inspecting and testing material rejected and all transportation charges thereon. Seller shall repair or replace at its expense any part of the material furnished hereunder which is found to be defective within one year from the date of acceptance or initial use, whichever is later.

5. WARRANTIES/YEAR 2000 WARRANTY: Seller represents and warrants that all materials, goods and/or services delivered under this Agreement shall be merchantable and free from all defects in material and workmanship, shall be fit for their intended purpose, and shall strictly conform to the specifications, if any. If this Agreement relates to the purchase of a chemical product, then Seller also represents and warrants that Seller has fully disclosed to Buyer all material information known to Seller regarding risks to human and animal health and the environment that may be associated with the use, exposure to or disposal of that product. Seller further represents and warrants that the materials, goods and/or services purchased by Buyer (and the provision thereof by Seller) shall not be adversely affected by the calendar year 2000, or by any related or unrelated information technology-based issues, or any related or unrelated date recognition issues.

6. PACKING AND CARTAGE: No charges will be allowed for boxing, packing, crating, transportation or insurance unless otherwise agreed.

7. EXCUSABLE DELAYS: Neither Seller nor Buyer shall be held responsible for delays in performance or failures of performance when caused by fires, strikes, epidemics, embargoes, directions of the Government, or other conditions of whatsoever nature or description beyond their respective control which delay performance or render performance commercially impracticable, provided however, that the affected party shall immediately notify the other of the condition and the expected duration thereof.

8. DELIVERY: Time is of the essence. Unless excused under Section 6 hereof, Seller's failure to deliver material of the quality and within the time or times specified shall, at the option of the Buyer, without waiver of any other legal right it may have, relieve it of any obligation to accept and pay for such material, as well as any undelivered installment.

9. TERMINATION: Buyer reserves the right to terminate this order in whole or in part at any time by written notice to Seller. Upon receipt of such notice, Seller shall immediately stop work on the portion of the order terminated and shall take corresponding action with respect to its suppliers and subcontractors. Within thirty (30) days of the notice, Seller shall prepare its termination claim (which may include a reasonable profit on work accomplished and accepted) for submission to Buyer. Upon receipt thereof, Buyer shall promptly negotiate a fair and equitable settlement with Seller, provided however, that Buyer may require reasonable proof of the validity of any elements of Seller's claim.

10. INFRINGEMENT: Seller shall protect and indemnify Buyer, its subsidiaries and its customers from and against all claims, liabilities and losses arising from infringement or alleged infringement of any right of a third party by the sale (including resale), delivery, acceptance, possession or use (except use in combination with another material or in the practice of any process) of the material covered by this order whether or not that material is according to Buyer's specifications, drawings or samples, and Seller shall defend at its own expense all proceedings instituted against Buyer, its subsidiaries and customers, based on said infringement or alleged infringement.

11. APPLICABLE LAWS:

a. Seller shall comply with all local, State and Federal laws and regulations affecting the price, production, sale, or delivery of the material under this order, or services performed in connection therewith, and Seller shall indemnify and save Buyer harmless from and against any liability, expense or loss resulting from Seller's failure so to do. In particular:

(1) Fair Labor Standards Act. Seller hereby agrees to incorporate in each invoice covering shipment of material pursuant to this agreement, a certification that the material covered by the invoice was produced in compliance with all applicable requirements of Section 6, 7 and 12 of the Fair Labor Standards Act, as amended, and of all proper regulations and orders of the United States Department of Labor issued under Section 14 thereof.

(2) Occupational Safety and Health Act. Seller warrants that all work performed on Buyer's premises, and the equipment and any other material delivered hereunder shall comply with applicable occupational safety and health standards promulgated under the Occupational Safety and Health Act of 1970 and regulations adopted thereunder.

(3) Equal Employment Opportunity. The nondiscrimination clauses contained in Section 202 of Executive Order 11246 relative to equal employment opportunity for all persons without regard to race, color, religion, sex, or national origin, and implementing rules and regulations, are incorporated herein. The nondiscrimination clauses contained in Section 503 of the Rehabilitation Act of 1973, as amended; in 38 USC 2012 of the Vietnam Era Veterans Readjustment Assistance Act of 1974; and in the Age Discrimination in Employment Act of 1967, are incorporated herein.

(4) In accepting this purchase order supplier assumes responsibility for testing, process control, labeling and other requirements of the U.S. Consumer Product Safety Commission and/or other regulatory, agencies or laws and is responsible for reporting product hazards in accordance with Section 15 of The Consumer Product Safety Act, Public Law 92-573.

b. Except as otherwise provided herein, this order shall be construed in accordance with the Uniform Commercial Code as in effect in the State of Delaware (6 Del. C. Rev.1974 ½ 2-101 through 2-725, inclusive) on the date of this order.

12. WORK ON BUYER'S PREMISES: If this order involves the presence of Seller on the premises of the Buyer, Seller shall comply with all safety and security regulations and shall take all necessary, precautions to prevent injury or damage to persons or property while so engaged. Seller shall indemnify, defend, and save Buyer harmless from and against all liability, losses and expenses (including costs and attorney's fees) for any suit, claim, settlement, award or judgement (herein referred to singly or collectively as the "claim") arising out of the failure of Seller to comply with safety and security regulations, and out of any negligence on the part of Seller, except to the extent such claim may be caused solely by the negligent act or omission of Buyer.

13. ASSIGNMENT: This purchase order shall not be assignable, in whole or in part, by either Seller or Buyer except with the express written consent of the other party.

14. DRAWINGS, PATTERNS, ETC.: All drawings, blueprints, tracings, patterns, samples, and the like, prepared by Seller and paid for by Buyer, or furnished hereunder to Seller by Buyer, and the information contained therein, are the property of Buyer, shall not be used by Seller, except to execute this purchase order, or except as authorized in writing by Buyer, and shall be delivered to Buyer promptly after completion or termination of this purchase order.

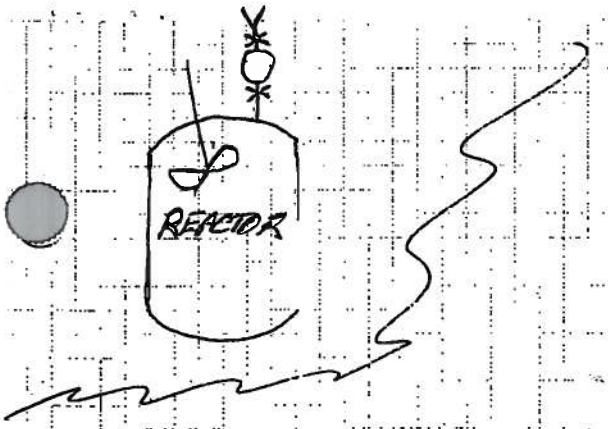
15. OTHER TERMS: No oral agreement or other oral understanding shall in any way modify this order, or the terms or the conditions hereof. Seller's action in accepting this order, or delivering the material called for hereunder shall constitute an acceptance of the terms and conditions of this purchase order. Terms and conditions contained in or submitted with Seller's acknowledgment and/or proposal shall be ineffective as to Buyer unless expressly accepted by Buyer in writing.

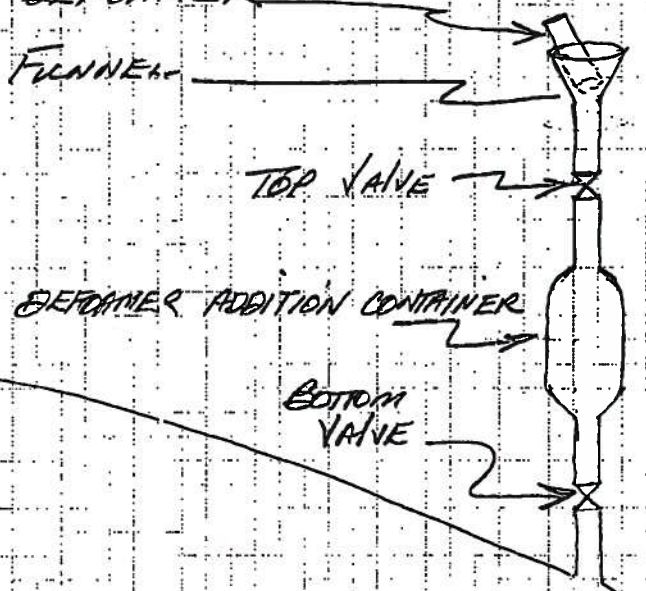
HER 1951

HERCULES INCORPORATED

DATE _____ NO. _____

AUTHOR _____





STEP

1) BOTH VALVES CLOSED
2) OPEN TOP VALVE
3) ADD 8 OZ OF DEFOAMER THROUGH FUNNEL INTO CONTAINER
4) CLOSE TOP VALVE
5) OPEN BOTTOM VALVE AND ALLOW DEFOAMER TO DRAIN INTO REACTOR
6) AFTER DEFOAMER ADDITION INTO THE REACTOR CLOSE BOTTOM VALVE
7) REPEAT STEPS 1 THROUGH 6

" REACTOR "

2 December, 1999

Charles S. Jordan
J. Bruce Sherman

Kymene 736 Manufacture in Reactor 401 (R401)

Conclusion: Based on the annual hours of operation of less than 300 hours, R401 re-circulating loop, mix cooler, and sampling port should be exempt from LDAR monitoring.

Background: Kymene 736 is produced at the Hattiesburg Plant in R401. During Kymene 736 manufacture, R401 contains a 49.42% Epichlorohydrin (Epi) and water mixture. The Epi water mixture is then reacted with Hexamethylenediamine (HMDA) until all the Epi is reacted. The question - how many hours annually does R401 re-circulating loop, mix cooler, and sampling port operate with a Epi concentration greater than 5%.

Results: Table 1, attached, shows the batch steps in question during Kymene 736 manufacture. They are: Step 1 - charge water, Step 2 – charge Epi in three weigh tank drops, and Step 3 – charge HMDA. As you can see, as soon as the first Epi drop is completed in Step 2, R401 re-circulating loop, mix cooler, and sampling port contain a Epi:water mixture greater than 5%. During Step 3, the HMDA reacts with the Epi to form a polyamine. Because this step is exothermic, it must be controlled to achieved the desired end product. The addition of HMDA reduces the Epi concentration two ways 1) it reacts with the Epi to form the polyamine, and 2) it acts as a diluent. The reaction of HMDA with Epi varies during the HMDA addition. During the initial HMDA addition 4.0 moles of Epi reacts with 1.0 mole of HMDA. At the end of HMDA addition 2.31 moles of Epi reacts with 1.0 mole of HMDA. For this model the linear approximation of 3.115 moles of Epi ((4.00+2.31)/2 = 3.155) with 1.0 mole of HMDA is used. Again, referring to Table 1, as the first 1000 pounds of HMDA is added to R401 the Epi concentration drops from 49.44% to 36.96%. When the second 1000 pounds of HMDA is added to R401, the Epi concentration drops from 36.96% to 25.81%. Finally, when the 4197 pounds of HMDA (out of a total HMDA charge of 6500 pounds) is added to R401 re-circulating loop, mix cooler, and sampling port, the Epi concentration drops below 5%.

To determine the hours R401 re-circulating loop, mix cooler, and sampling port operate above the 5% Epi concentration, we needed to determine Step 2) the batch time to add the Epi, and Step 3) the batch time to add 4197 pounds of HMDA. The time to add the 4197 pounds of HMDA is 147 minutes as shown in Table 1. Kymene 736 batch sheets from March 8, 1998 to December 31, 1998 and January 1, 1999 to December 1, 1999 were reviewed. The batch times were as follows:

	3/8/98-12/31/98 (minutes)	1/1/99-11/30/99 (minutes)
Step 2	56	46
Step 3	147	147
Total Time	203	193

As a check, the actual HMDA addition time was compared against the Work Instruction charging recommendations. The recommended charging time is 195 minutes. During the 3/8/98-12/31/98 period, the HMDA charging time was 179 minutes. During the 1/1/99-12/1/99 period, the HMDA charging time was 183 minutes. In both time periods, the HMDA addition time was faster then the recommended charging time. The estimated charging time of 147 minutes is a conservative HMDA addition rate estimate.

Conclusion: During Kymene 736 manufacture the average time that the R401 re-circulating loop, mix cooler, and sampling port operated with a Epi concentration greater than 5% was 203 minutes per batch. The calculated annual time the R401 re-circulating loop, mix cooler, and sampling port operated in this range was 288 hours in 1998. The calculated annual time R401 re-circulating loop, mix cooler, and sampling port will operate in this range in 1999 is 176 hours (162/11*12 = 176). Based on the annual hours of operation of less than 300 hours, R401 re-circulating loop, mix cooler, and sampling port should be exempt from LDAR monitoring.

cc: Walt Langhans – Plant Manager, Hattiesburg
Doug Smith – Process Specialist, Wilmington
Bill Maslanka – Research Associate

Table 1 - Kymene 736 production at Hattiesburg 3/8/98 - 12/1/99

Epi:HMDA mole ratio = 3.155 (average of 4.0 and 2.31)
MW HMDA = 116.21 MW Epi = 92.4

		Charge	TS	Epi Consumption (pounds)	HMDA Charge	Free Epi	Total	Epi Concentration
Step 1	Water	8628	0.0%	0	0	0	8628	0.00%
Step 2	Epi	2810	100.0%	2810	0	2810	11438	24.57%
	Epi	2810	100.0%	2810	0	5620	14248	39.44%
	Epi	2810	100.0%	2810	0	8430	17058	49.42%
Step 3	HMDA	1000	70.0%	-1756 *	700	6674	18058	36.96%
	HMDA	1000	70.0%	-1756	700	4918	19058	25.81%
	HMDA	1000	70.0%	-1756	700	3162	20058	15.76%
	HMDA	1000	70.0%	-1756	700	1406	21058	6.68%
	HMDA	197	70.0%	-346	138	1060	21255	4.99%
	HMDA	1000	70.0%	-1756	700	-696	22255	0.00%
	HMDA	1000	70.0%	-1756	700	-2452	23255	0.00%
	HMDA	303	70.0%	-532	212	-2984	23558	0.00%
Total - #		6500						

	HMDA pounds	HMDA ppm	minutes	HMDA pounds	HMDA ppm	minutes
	899	55	16	899	55	16
	2180	23	95	2180	23	95
	1118	31.2	36	1540	31.2	49
	0	55	0	1881	55	34
Totals	4197		147	6500		195

Production 203

Period		Kymene 736 Production Pounds	R401 Time > 5% Epi Hours
3/8/98-12/31/99	Actual	2980113	288
1/1/99-12/1/99	Actual	1672770	162
1/1/99-12/31/99	Estimated	1824840	176

* - Sample calculation: -(1000*.7)/116.21*3.155*92.4 = -1756 pounds

Table 1 - Kyrnene 736 production at Hattiesburg 3/8/98 - 12/31/99

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	Epi	2810	100.0%	2810	0	8430	17058	49.42%
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	HMDA	1000	70.0%	-1756	700	4918	19058	25.81%
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	HMDA	1000	70.0%	-1756	700	1406	21058	6.68%
	HMDA	197	70.0%	-346	138	1060	21255	4.99%
	HMDA	1000	70.0%	-1756	700	-696	22255	0.00%
	HMDA	1000	70.0%	-1756	700	-2452	23255	0.00%
	HMDA	303	70.0%	-532	212	-2984	23558	0.00%
Total - #		6500						

	HMDA pounds	HMDA ppm	minutes	HMDA pounds	HMDA ppm	minutes
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	2180	23	95	2180	23	95
	1118	31.2	36	1540	31.2	49
	0	55	0	1881	55	34
Totals	4197		147	6500		195

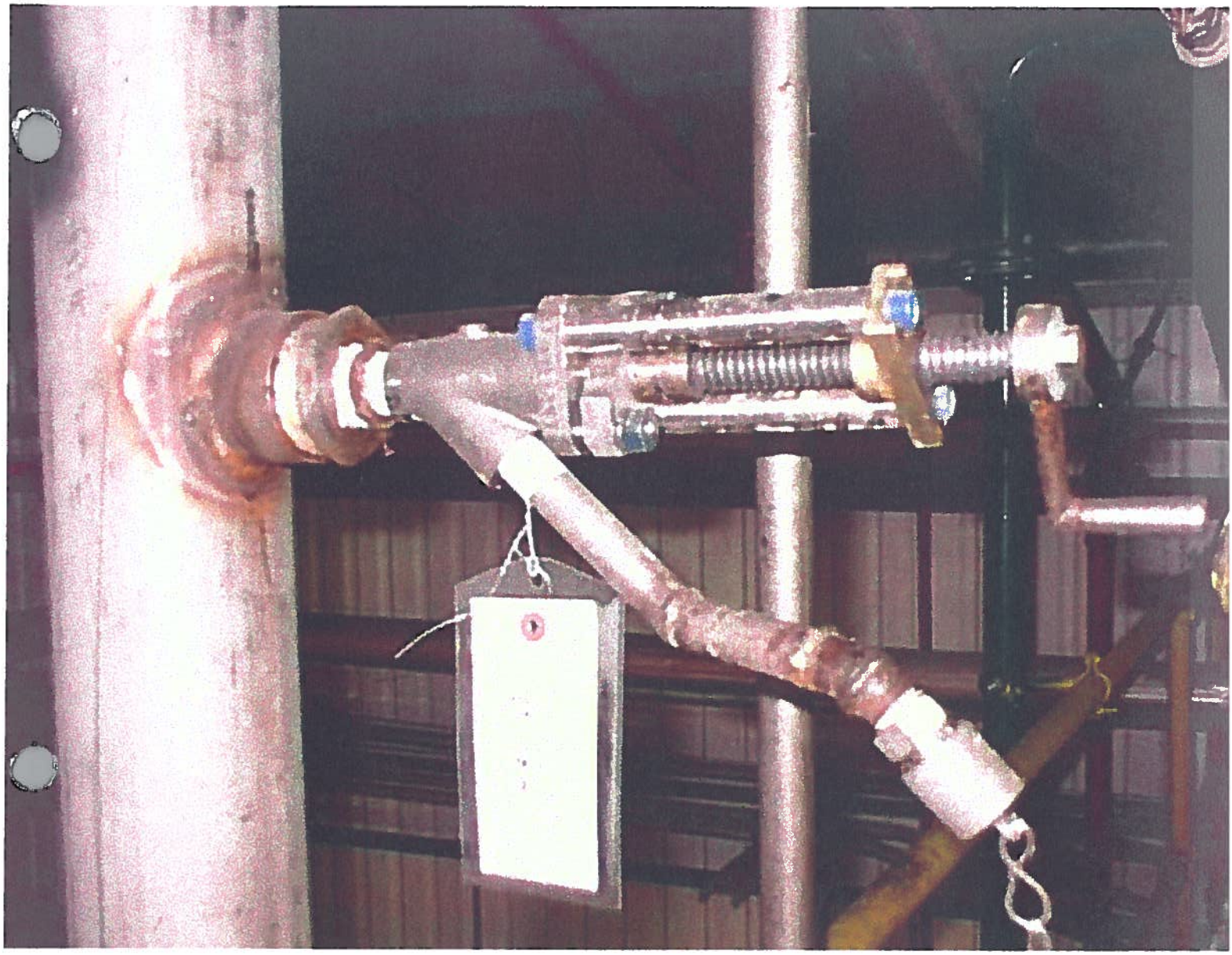
Production

203

Period		Kymene 736 Production Pounds	R401 Time > 5% Epi Hours
3/8/98-12/31/99	Actual	2980113	288
1/1/99-12/1/99	Actual	1672770	162
1/1/99-12/31/99	Estimated	1824840	176
1/1/99-12/31/99**	Actual	1740280	168

* - Sample calculation: -(1000*.7)/116.21*3.155*92.4 = -1756 pounds
** - Kymene 736 production updated 1/17/2000

J Bruce Shuman



HERCULES

Hercules Incorporated
Purchase Order

DELIVERY DATE	PURCHASE ORDER NUMBER	OUTLINE AGREEMENT NUMBER	ORDER DATE	ALT NO:	ALTERATION DATE
08OCT1999	4500192062		21SEP1999		

VENDOR

Attention: MIKE CLINE
FABRICATED FILTERS INC
ELMWOOD INDUSTRIAL PARK
5630 POWELL STREET
HARAHAN LA 70183

MAIL TWO COPIES OF YOUR INVOICE TO:
HERCULES INCORPORATED
HATTIESBURG PLANT
613 WEST 7TH STREET
HATTIESBURG, MS 39401

X
ATTN: ACCTS. PAYABLE

SHIP TO

HATTIESBURG PLANT
HERCULES INCORPORATED
613 WEST 7TH STREET
HATTIESBURG MS 39401

NOTE: New Purchase Order Terms and Conditions

The items being purchased on this order are subject to the Hercules Year 2000 Warranty (Para. 5) on the Terms and Conditions page which is the last page of this order.

VIA

TERMS
Net 30 Days From Invoice Date

INCOTERMS PPD UPS / PREPAID & ADD

ITEM	QUANTITY	PRICE	UNIT	AMOUNT
	PLEASE ORDER AS PER THE ABOVE PURCHASE ORDER NUMBER. ANY CHANGES OR QUESTIONS, PLEASE CALL 601-584-3368 (VOICE MAIL) OR FAX 601-584-3206 ATTENTION: SHELIA JOHNSON / PLEASE RETURN FAX THE CONFIRMATION PAGE.			
	PLEASE BE ADVISED, EFFECTIVE 7/27/99, YOUR INVOICES FOR PAYMENT SHOULD BE MAILED TO THE HATTIESBURG PLANT AS PER INSTRUCTIONS ABOVE.			
10	DUST COLLECTOR BAGS.(CONDUCTIVE TYPE)			
	29.000	EA	17.60 / 1 EA	510.40
	SPROUT WALDRON 600C.F.M. MULTI-TUBE COL. 3-1\8"DIA.X 37"L.FM.CENTER 1\2"BRASS EYE			
	Total Net Value Excl. Tax	USD		510.40

THIS ORDER EXPRESSLY LIMITS ACCEPTANCE TO THE TERMS AND CONDITIONS STATED HEREIN INCLUDING THOSE PRINTED ON THE LAST PAGE OF THIS ORDER. ANY PROVISIONS TO THE CONTRARY YOU HAVE PROPOSED OR MAY PROPOSE ARE EXPRESSLY REJECTED. TO THE EXTENT NECESSARY TO GIVE EFFECT TO THESE TERMS AND CONDITIONS, THIS PURCHASE ORDER CONSTITUTES A COUNTEROFFER TO ANY OFFER YOU HAVE PROPOSED OR MAY PROPOSE.

REQUISITIONED BY: FRED GREEN
ORDERED BY: SC JOHNSON S. C. Johnson
APPROVED BY:

Forward copies to: FRED GREEN
CHARLIE JORDAN

SECTION 3. EMISSION LIMITATIONS & STANDARDS

A. Facility-Wide Emission Limitations & Standards

3.A.1 Except as otherwise specified or limited herein, the permittee shall not cause, permit, or allow the emission of smoke from a point source into the open air from any manufacturing, industrial, commercial or waste disposal process which exceeds forty (40) percent opacity subject to the exceptions provided in (a) & (b).

(a) Startup operations may produce emissions which exceed 40% opacity for up to fifteen (15) minutes per startup in any one hour and not to exceed three (3) startups per stack in any twenty-four (24) hour period.

(b) Emissions resulting from soot blowing operations shall be permitted provided such emissions do not exceed 60 percent opacity, and provided further that the aggregate duration of such emissions during any twenty-four (24) hour period does not exceed ten (10) minutes per billion BTU gross heating value of fuel in any one hour.

(Ref.: APC-S-1, Section 3.1)

3.A.2 Except as otherwise specified or limited herein, the permittee shall not cause, allow, or permit the discharge into the ambient air from any point source or emissions, any air contaminant of such opacity as to obscure an observer's view to a degree in excess of 40% opacity, equivalent to that provided in Paragraph 3.A.1. This shall not apply to vision obscuration caused by uncombined water droplets.
(Ref.: APC-S-1, Section 3.2)

B. Emission Point Specific Emission Limitations & Standards

Emission Point(s)	Applicable Requirement	Condition Number(s)	Pollutant/ Parameter	Limit/Standard
AA-000, AA-001, and AN-000	APC-S-1, Section 8.1 and MACT, Subpart W, 40 CFR 63.524	3.B.1	HAP	1) 10 lbs/MMlbs of product, or 2) requirements of Subpart H to control emissions from equipment leaks
AA-002	APC-S-1, Section 3.6(a)	3.B.2	PM	$E=4.1(p)^{0.67}$
AA-003 and AA-004	NSPS, Subpart Kb, 40 CFR 60.110b and 60.116b (a) & (b)	3.B.7	Tank Size	
AB-001	APC-S-1, Section 3.6(a)	3.B.2	PM	$E=4.1(p)^{0.67}$
AC-001	APC-S-1, Section 3.4(a)(1)	3.B.3	PM	0.6 lbs/MMBTU
	APC-S-1, Section 4.1(a)	3.B.4 3.B.6	SO_2	4.8 lbs/MMBTU
AC-002	APC-S-1, Section 4.2(a)	3.B.8	SO_2	2,000 ppm

II. RESOURCE CONSERVATION AND RECOVERY ACT ("RCRA")

EPA's RCRA Inspection did not note any Areas of Concern or Non-Compliance. Therefore, this portion of Hercules' Response addresses MDEQ's RCRA Inspection Report.

A. Closed Containers - State Area of Non-Compliance

MDEQ's RCRA Inspection Report alleges that, out of the seventeen properly labeled containers, one was holding hazardous waste in the open position during the Inspection of Laboratory Number 1. Prior to the Inspection, Hercules trained its employees on the importance of closing containers holding hazardous waste. *See* Exhibit 1, attaching an excerpt of Hercules' hazardous waste training materials. After the Inspection, Hercules reduced the number of containers holding hazardous waste in Laboratory Number 1 from seventeen to seven. Additionally, Hercules reminded its employees in Laboratory Number 1 that they are required to close all containers holding hazardous waste, except when adding or removing waste.

B. "Used Oil" Containers - State Area of Non-Compliance

The RCRA Inspection Report indicates that a drum containing used oil was not clearly marked with the words "Used Oil." As depicted in Exhibit 2, Hercules' primary used oil storage is clearly marked "Used Oil." The drum observed during the RCRA Inspection was a temporary drum used for less than a week and has not been in service since. After the Inspection, Hercules discussed the matter with its employees and again stressed the importance of properly labeling above ground tanks and containers that store used oil. *See* Exhibit 3, attaching Hercules' annual training material.

C. Manifest Must Contain the Date and Handwritten Signature of the Initial Transporter - State Area of Non-Compliance

The RCRA Inspection Report claims that Manifest #81201 failed to contain the date and handwritten signature of the initial transporter, as required by Mississippi Hazardous Waste Management Regulation ("MHWMR") § 262.23(a)(2). The missing signature was due to an error by the transporter and the Hercules operator handling the shipment records. Hercules' employees are instructed to obtain the original handwritten signature of the initial transporter on each Manifest, and in fact, Hercules' Manifests for the past three years reveal that each Manifest contained all the required information. *See* Exhibit 4. After the Inspection, Hercules' employees were reminded of the necessity of securing the date and hand-written signature of the original transporter.

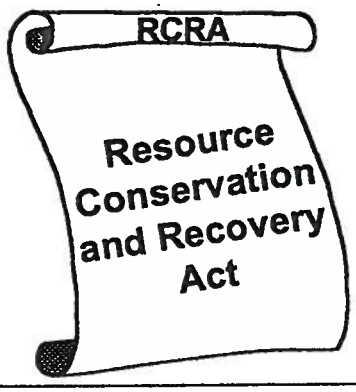
D. Inspections and Records - State Area of Non-Compliance

The RCRA Inspection Report states that a generator must inspect hazardous waste container storage areas at least weekly for leaks, corrosion and deterioration, and maintain a written log of the inspection. Hercules has consistently performed weekly inspections consistent with Mississippi Hazardous Waste Management Regulations. However, due to an employee's illness, formal weekly inspections were not logged between May 3 and June 21, 1999. Although the employee who was typically responsible for performing the formal weekly visual inspections was absent, other employees in the area performed visual inspections of the hazardous waste container storage area between May 3 and June 21, 1999. After the Inspection, Hercules reacquainted its employees with its written waste management procedure to ensure that weekly inspections and logs are completed. In addition, Hercules appointed a particular employee to have the primary responsibility for the inspections and the logs. Hercules also appointed

individuals to provide back-up coverage if the primary-responsible employee is absent or unable to perform the inspections and complete the log. *See* Exhibit 5. Moreover, Hercules took steps to place Hazardous Waste Log Sheets in a weather resistant box located near the drums. *See* Exhibit 6. Employees were re-instructed on their collective responsibility to inspect hazardous waste containers at least weekly for leaks, corrosion and deterioration, and the necessity of maintaining a written log of the inspections.

HERCULES

Hazardous Waste



Welcome to Hercules Hazardous Waste Training Program. This is a required course and you will be given a feedback quiz for the records. Therefore, should you have any questions, please feel free to ask. If we do not know the answers, we will make every attempt to find the correct answer for you. So, again, if you do not understand let us know. We're here to help you understand how to handle, treat, and dispose of hazardous waste here at Hercules without risking your health or the safety of your environment.

HERCULES

WEEKLY INSPECTIONS

- ✓ All Hazardous Waste Containers Must Contain a Label
- ✓ Containers are to be in Good Condition
- ✓ Containers Must Not Leak
- ✓ Immediate Area to Contain Only Hazardous Waste Containers
- ✓ Containers Must be Properly Sealed
- ✓ Incompatible Waste Must be Properly Separated
- ✓ Empty Hazardous Waste Containers Must Have Labels Removed and Must be Removed from Immediate Hazardous Waste Area
- ✓ Completed Log Sheet Must be Returned to Environmental Coordinator

Review slide with trainees and show a copy of the Weekly Inspection Log Sheet.

HAZARDOUS WASTE LOG SHEET - WEEKLY INSPECTIONS
(Use and Management of Containers)

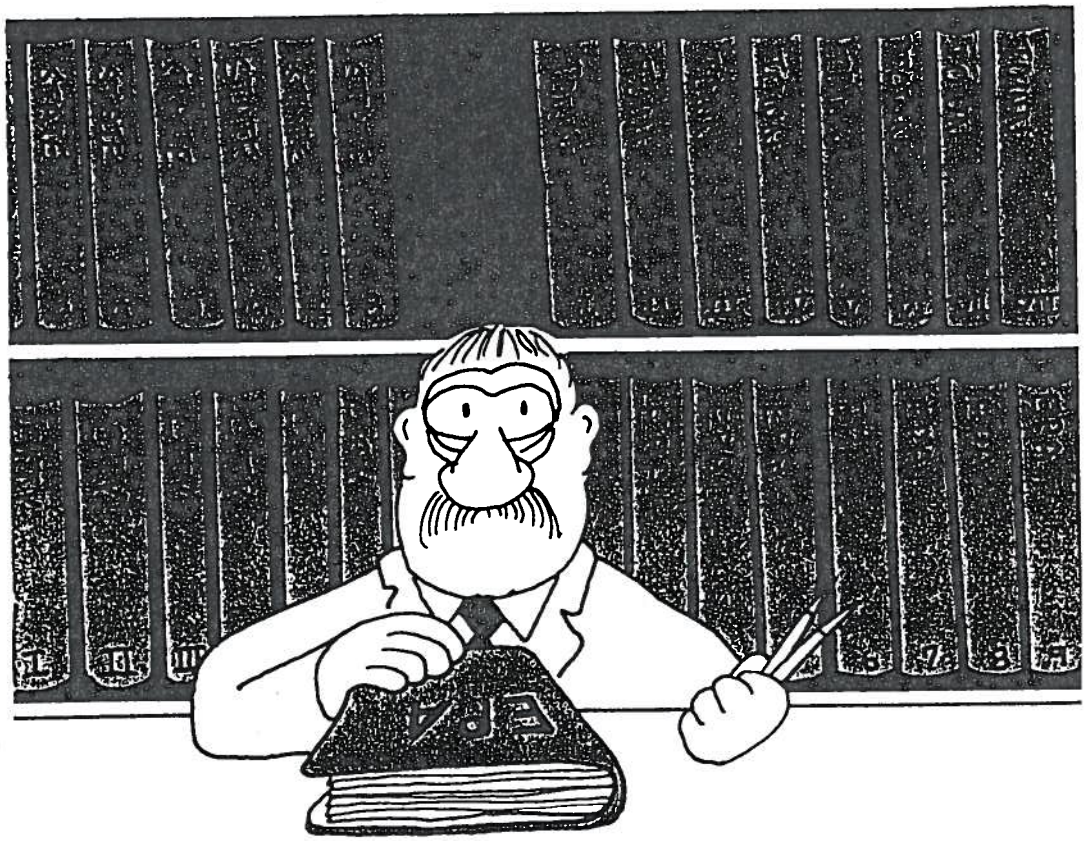
The following guidelines are to be used for **WEEKLY** inspections:

1. All Hazardous Waste containers must have Hazardous Waste label.
2. Containers are to be in good condition.
3. Containers must be free of leaks. Any leaking container must be transferred immediately.
4. Immediate area is to contain only Hazardous waste containers.
5. Containers must be properly sealed.
6. Incompatible waste must be properly separated.
7. Empty Hazardous Waste Drums must have labels removed and must be removed from immediate hazardous waste area.
8. Completed log sheet must be returned to Environmental Coordinator for record keeping documentation.

DATE	INSPECTION NOTES	NO. DRUMS	INITIALS


USED OIL
2
1
1
1993

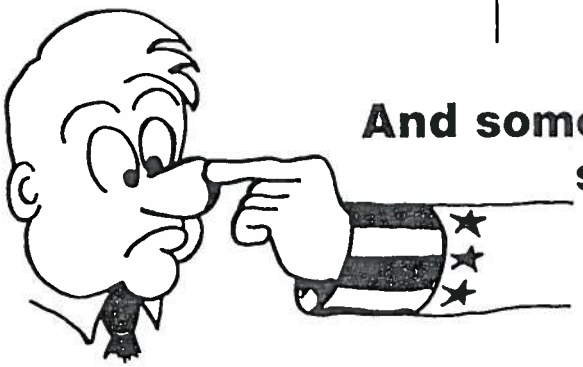
Hazardous Waste REGULATIONS and You



HERCULES

HATTIESBURG, MISSISSIPPI

RCRA was created to make sure *someone's responsible* for hazardous waste.



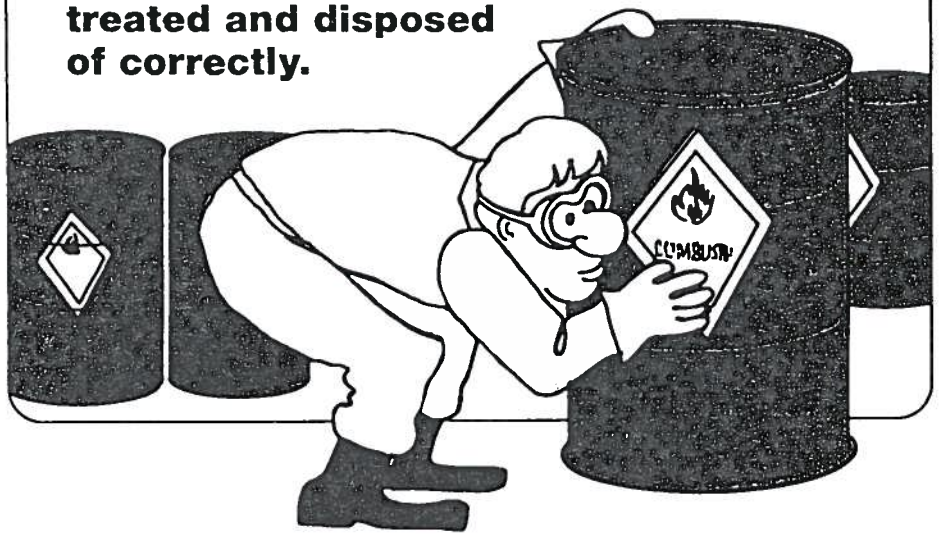
And sometimes that someone is YOU.

RCRA recognizes your important role in hazardous waste safety, and specifically requires that everyone who works around hazardous wastes be trained to understand and use

- General hazardous waste regulations;
- Safety training;
- Chemical hazard recognition;
- Protective clothing and equipment;
- Respiratory protection;
- Emergency response;
- Facility operation and maintenance.

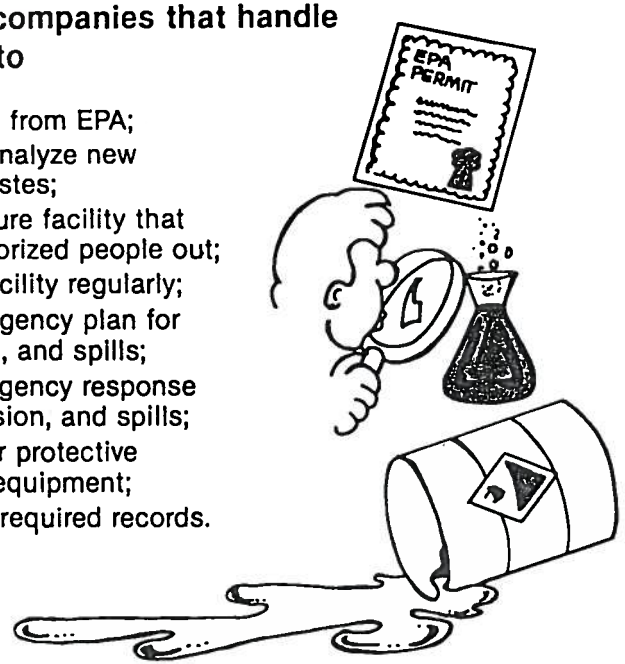
Your employer may have to report to the Environmental Protection Agency on how the company is meeting its RCRA responsibilities.

RCRA also requires your company to make sure that hazardous wastes are identified, handled, stored, treated and disposed of correctly.

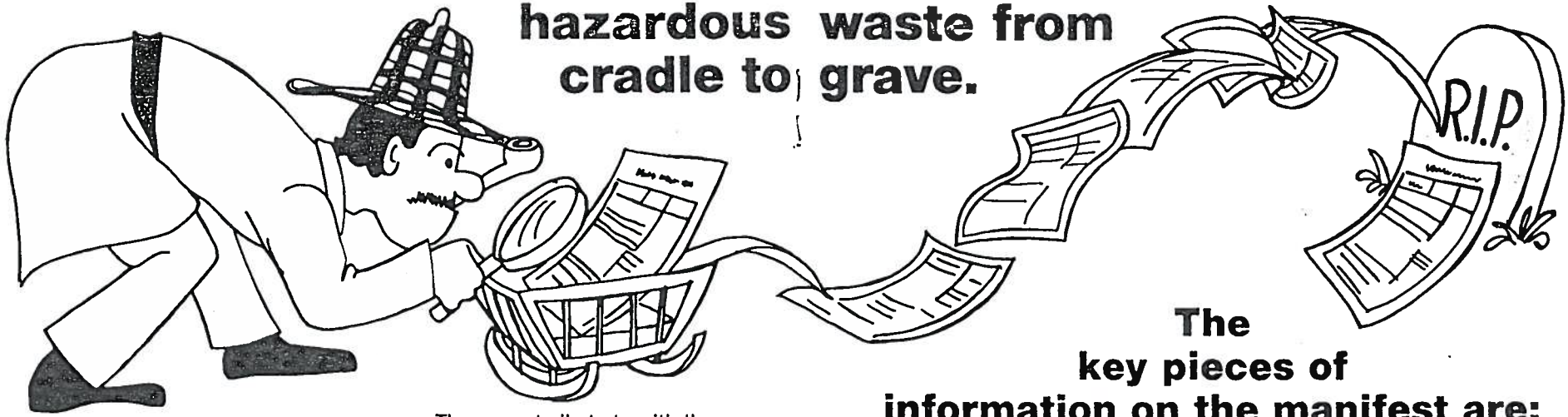


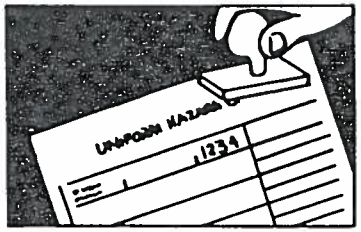
The law requires companies that handle hazardous waste to

- Have a permit from EPA;
- Identify and analyze new hazardous wastes;
- Provide a secure facility that keeps unauthorized people out;
- Inspect the facility regularly;
- Have a contingency plan for fire, explosion, and spills;
- Practice emergency response for fire, explosion, and spills;
- Provide proper protective clothing and equipment;
- Maintain EPA-required records.



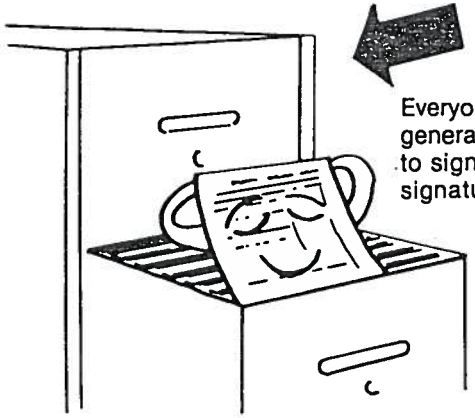
The EPA requires paperwork that tracks hazardous waste from cradle to grave.





The paper trail starts with the **ID number** your plant gets from the EPA. That number goes on the **manifest,** the key document in the hazardous waste tracking system.

The company that generates a hazardous waste fills in the manifest, which stays with the shipment until it's disposed of. Then it stays in company and EPA files at least three years.



Everyone who handles the waste—the generator, shipper, treater, disposer—has to sign the manifest and keep a copy. The signatures help guarantee that the wastes are classified, described, packaged, marked and labeled properly.

Once the waste reaches its final destination, a copy of the manifest is sent back to the generator. That's how you know it has arrived safely.

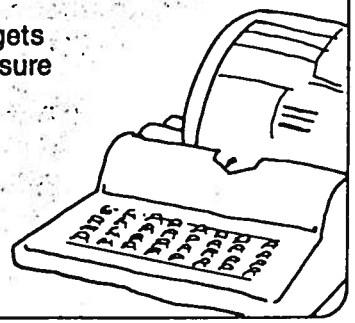
The key pieces of information on the manifest are:

- Manifest document number
- Name, address, phone number, and EPA ID number of the generator
- Name and EPA ID number of every company that transports and receives the hazardous waste
- Description of the hazardous waste:
  - Shipping name
  - Weight and volume
  - Type of containers shipped
  - Number of containers shipped

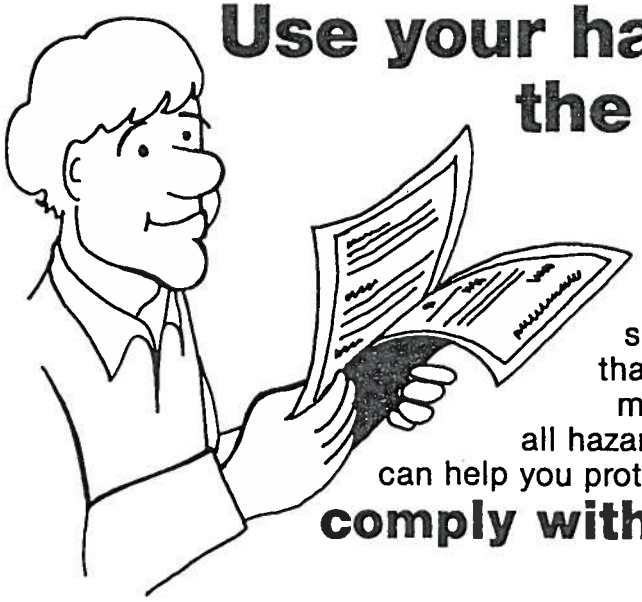
The law specifically requires an accurate manifest.

It should be typewritten. Everyone who gets that manifest is responsible for making sure all the needed information is on it—and correct. If it's not, it could come back to haunt you.

Study the manifests that come to you to be sure they're right. If something appears wrong, report it to your supervisor.



Use your hazardous the Material

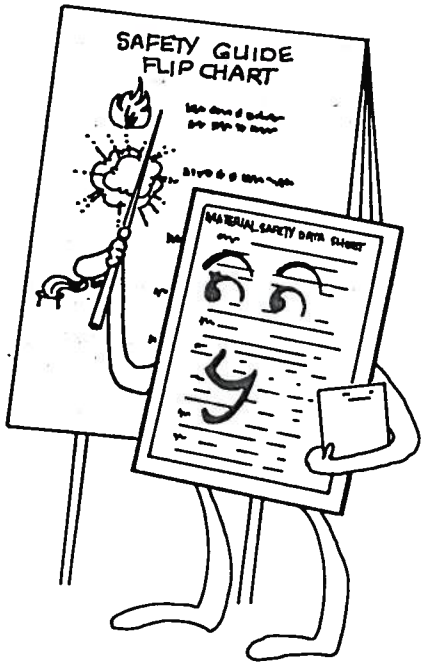


The material safety data sheet that manufacturers must provide with all hazardous chemicals can help you protect yourself and **comply with the law.**

They explain what a substance's hazards are, how to handle that substance safely, and what to do if you have a problem.

A material safety data sheet tells you that chemical's

- Hazardous ingredients;
- Physical and chemical characteristics;
- Potential for hazards like fire, explosion, or reaction;
- Possible health hazards and symptoms;
- Path into your body (inhaling, skin, etc.);
- Exposure limits and carcinogenic listing.



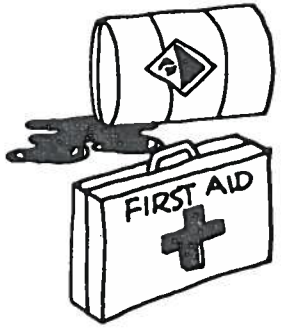
waste safety guides: Safety Data Sheets.

The Material Safety Data Sheet also tells you how to use the chemical safely, in terms of

- **work procedures**
- **hygiene**
- **protective equipment**

And, if there *is* a problem, the sheet explains what to do about

- spills or leaks
- emergencies
- first aid for exposure or accidents

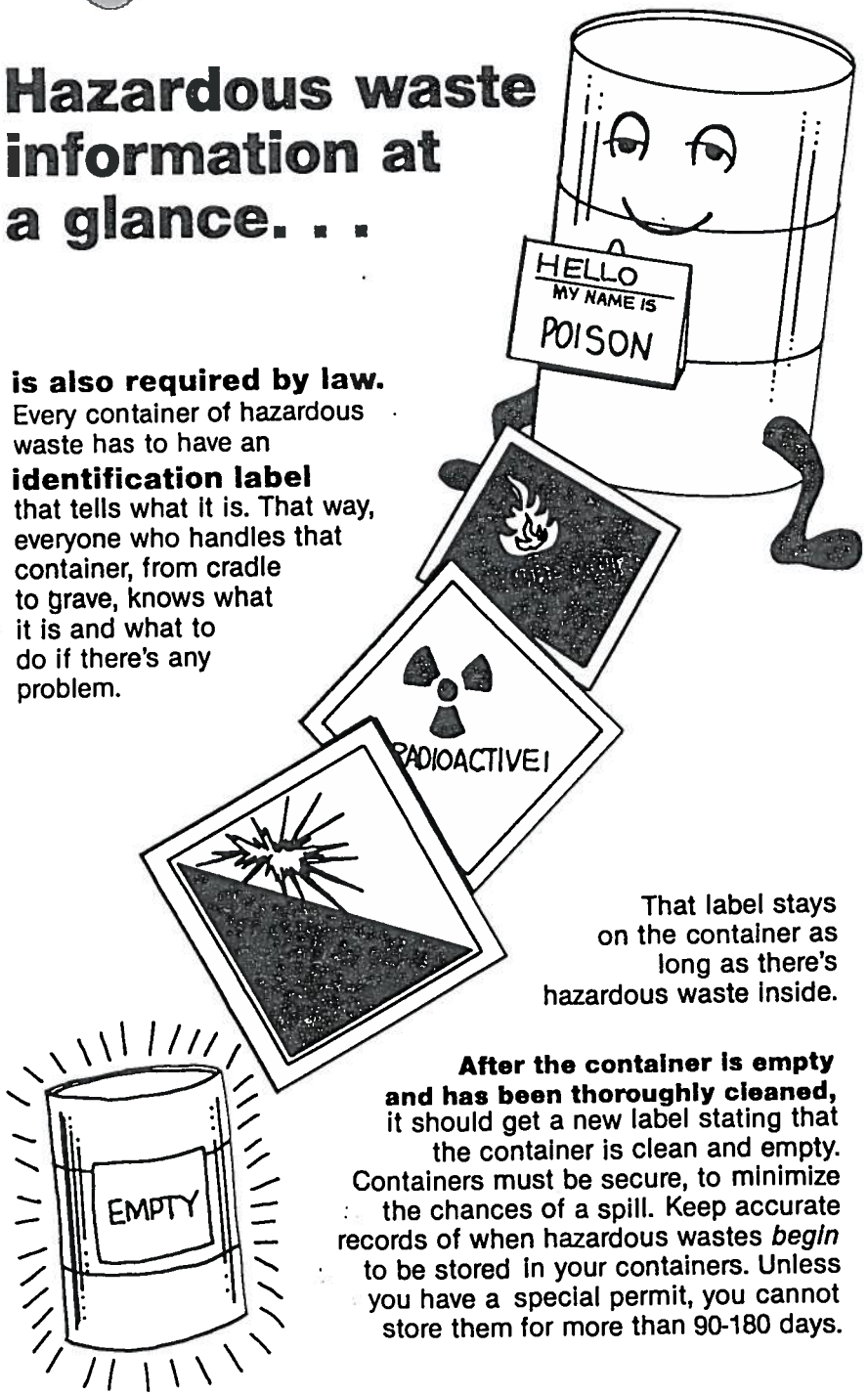


Read your material safety data sheets.

They'll help you live up to your legal responsibilities. You'll know what you're working with, and what *you* can do to stay safe, healthy, and legal.

Hazardous waste information at a glance. . .

is also required by law.
Every container of hazardous waste has to have an
identification label
that tells what it is. That way, everyone who handles that container, from cradle to grave, knows what it is and what to do if there's any problem.

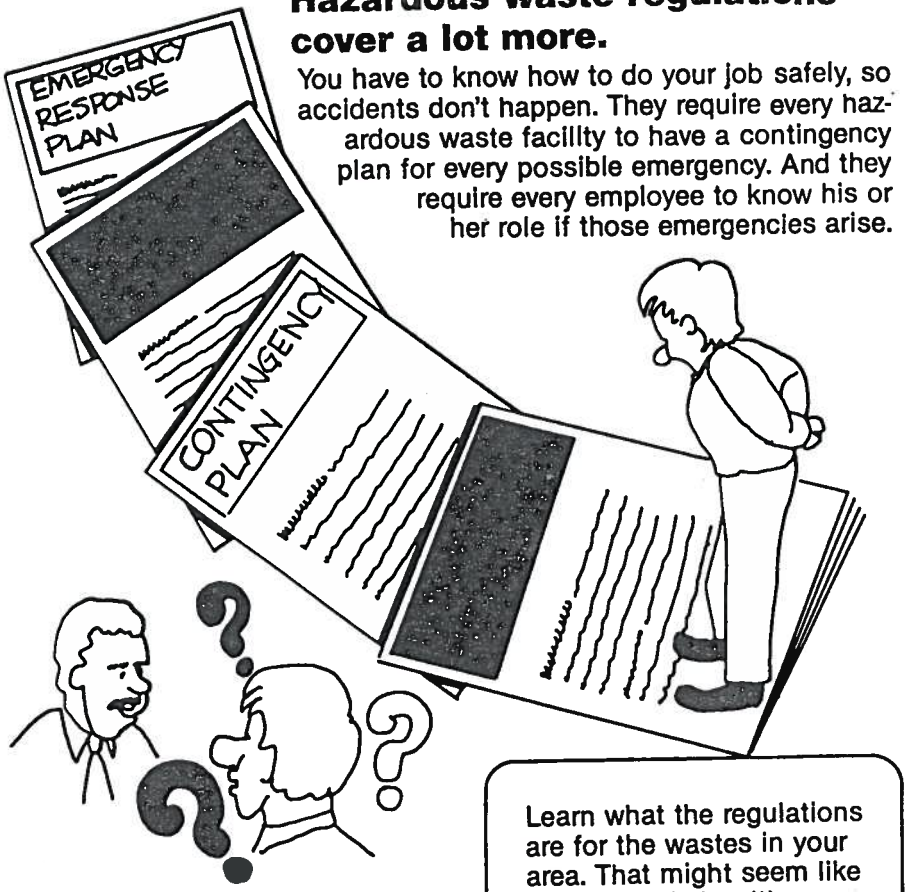


That label stays on the container as long as there's hazardous waste inside.

After the container is empty and has been thoroughly cleaned, it should get a new label stating that the container is clean and empty. Containers must be secure, to minimize the chances of a spill. Keep accurate records of when hazardous wastes *begin* to be stored in your containers. Unless you have a special permit, you cannot store them for more than 90-180 days.

Hazardous waste regulations cover a lot more.

You have to know how to do your job safely, so accidents don't happen. They require every hazardous waste facility to have a contingency plan for every possible emergency. And they require every employee to know his or her role if those emergencies arise.



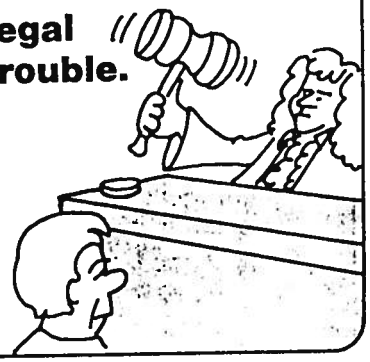
Find out where your contingency plan is kept.

Read it, and learn what you are supposed to do in an emergency. If you have any questions,

ask your supervisor immediately.

Learn what the regulations are for the wastes in your area. That might seem like a lot of work, but it's as important as any part of your job. It's the best way to keep yourself out of danger and

legal trouble.



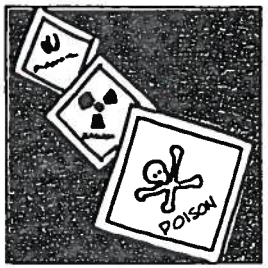
Improper hazardous waste handling and disposal is dangerous—and illegal.

Experience has taught us that hazardous wastes can be more dangerous than anyone ever realized. Fortunately, we *know* how to ***minimize those risks.***

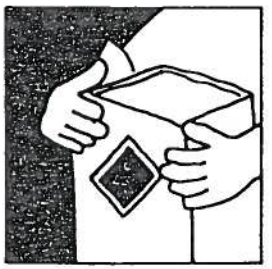
Hazardous waste regulations are designed to make sure we use our knowledge and that we really do everything in our power to handle hazardous waste safely. The penalties for not following the regulations are very strong—jail terms, fines, not to mention damaging publicity.

Compliance isn't just busy work. It's the best way to protect *your* life; *your* health; *your* safety.

We *can* make hazardous waste handling safe if we . . .

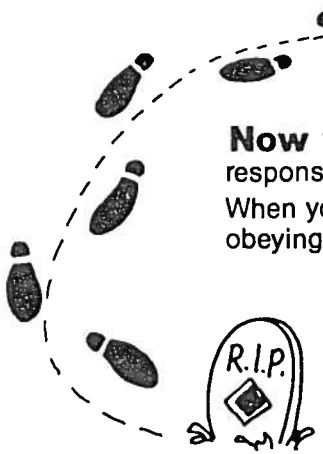


- Know what the hazards are;
- Use safe handling procedures;
- Use protective clothing and equipment;
- Use the documentation that tells what we're working with and what to do with it;
- Know what to do if something goes wrong.



Hazardous waste safety is too important to leave to chance.

That's why the government has written the laws and set up the procedures for tracking all those wastes from cradle to grave.



Now we know what's out there, know who's responsible, know what to do if there's an accident. When you follow hazardous waste regulations, you're obeying the law and avoiding jail or a fine.

But even more important, you're doing everything possible to insure that you, your neighbors, and your environment stay **safe and healthy.**

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P.O.Box 13087
Austin, Texas 78711-3087

THE STATE OF TEXAS

AAL-Ryan 584 8451 - Diesel mech - Jimmy Carlyle

Form approved. OMB No. 2050-0039, expires 09/30/96

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MSD008182081 — Manifest Document No. 40052
2. Page 1 of 2
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
HERCULES INC
W 7TH ST
PO BOX 1937
HATTISBURG MS 39401
601 545-3450

4. Generator's Phone ( )

A. State Manifest Document Number SK 148063
B. State Generator's ID 99928

5. Transporter 1 Company Name Safety Kleen Systems Inc
6. US EPA ID Number ILD984908202
C. State Transporter's ID 88888
D. Transporter's Phone 601 922 1421

7. Transporter 2 Company Name Safety Kleen (TG) Inc
8. US EPA ID Number SCD987574647
E. State Transporter's ID 41747
F. Transporter's Phone 405 372 0521

9. Designated Facility Name and Site Address 000516
SAFETY-KLEEN ~~CORP.~~ SYSTEMS.
1722 COOPER CREEK ROAD
DENTON, TX 76208

10. US EPA ID Number TXD 077603371
G. State Facility ID 65124
H. Facility's Phone 817 383-2611

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
	a. ~~THIS IS A RYDER TO MANIFEST#~~					XXXXX
X	b. RQ WASTE FLAMMABLE LIQUID, N.O.S. (TOLUENE + ACETONE) 3 UN1993 PG II (F005) (ERG #27	2 ~~8~~	DM	800 ~~1,000~~	P	OUTS203H
	c.					
	d.					

J. Additional Descriptions for Materials Listed Above
(A) NONE
(B) F005 F003 D001

K. Handling Codes for Wastes Listed Above
(B) ~~M144~~ 061
97964950

15. Special Handling Instructions and Additional Information
MFST REQ# ~~90272915~~ 6-078-01-9132
EMERGENCY RESP#800-468-1760(24 HR). IF UNDELIVERABLE RETURN TO GENERATOR.
SK CORP AUTHORIZED TO RETAIN LICENSED SUBSEQUENT CARRIERS AS NECESSARY.
SKDOT# A: ~~9000~~ B: 2575 C: D:

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, including applicable state regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Raymond Poole — Signature: Raymond Poole — Date (Month Day Year): 10 13 99

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: John Bryant — Signature: John Bryant — Date (Month Day Year): 10 13 99

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: Rick Mathis — Signature: [signature] — Date (Month Day Year): 10 20 99

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: J Johnson — Signature: J Johnson — Date (Month Day Year): 10 20 99

White - original   Pink-TSD Facility   Yellow-Transporter   Green-Generator's first copy

TEXAS NATURAL RESOURCE
CONSERVATION COMMISSION
P.O. Box 13087
Austin, Texas 78711-3087

BAHER
SWD # 44182

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MSD008182081 | Manifest Document No. 99623
2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: Attn: Charles Jordan; Hercules & Co. 613 W. 7th St. Hattisburg, MS 39401
4. Generator's Phone (601) 545-3450

A. State Manifest Document Number: L0057548
B. State Generator's ID: 99928
C. State Transporter's ID: 41747
D. Transporter's Phone: (281) 478-7735
E. State Transporter's ID:
F. Transporter's Phone:
G. State Facility's ID: 50225
H. Facility's Phone: (281) 476-0645

5. Transporter 1 Company Name: SAFETY-KLEEN (TG) | 6. US EPA ID Number: SCD987574647
7. Transporter 2 Company Name | 8. US EPA ID Number:
9. Designated Facility Name and Site Address: SAFETY-KLEEN (LAPORTE), INC. FORMERLY TES 500 BATTLEGROUND ROAD ATTN: MANIFESTING LA PORTE, TX 77571 | 10. US EPA ID Number: TXD982290140

11A. HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
X	a. Waste Flammable liquids, n.o.s., 3, UN1993, PG III (toluene, Acetone)	003	DM	est 001200	P	OUT5203H D001 F005 F003
X	b. Hazardous waste, Solid, n.o.s., 9, NA3077, PG III (lead)	001	DF	est. 00060	P	OUT5319H D008
	c.					
	d.					

J. Additional Descriptions for Materials Listed Above
Additional EPA Waste Codes: a. b. c. 990623-BAHER d.

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Approval Numbers: a. BAHER-69086-01-03 b. BAHER-69269-04 c. d.
Emergency Contact: 1-800-535-5053 (593) Infotrac Fax 281-478-7683

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, including applicable state regulations.
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GENERATOR
Printed/Typed Name: Raymond Poole | Signature: Raymond Poole | Month 06 Day 23 Year 99 Date

TRANSPORTER
17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Donald B. (Biff) Bivens Jr. | Signature | Month 06 Day 23 Year 99 Date
18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Month Day Year Date

FACILITY
19. Discrepancy Indication Space
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Kathryn Horton | Signature | Month 06 Day 29 Year 99 Date

TWC-0311 (Rev. 01/01/89) Form # 593-4520 White-original Pink-TSD Facility Yellow-Transporter Green-Generator's first copy

Form Approved. OMB No. 2050-0039. Expires 9-30-9

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. HSD008182081 Manifest Document No. 22499
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
HERCULES, INC.
613 WEST 7TH STREET, HATTIESBURG, MS 39401
4. Generator's Phone (601)545-3450 X360

A. State Manifest Document Number
B. State Generator's ID

5. Transporter 1 Company Name: SAFETY-KLEEN (TG), INC.
6. US EPA ID Number: SCD987574647
C. State Transporter's ID
D. Transporter's Phone (615) 350-5400

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
SAFETY-KLEEN (TS), INC.
2815 OLD GREENBRIER PIKE
GREENBRIER, TN 37073-4514
10. US EPA ID Number: TND000645770
G. State Facility's ID
H. Facility's Phone (615) 643-4511

	11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	Waste Flammable Liquids, n.o.s. (toluene, acetone), 3, UN1993, II	X	002	DM	02400	P	D001 F003, F005
b.	Corrosive Solids, N.O.S. 8, UN 1759 ## (used Dessicant)	X	001	DF	00070	P	None
c.							
d.							

J. Additional Descriptions for Materials Listed Above
Additional EPA Waste Codes a. b. c. d.

K. Handling Codes for Wastes Listed Above
a. S-01
b.
c.
d.

15. Special Handling Instructions and Additional Information
Profile Numbers a. GBR4C-010 b. GBR4C-017 c. d.
Emergency Contact: 800-468-1760 (597) 3-B Fax (619) 625-3233

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.
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GENERATOR

Printed/Typed Name	Signature	Month Day Year
Raymond Poole	Raymond Poole	02 24 99

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
Lewis Sisco	Lewis Sisco	02 24 99

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year
Tim Conner		03 03 99

ORIGINAL - RETURN TO GENERATOR

Form Approved. OMB No. 2050-0039. Expires 9-30-99

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
	01201		

GENERATOR

3. Generator's Name and Mailing Address

4. Generator's Phone ( )

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name | 6. US EPA ID Number

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name | 8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address | 10. US EPA ID Number

G. State Facility's ID

H. Facility's Phone (615) 683-4511

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	X	3	DM	900	P	Not Regs
b.	X					RD. Not Regs
c.	X	8	CF	9000	P	U147
d.	X	1	DF	500	P	U147

J. Additional Descriptions for Materials Listed Above

a.
b.
c.
d.

K. Handling Codes for Wastes Listed Above

a. S-01
b. S-01
c.
d.

15. Special Handling Instructions and Additional Information

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Printed/Typed Name	Signature	Month	Day	Year
Raymond E. Poole	Raymond E. Poole	1	2	98

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

LAIDLAW ENVIRONMENTAL SERVICES

LMF PK CO/SWO#: 597-40021

GBR4C	BILLING ID 951365	SALESPERSON (005) TOM TOOMEY	DATE 11/24/98
TE 12/1/98	CLIENT P.O. CHARLIE JORDAN	DISP. SITE SWO	COUNTY FORREST

CUSTOMER

RCULES INCORPORATED
PORTLAND PLANT
3366 NORTHWEST YEON AVENUE
PORTLAND OR 97210-
CAROL O'BRIEN (503) 417-4269

PICK-UP CUSTOMER AND ADDRESS

HERCULES, INC.
613 WEST 7TH STREET
HATTIESBURG MS 39401
CHARLES JORDAN (601) 545-3450 x360

CHEMIST/DRIVER

TRANSPORTATION (04000)	UNIT/PRICE 30/55/3-5	UNIT/PRICE 85	EXTENSION
0-50 MILES			
51-100 MILES			
101-200 MILES			
200-500 MILES			
► 500 MILES			
TOTAL			

LABOR (04045)	HOURS	PRICE
ıist		
ER Rod 1X	5.5	
ct Manager		

PROFESSIONAL SERVICES (04035)	QUANTITY	PRICE
SAMPLE ANALYSIS		
WASTE STREAM EVALUATION		

EQUIPMENT (04065)	QUANTITY	PRICE

OSAL (04060)

MATERIALS (04040)	QUANTITY	PRICE
85-G Salvage Drum-New		
55-G 17C, 17H, 17E Recon.		
55-G 37M - New		
30-G 17H - New		
30-G, 20-G Fiber New		
5-G Pail - 37E, 37A-New, 34-5, 35-50		
Dot Spec. Wooden Box		
Drum Thief		
Disposal Coliwassa		
Absorbant, Clay, Vermiculite, CornCob - Bag		
Drum Pump-Use & Decon.		
4 Mil Liners		
Reactive Bags		
Dot Labels		
EPA Labels		
Sample Bottles		
Protective Gear - Level I		
Protective Gear - Level II		
Packing Materials 5G		
Packing Materials 20G		
Packing Materials 30G, 55G		
OTHER (04055)	**QUANTITY**	**PRICE**
Minimum Charge		

OFILE/LABPACK	DESCRIPTION	QTY.	UM	UNIT PRICE
BR4C-007	ORGANIC LIQUID, FUEL, BTU >10K	6.00	55	
BR4C-008	SOLID AND DEBRIS, LIGHT, <250#	2.00	55	
BR4C-016	SOLIDS FOR DIRECT LANDFILL	3.00	Y	

Shipped 4 pallets
4 cubic yard boxes
4 Drums
X-Raying Each Pail

rks

CTG-1	2. Customer Service Rep.	3. Customer Service Supv.	4. Operations

48 (3-94)

GENR COPY

LAIDLAW ENVIRONMENTAL SERVICES

FORM A

Customer Notification And Certification

Generator Name/Location: Hercules, Inc., 613 W. 7th St., Hattiesburg, MS

EPA I.D. Number: MSD008132081

Waste Profile or ARF Designation: See form B1

Manifest Number: 81201

EPA Waste Number(s): See form B1

Waste Analysis Available? Yes (attached) ____ No X On file at receiving facility ____

Unrestricted Waste Notification (*Category 1*)

Mark the statement below if you generate a waste that is not a land disposal restricted waste (the waste has no applicable treatment standards).

☐ *I notify that I am familiar with the waste through analysis and testing or through knowledge of the waste to support this notification that the waste is not restricted as specified in 40 CFR §268, Subpart D or any applicable prohibitions set forth in 40 CFR §268.32 or RCRA Section 3004(d).*

Restricted Waste/Debris Notification (*Category 2*)

Mark statement (2a) below if you generate a waste that is restricted from land disposal (the waste has applicable treatment standards). **NOTE-1:** A waste may pass one or more standards and require treatment or be varianced for others. In this case, all applicable categories must be checked. **NOTE-2:** D001, D002 and D012 - D043 wastes must be evaluated for underlying constituents found in 40 CFR §268. 48 (Table UTS), that are reasonably expected to be present. A list of these constituents must be included on **FORM B**, or attached to and accompany this notification with each waste shipment. Mark statement (2b) if you generate a debris waste that will be treated to the alternate debris standards located in 40 CFR §268.45.

☒ **(2a) Restricted Waste Notification**

I notify that I am familiar with the waste through analysis and testing or through knowledge of the waste to support this notification that the waste is subject to the treatment standards specified in 40 CFR §268 Subpart D. The waste: (a) must be treated to the appropriate regulatory treatment standard, by the appropriate regulatory treatment method; (b) qualifies for a variance as described in category 3 below; or (c) meets some or all of the standards as described in Category 4 below.

☐ **(2b) Alternate Debris Treatment Notification: This hazardous debris is subject to the alternate treatment standards of 40 CFR §268.45.**

The waste contains the following contaminants subject to treatment [check all that apply]:

_____ §268.45(b)(1) - Toxicity characteristic debris;

_____ §268.45(b)(2) - Debris contaminated with listed waste;

_____ §268.45(b)(3) - Cyanide reactive debris.

Restricted Waste Variance Notification (*Category 3*)

Mark the statement below and list the applicable variance date on **Form B**, if you generate a waste which does not require treatment prior to land disposal because of a variance (including a case-by-case extension under 40 CFR §268.5, a nationwide variance under 40 CFR §268 Subpart C, a no migration petition under 40 CFR §268.6, or other applicable variance).

☐ *I notify pursuant to 40 CFR §268.7(a)(3) that I am familiar with the waste through analysis and testing or through knowledge of the waste to support this notification that this waste is subject to a national capacity variance under 40 CFR §268 Subpart C, or a case-by-case extension under 40 CFR §268.5, or an exemption under 40 CFR §268.6.*

Restricted Waste Certification (Treatment Standards Met) (*Category 4*)

Mark the certification statement below if you generate a waste that is restricted from land disposal (the waste has applicable treatment standards), and the waste meets the standards as generated. Note: All applicable constituent standards must be accounted for. A waste may pass one or more standards and require treatment or be variance for other constituents. In this case, all applicable categories must be checked.

☐ *I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Part 268 Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA § 3004(d). I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.*

SIGNATURE: Raymond E. Poole DATE: 12-01-95

PRINT NAME: Raymond E. Poole TITLE: Utilities Foreman

FORM B1 ***(Must be accompanied by Form A)***

Generator Name/Location Hercules Inc., 613 W. 7th St., Hattiesburg, MS Page 2 of 2.

EPA I.D. Number: MSD008182081 Manifest: 81201

Waste Profile or ARF	Category No.	EPA or State Waste Code	Variance Date	Description/Sub Category	Treatability Group (WW or NWW)	Waste Constituents or Legend #
GBR4C-007	20	D001		ignitable liq., high TOC	NWW	231
IMB-0-	20	F005			NWW	22
" -008	20	D001		ignitable liq, high TOC	NWW	231
	20	F005			NWW	22
-016	20	U147			NWW	

CONSTITUENTS IN SOLVENT, CALIFORNIA LIST AND CHARACTERISTIC WASTES.

F001 - F005 spent solvents

Legend #	Constituent Name
1	Acetone
2	Benzene
3	n-Butyl alcohol
*4	Carbon disulfide
5	Carbon tetrachloride
6	Chlorobenzene
7	Cresol (m-and p-isomers)
8	o-Cresol
*9	Cyclohexanone
10	1,2-Dichlorobenzene
11	Ethyl Acetate
12	Ethyl Benzene
13	Ethyl Ether
14	Isobutyl alcohol
*15	Methanol
16	Methylene Chloride
17	Methyl Ethyl Ketone
18	Methyl isobutyl ketone
19	Nitrobenzene
20	Pyridine
21	Tetrachloroethylene
22	Toluene
23	1,1,1-Trichloroethane
24	1,1,2-Trichloroethane
25	Trichlorothylene
26	1,1,2-Trichloro-1,2,2-trifluoroethane
27	Trichloromonofluoro-methane
28	Xylenes (total)

Legends 29-31 RESERVED

** If these constituents are present alone or in any combination of the three, then non waste water forms of these constituents must be treated to TCLP levels as indicated in §268.40.*

Technology-Based standards For F005 when the constituent is the only listed F00-F005 solvent

Legend #	Constituent Name
32	2-Ethoxyethanool
33	2-Nitropropane

Legends 34-43 RESERVED

CALIFORNIA LIST WASTES

Legend #	Constituent Name
44	Nickel
45	Thallium
46	Cyanide (Liquid)
47	Liquid Polychlorinated Biphenyls (PCB's)
48	Halogenated Organic compounds (HOC's)

SEE BACK FOR THE UNIVERSAL TREATMENT STANDARDS (UTS), Legends 49 - 264

STE DOES NOT CONTAIN ANY DIOXINS, CHLORINATED FURANS, EXPLOSIVES OR RADIOACTIVE MATERIALS.

Container Contents

☒ Bulk ☐ Lab Pack RQ ______

Container Number:	Year Month Day: 95 12 01 – Code: G B R 4 C – Number: 10 · 12	Chemist	Roo
Shipping Name:	W. F. L. ...		
Container Type:	DM Size 55	ID Number: UN1993	~~HM~~ Absorbent C V O X
Hazard Class:	3 II		

Profile Number	R4C-007
Disposal Site	
Approval Code	
Reactive Wt.	

Line No.	Material Description	PS	Material Quantity	IC	EPA Waste Code Number
01	DC #		pH		D001
02	(2) 10" Liquid 4" solid		7		F005
03	(1) 32" Liquid		7		
04	(2) 25" Liquid		7		
05					
06					
07					
08					
09					
10					
11					
12					
13					
14	Resin 50%				
15	Toluene 40				
16	Calcium .2				
17	Zinc .2				
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					

ABSORBENT
C - CORN COB
V - VERMICULITE
O - OIL DRY
X - OTHER

PS - PHYSICAL STATE
L - LIQUID/POURABLE
S - SOLID
SL - SLUDGE
D - POWDER OR DUST

IC - INTERNAL CONTAINER
G - GLASS M - METAL
P - PLASTIC F - FIBER
B - BAGGED

This Lab Pack list continues: Yes ☐ No ☐ This is page ______ of ______

ORIGINAL - FINAL T.S.D. • GREEN - TRANS/CERT • YELLOW - DISPOSER • PINK - 1ST T.S.D. • GOLD - GENERATOR

STE DOES NOT CONTAIN ANY DIOXINS, CHLORINATED FURANS, EXPLOSIVES OR RADIOACTIVE MATERIALS.

Container Contents

☒ Bulk ☐ Lab Pack RQ ____________

	Year	Month	Day	Code	Number	Chemist
Container Number:	18	12	01	G B R 4 C	01–09	Rod
Shipping Name:	Haz S nos					
Container Type:	CF	Size 3x5		ID Number: NA3077	HM X	Absorbent C V O X
Hazard Class:	9			III		

Profile Number	R46-016
Disposal Site	
Approval Code	
Reactive Wt.	

Line No.	Material Description	PS	Material Quantity	IC	EPA Waste Code Number
01	QC#		pH		U147
02	1 thru 4: cubic yard Boxes				
03	5 thru 8: Pallets				
04	9 30 gal Drum of cleanup.				
05					
06					
07					
08					
09					
10					
11	Maleic Anhydride 100%				
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					

ABSORBENT
C - CORN COB
V - VERMICULITE
O - OIL DRY
X - OTHER

PS - PHYSICAL STATE
L - LIQUID/POURABLE
S - SOLID
SL - SLUDGE
D - POWDER OR DUST

IC - INTERNAL CONTAINER
G - GLASS M - METAL
P - PLASTIC F - FIBER
B - BAGGED

This Lab Pack list continues: Yes ☐ No ☐ This is page ________ of ________

ORIGINAL - FINAL T.S.D. • GREEN - TRANS/CERT • YELLOW - DISPOSER • PINK - 1ST T.S.D. • GOLD - GENERATOR

1303

Form Approved. OMB No. 2050-0039. Expires 9-30-99

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: 1SD008182081 — Manifest Document No.: 80910
2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: HERCULES, INC. / 613 WEST 7TH STREET, HATTIESBURG, MS [illegible]
4. Generator's Phone ([illegible]) 545-[illegible] X360

A. State Manifest Document Number
B. State Generator's ID

5. Transporter 1 Company Name: SAFETY-KLEEN (TG), INC.
6. US EPA ID Number: SCD987574647

C. State Transporter's ID
D. Transporter's Phone (615) 350-5400

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address: SAFETY-KLEEN (TS), INC. / [illegible] OLD [illegible] PIKE / [illegible], TN [illegible]
10. US EPA ID Number: TND000645770

G. State Facility's ID: Robertson
H. Facility's Phone: (615) 643-4511

	HM	11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	X	WASTE FLAMMABLE SOLIDS, ORGANIC, N.O.S., ([illegible] TOLUENE), 4.1, [illegible], II	3	DM	900	P	D001 F005
b.	X	WASTE FLAMMABLE LIQUIDS, N.O.S., (CONTAINS TOLUENE, ACETONE), 3, UN1993, II	2	DM	110	G	D001 F003
c.	X	WASTE FLAMMABLE LIQUIDS, N.O.S., (CONTAINS TOLUENE), 3, UN1993, II	12	DM	660	G	D001 F005
d.							

J. Additional Descriptions for Materials Listed Above
Additional EPA Waste Codes a. b. F005 c. d.

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month Day Year
Raymond E. Poole	Raymond E. Poole	09 10 98

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
Thomas D. Welsandt	Thomas D. Welsandt	09 10 98

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year
Tim Conner	[signature]	09 15 98

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EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete.

ORIGINAL - RETURN TO GENERATOR

38892

Form Approved. OMB No. 2050-0039. Expires 9-30-99

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
USD008182081	09018		

3. Generator's Name and Mailing Address
[illegible]
[illegible]

4. Generator's Phone ([illegible]) [illegible]

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name [illegible]
6. US EPA ID Number SCD987574647

C. State Transporter's ID
D. Transporter's Phone (615) 350-5351

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
[illegible]
[illegible]
[illegible]

10. US EPA ID Number IND000645770

G. State Facility's ID
H. Facility's Phone (615) 643-4511

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. [illegible]	X	001	TT	13890	P	D001 F005
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above
Additional EPA Waste Codes a. b. c. d.

K. Handling Codes for Wastes Listed Above
a. H061
b.
c.
d.

15. Special Handling Instructions and Additional Information
[illegible]

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.
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Printed/Typed Name	Signature	Month Day Year
J. D. SPENCE	J D Spence	09 01 98

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
Bobby Reeves	Bobby Reeves	09 01 98

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year
PATRICK Storey	Patrick Storey	09 02 98

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ORIGINAL - RETURN TO GENERATOR

Form Approved. OMB No. 2050-0039. Expires 9-30-99

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. M S D 0 0 8 1 8 2 0 8 1 — Manifest Document No. 08118 — 2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
HERCULES, INC.
[illegible]

4. Generator's Phone ([illegible]) [illegible]

5. Transporter 1 Company Name — [illegible] ENVIRONMENTAL SERVICES [illegible] — 6. US EPA ID Number — [illegible]

7. Transporter 2 Company Name — 8. US EPA ID Number

9. Designated Facility Name and Site Address — 10. US EPA ID Number
(w) [illegible] ENVIRONMENTAL SERVICES [illegible]
[illegible] OLD GREENBRIER PIKE
GREENBRIER, TN [illegible]
SAFETY-KLEEN (TS), INC.
T N D 0 0 6 4 5 7 7 0

A. State Manifest Document Number
B. State Generator's ID
C. State Transporter's ID
D. Transporter's Phone (615) 350-5351
E. State Transporter's ID
F. Transporter's Phone
G. State Facility's ID
H. Facility's Phone (615) 643-4511

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. [illegible]		001	TT	5,122	G	D001 F005
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above
Additional EPA Waste Codes
a.
b.
c.
d.

K. Handling Codes for Wastes Listed Above
a. H061
b.
c.
d.

15. Special Handling Instructions and Additional Information
[illegible]

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: J.D. SPENCE — Signature: [signature] — Month Day Year: 10/11/98

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Carl Begley — Signature: [signature] — Month Day Year: 10/11/98

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Mark Harris — Signature: [signature] — Month Day Year: 10/12/98

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ORIGINAL - RETURN TO GENERATOR

582

Form Approved. OMB No. 2050-0039. Expires 9-30-99

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MSD008182081 Manifest Document No. 98702

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
HERCULES, INC. PO BOX 1937
513 WEST 7TH STREET, HATTIESBURG, MS 39401

4. Generator's Phone (601) 545-3459 X360

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name: LAIDLAW ENVIRONMENTAL SERVICES (TSI), INC.

6. US EPA ID Number: TND987574647

C. State Transporter's ID

D. Transporter's Phone (615) 350-5400

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
LAIDLAW ENVIRONMENTAL SERVICES (TSI), INC.
2813 OLD GREENBRIER PIKE
GREENBRIER, TN 37073-4514

10. US EPA ID Number: TND000645770

G. State Facility's ID

H. Facility's Phone (615) 643-4511

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. WASTE FLAMMABLE LIQUID, N.O.S., (TOLUENE ACETONE), 3, UN1993, PG II	X	002 003	DM	00900	P	D001, F003, F005
b. WASTE FLAMMABLE SOLID, ORGANIC, N.O.S., (TOLUENE), 4.1, UN1325, PG II	X	002 002	DM	00900	P	D001 F005
c. WASTE PAINT RELATED MATERIAL, 3, UN1263, PG II	X	001	DM	00450	P	D001, F003 F005
d.						

J. Additional Descriptions for Materials Listed Above
Additional EPA Waste Codes
a.
b.
c.
d.

K. Handling Codes for Wastes Listed Above
a. S-01
b.
c.
d.

15. Special Handling Instructions and Additional Information
Profile Numbers a. R4C-010
b. R4C-008
c. R4C-015
d.
Emergency Contact: 800-535-5053 (997) INFOTRAC

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR

Printed/Typed Name: Raymond E. Poole
Signature: Raymond E. Poole
Month Day Year: 10 7 02 98

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Thomas D Welsandt
Signature: Thomas D. Welsandt
Month Day Year: 10 7 02 98

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Month Day Year:

FACILITY

19. Discrepancy Indication Space
Line 11a switch 1drum to Line 11b.

20. Facility Owner or Operator: Certification of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Patrick Storey
Signature: Patrick Storey
Month Day Year: 10 7 02 98

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EPA Form 8700-22 (Rev 9-88) Previous editions are obsolete

ORIGINAL - RETURN TO GENERATOR

Form Approved. OMB No. 2050-0039. Expires 9-30-99

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: MSD008182081 — Manifest Document No.: 80312 — 2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

GENERATOR

3. Generator's Name and Mailing Address
HERCULES, INC.
613 WEST 7TH STREET, HATTIESBURG, MS 39401
4. Generator's Phone (601) 545-3450 X360

A. State Manifest Document Number
B. State Generator's ID

5. Transporter 1 Company Name: LAIDLAW ENVIRONMENTAL SERVICES (TG), INC.
6. US EPA ID Number: TCD987574647
C. State Transporter's ID
D. Transporter's Phone: (615) 350-5400

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
LAIDLAW ENVIRONMENTAL SERVICES (TS), INC.
2815 OLD GREENBRIER PIKE
GREENBRIER, TN 37073-4514
10. US EPA ID Number: TND000645770
G. State Facility's ID
H. Facility's Phone: (615) 643-4511

	11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	WASTE FLAMMABLE SOLIDS, ORGANIC, N.O.S., (CONTAINS TOLUENE), 4.1, UN1325, II	X	2	DM	200	P	D001 F005
b.	WASTE FLAMMABLE LIQUIDS, N.O.S., (CONTAINS TOLUENE, ACETONE), 3, UN1993, II	X	2	DM	110	G	D001 F003
c.							
d.							

J. Additional Descriptions for Materials Listed Above
Additional EPA Waste Codes: a. b.F005 c. d.

K. Handling Codes for Wastes Listed Above
a.M061
b.
c.
d.

15. Special Handling Instructions and Additional Information
Profile Numbers: a.GBR4C-005 b.GBR4C-010 c. d.
Emergency Contact: 800-535-5053 (557) INFOTRAC

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; **OR,** if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Raymond Poole — Signature: Raymond Poole — Month Day Year: 03/29/98

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Thomas D Welsnecht — Signature: Thomas D Welsnecht — Month Day Year: 03/29/98

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Tim Conner — Signature — Month Day Year: 03/16/98

ORIGINAL - RETURN TO GENERATOR

Form Approved. OMB No. 2050-0039. Expires 9-30-99

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. MSD008182081	Manifest Document No. Y0512	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
HERCULES, INC.
613 WEST 7TH STREET, HATTIESBURG, MS 39401

4. Generator's Phone (601) 545-3450 X369

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name
LAIDLAW ENVIRONMENTAL SERVICES (TG), INC.

6. US EPA ID Number
SCD987574647

C. State Transporter's ID

D. Transporter's Phone (615) 350-5400

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
LAIDLAW ENVIRONMENTAL SERVICES (TS), INC.
2315 OLD GREENBRIER PIKE
GREENBRIER, TN 37073-4511

10. US EPA ID Number
TND000645770

G. State Facility's ID

H. Facility's Phone
(615) 643-4511

	HM	11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	X	WASTE FLAMMABLE SOLIDS, ORGANIC, N.O.S., (CONTAINS TOLUENE), 4.1, UN1325, II	2	DM	200	P	D001 F005
b.	X	WASTE FLAMMABLE LIQUIDS, N.O.S., (CONTAINS TOLUENE, ACETONE), 3, UN1993, II	2	DM	110	G	D001 F003
c.							
d.							

J. Additional Descriptions for Materials Listed Above
Additional a.
EPA Waste b.F005
Codes c.
d.

K. Handling Codes for Wastes Listed Above
a. H061
b.
c.
d.

15. Special Handling Instructions and Additional Information
Profile Number: [illegible]
[illegible]
c.
d.

Emergency
Contact: [illegible]
[illegible]

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; **OR**, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month Day Year
Raymond Peale	[signature]	1 1 1 2 9 3

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
[illegible]		

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year

GENERATOR · TRANSPORTER · FACILITY

Form Approved. OMB No. 2050-0039. Expires 9-30-99

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MSD008182081 — Manifest Document No. 71217

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

GENERATOR

3. Generator's Name and Mailing Address
HERCULES, INC.
613 WEST 7TH STREET, HATTIESBURG, MS 39401

4. Generator's Phone (601) 545-3450 X360

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name: LAIDLAW ENVIRONMENTAL SERVICES (TG), INC.

6. US EPA ID Number: SCD987574647

C. State Transporter's ID

D. Transporter's Phone (615) 350-5400

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
LAIDLAW ENVIRONMENTAL SERVICES (TS), INC.
2815 OLD GREENBRIER PIKE
GREENBRIER, TN 37073-4514

10. US EPA ID Number: TND000645770

G. State Facility's ID

H. Facility's Phone (615) 643-4511

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. WASTE FLAMMABLE ~~SOLIDS~~ LIQUID, ORGANIC, N.O.S., (CONTAINS TOLUENE), ~~4.1~~, ~~UN1325~~, II 3, UN1993, II	X	004	DM	220	G	D001 F005
b. WASTE FLAMMABLE LIQUIDS, N.O.S., (CONTAINS TOLUENE, ACETONE), 3, UN1993, II	X	001	DM	55	G	D001 F003
c.						
d.						

J. Additional Descriptions for Materials Listed Above

Additional EPA Waste Codes
a.
b.F005
c.
d.

K. Handling Codes for Wastes Listed Above

a.S01
b.S01
c.
d.

15. Special Handling Instructions and Additional Information

Profile Numbers
a.GBR4C-~~008~~ 007
b.GBR4C-010
c.
d.

Emergency Contact: 800-535-5053 (597) INFOTRAC

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month	Day	Year
Raymond E. Poole	Raymond E. Poole	12	17	97

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Thomas D. Welsandt	Thomas D. Welsandt	12	17	97

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Tim Conner		12	24	97

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ORIGINAL - RETURN TO GENERATOR

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. / Manifest Document No.: M S D 0 0 8 1 8 2 0 8 1 7 1 0 2 1

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
HERCULES, INC.
613 WEST 7TH STREET, HATTIESBURG, MS 39401

4. Generator's Phone (601) 545-3450 X360

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name: LAIDLAW ENVIRONMENTAL SERVICES (TG), INC.

6. US EPA ID Number: S C D 9 8 7 5 7 4 6 4 7

C. State Transporter's ID

D. Transporter's Phone (615) 350-5400

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
LAIDLAW ENVIRONMENTAL SERVICES (TS), INC.
2815 OLD GREENBRIER PIKE
GREENBRIER, TN 37073-4514

10. US EPA ID Number: T N D 0 0 0 6 4 5 7 7 0

G. State Facility's ID

H. Facility's Phone (615) 643-4511

	11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	Waste Flammable Liquids NOS, 3, UN1993, PG II (Acetone, Toluene	X	002	DM	01000	P	D001
b.	Waste Flammable Solids, Organic, NOS, 4.1 UN1325, PG II (Toluene)	X	002	DM	00600		F005
c.							
d.							

J. Additional Descriptions for Materials Listed Above
Additional EPA Waste Codes: a. F003 F005; b. D001; c.; d.

K. Handling Codes for Wastes Listed Above
a. S-01
b.
c.
d.

15. Special Handling Instructions and Additional Information
Profile Numbers: a. RHC-010; b. R4C-008; c.; d.
Emergency Contact: 800-535-5053 (597) INFOTRAC

ERG #'s A. 128 B. 133

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.
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GENERATOR

Printed/Typed Name	Signature	Month Day Year
Raymond Poole	Raymond Poole	10 21 97

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
Wayne L. Shafer II	Wayne L. Shafer II	10 21 97

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year
Dana L. Eaton	Dana L. Eaton	10 22 97

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ORIGINAL - RETURN TO GENERATOR

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. M S D 0 0 8 1 8 2 0 8 1 | Manifest Document No. 7 0 8 1 2 | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
HERCULES, INC.
613 WEST 7TH STREET, HATTIESBURG, MS 39401
4. Generator's Phone (601) 545-3450

A. State Manifest Document Number
B. State Generator's ID

5. Transporter 1 Company Name: LAIDLAW ENVIRONMENTAL SERVICES (TG), INC.
6. US EPA ID Number: S C D 9 8 7 5 7 4 6 4 7
C. State Transporter's ID
D. Transporter's Phone (615) 350-5400

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
LAIDLAW ENVIRONMENTAL SERVICES (TS), INC.
2815 OLD GREENBRIER PIKE
GREENBRIER, TN 37073-4514
10. US EPA ID Number: T N D 0 0 0 6 4 5 7 7 0
G. State Facility's ID
H. Facility's Phone (615) 643-4511

	11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	WASTE FLAMMABLE SOLID, N.O.S., 4.1, UN1325, PG II (FILTERS CONTAMINATED WITH TOLUENE)	X	10	DM	4500	P	D001 F005
b.	WASTE FLAMMABLE LIQUID, N.O.S., 3, UN1993, PG II, (TOLUENE AND Acetone)	X	3	DM	1350	P	D001 F003 F005
c.							
d.							

J. Additional Descriptions for Materials Listed Above
Additional EPA Waste Codes a. b. c. d.

K. Handling Codes for Wastes Listed Above
a. S-01
b. ↓
c.
d.

15. Special Handling Instructions and Additional Information
Profile Numbers a. R4C-008 b. R4C-010 c. d.
Emergency Contact: 800-535-5053 (597) INFOTRAC

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.
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GENERATOR

Printed/Typed Name: Raymond Poole | Signature: Raymond Poole | Month Day Year: 08 | 29 | 97

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: DONNIE LYONS | Signature: Donnie Lyons | Month Day Year: 08 | 12 | 97

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Tim Conner | Signature | Month Day Year: 08 | 18 | 97

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ORIGINAL - RETURN TO GENERATOR

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Form Approved. OMB No. 2050-0039. Expires 9-30-99

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MSD008182081 Manifest Document No. 82197 2. Page 1 of 2 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
HERCULES, INC.
613 WEST 7TH STREET, HATTIESBURG, MS 39401
4. Generator's Phone (601)545-3450

A. State Manifest Document Number
B. State Generator's ID

5. Transporter 1 Company Name: LAIDLAW ENVIRONMENTAL SERVICES (TG), INC.
6. US EPA ID Number: TCD987574647
C. State Transporter's ID
D. Transporter's Phone (615) 350-5400

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
LAIDLAW ENVIRONMENTAL SERVICES (TS), INC.
2815 OLD GREENBRIER PIKE
GREENBRIER, TN 37073-4514
10. US EPA ID Number: TND000645770
G. State Facility's ID: HWTD-02
H. Facility's Phone (615) 643-4511

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. WASTE FLAMMABLE LIQUIDS, N.O.S. 3, UN1993, II	X	001	DM	00220	P	D001
b. WASTE FLAMMABLE LIQUIDS, N.O.S. 3, UN1993, II	X	001	DM	00220	P	D001
c. WASTE TOXIC LIQUIDS, ORGANIC, N.O.S. (METHYLENE CHLORIDE, HYDROQUINONE) 6.1, UN2810, II	X	001	DM	00220	P	U188
d. WASTE TOXIC LIQUIDS, ORGANIC, N.O.S. (PHENOL, SILVER) 6.1, UN2810, II	X	001	DM	00220	P	D011

J. Additional Descriptions for Materials Listed Above
Additional EPA Waste Codes: a. U002, U108, U213, U161, U056; b. U154, U239, U220, U031, U159, U056; c. U080; d. U188

K. Handling Codes for Wastes Listed Above
a. S-01
b.
c.
d.

15. Special Handling Instructions and Additional Information
Profile Numbers: a. M/L-01; b. M/L-02; c. M/L-03; d. M/L-04
Emergency Contact: 800-535-5053 (597) INFOTRAC

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.
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GENERATOR

Printed/Typed Name	Signature	Month Day Year
CHARLES JORDAN	Charles Jordan	08/24/97

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
WAYNE DENNIS	Wayne Dennis	08/24/97

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year
Tim Conner		08/25/97

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ORIGINAL - RETURN TO GENERATOR

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete

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Form Approved. OMB No. 2050-0039. Expires 9-30-99

...URM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator's US EPA ID No. MSD008182081 — Manifest Document No. 82197

22. Page 2 of 5 — Information in the shaded areas is not required by Federal law.

23. Generator's Name: HERCULES, INC.

L. State Manifest Document Number

M. State Generator's ID

24. Transporter ____ Company Name — 25. US EPA ID Number

N. State Transporter's ID

O. Transporter's Phone

26. Transporter ____ Company Name — 27. US EPA ID Number

P. State Transporter's ID

Q. Transporter's Phone

	28. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	29. Containers No.	29. Containers Type	30. Total Quantity	31. Unit Wt/Vol	R. Waste No.
a.	TOXIC LIQUIDS, ORGANIC, N.O.S. (FATTY ACIDS) 6.1, UN 2810, II	X	001	DM	00220	P	NONE
b.	WASTE TOXIC LIQUIDS, ORGANIC, N.O.S. (CHLOROFORM, ETHYLENE GLYCOL) 6.1, UN 2810, II	X	001	DM	00220	P	D023
c.	TOXIC SOLIDS, ORGANIC, N.O.S. (CALCIUM ACETATE, N-VINYLPHTHALIMIDE) 6.1, UN 2811, III	X	001	DM	00220	P	NONE
d.	WASTE CORROSIVE LIQUIDS, N.O.S. 8, UN 1760, II	X	001	DM	00220	P	D002
e.	CORROSIVE SOLIDS, N.O.S. 8, UN 1759, II	X	001	DF	00120	P	NONE
f.	WASTE CORROSIVE LIQUIDS, OXIDIZING, N.O.S. 8, UN 3093, II	X	001	DM	00020	P	D002
g.	WASTE CORROSIVE LIQUIDS, FLAMMABLE, N.O.S. 8, UN 2920, II	X	001	DM	00020	P	D002
h.	WASTE WATER-REACTIVE SOLID, SELF-HEATING, N.O.S. 4.3, UN 3135, II "DANGEROUS WHEN WET"	X	001	DM	00020	P	D003
i.	WASTE FLAMMABLE LIQUIDS, N.O.S. 3, UN 1993, II	X	001	DM	00010	P	D001

S. Additional Descriptions for Materials Listed Above
d) U123 h) ~~DOT-E~~ DOT-E 9769
f) D001
g) D001

T. Handling Codes for Wastes Listed Above
S-01

32. Special Handing Instructions and Additional Information
a) m/L-05
b) m/L-06
c) m/L-07
d) m/L-08
e) m/L-09
f) m/L-10
g) m/L-11
h) m/L-12
i) m/L-13

GENERATOR

TRANSPORTER

33. Transporter ____ Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Date (Month Day Year)

34. Transporter ____ Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Date (Month Day Year)

FACILITY

35. Discrepancy Indication Space

EPA Form 8700-22A (Rev. 10-92) Previous editions are obsolete.

ORIGINAL - RETURN TO GENERATOR

(Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-99

ORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator's US EPA ID No. NSD008182081 | Manifest Document No. 821917

22. Page 3 of 45

Information in the shaded areas is not required by Federal law.

23. Generator's Name: HERCULES, INC.

L. State Manifest Document Number

M. State Generator's ID

24. Transporter ____ Company Name | 25. US EPA ID Number

N. State Transporter's ID

O. Transporter's Phone

26. Transporter ____ Company Name | 27. US EPA ID Number

P. State Transporter's ID

Q. Transporter's Phone

GENERATOR

	28. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	29. Containers No.	Type	30. Total Quantity	31. Unit Wt/Vol	R. Waste No.
a.	WASTE FLAMMABLE LIQUIDS, N.O.S. 3, UN 1993, II	X	001	DM	00220	P	D001
b.	TOXIC LIQUIDS, ORGANIC, N.O.S. (PENTAERYTHRITOL, NONYLPHENOL) 6.1, UN 2810, II	X	001	DM	00220	P	NONE
c.	TOXIC SOLIDS, ORGANIC, N.O.S. (POLYOL RESIN) 6.1, UN 2811, II	X	001	DM	00220	P	NONE
d.	WASTE FLAMMABLE LIQUIDS, N.O.S. 3, UN 1993, II	X	001	DF	00120	P	D001
e.	CORROSIVE SOLIDS, BASIC, INORGANIC, N.O.S. 8, UN 3262, II	X	001	DM	00020	P	NONE
f.	WASTE FLAMMABLE SOLID, ORGANIC, N.O.S. 4.1, UN 1325, II	X	001	DF	00120	P	D001
g.	WASTE CORROSIVE LIQUIDS, FLAMMABLE, N.O.S. 8, UN 2920, II	X	001	DM	00020	P	D002
h.	WASTE HYDROGEN PEROXIDE, AQUEOUS SOLUTION, 5.1, UN 2014, II	X	001	DM	00020	P	D001
i.	SODIUM METHYLATE, 4.2, UN1431, II	X	001	DF	00100	P	NONE

S. Additional Descriptions for Materials Listed Above

a) D005, U056, D019, U211
d) F005
f) P048
g) D001
h) D002
i) DOT-E 9769

T. Handling Codes for Wastes Listed Above: S-01

32. Special Handling Instructions and Additional Information

a) m/L-14
b) m/L-15
c) m/L-16
d) m/L-17
e) m/L-18
f) m/L-19
g) m/L-20
h) m/L-21
i) m/L-22

TRANSPORTER

33. Transporter ____ Acknowledgement of Receipt of Materials — Printed/Typed Name | Signature | Date (Month Day Ye)

34. Transporter ____ Acknowledgement of Receipt of Materials — Printed/Typed Name | Signature | Date (Month Day Ye)

FACILITY

35. Discrepancy Indication Space

EPA Form 8700-22A (Rev. 10-92) Previous editions are obs

ORIGINAL - RETURN TO GENERATOR

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Form Approved. OMB No. 2050-0039. Expires 9-30-99

HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator's US EPA ID No. MSD008182081 | Manifest Document No. 82119705

22. Page 4 of 5

Information in the shaded areas is not required by Federal law.

L. State Manifest Document Number

M. State Generator's ID

Generator's Name: HERCULES, INC.

24. Transporter ____ Company Name | 25. US EPA ID Number

N. State Transporter's ID

O. Transporter's Phone

26. Transporter ____ Company Name | 27. US EPA ID Number

P. State Transporter's ID

Q. Transporter's Phone

	HM	28. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	29. Containers No.	Type	30. Total Quantity	31. Unit Wt/Vol	R. Waste No.
a.	X	~~Flammable~~ Tm WASTE ~~TOXIC~~ LIQUIDS, ~~ORGANIC~~, N.O.S. (METHYL SULFIDE, POTASSIUM FERRICYANIDE) ~~6.1, UN 2810, II~~ 3, UN1993, II	001	DM	00020	P	D001 ~~D003~~ Tm
b.	X	WASTE TOXIC LIQUIDS, ORGANIC, N.O.S. (NAPHTHALENE, PHENOL) 6.1, UN 2810, II	001	DF	00120	P	U188
c.	X	WASTE SODIUM BOROHYDRIDE, 4.3, UN 1426, I "DANGEROUS WHEN WET"	001	DM	00010	P	D003
d.	X	BORON TRIFLUORIDE, 2.3, UN 1008 POISON INHALATION HAZARD ZONE B	001	DM	00110	P	NONE
e.	X	AMMONIA, ANHYDROUS, LIQUEFIED, 2.2, UN 1005 INHALATION HAZARD	001	DF	00120	P	NONE
f.	X	WASTE SULFUR DIOXIDE, LIQUEFIED, 2.3, UN 1079 POISON INHALATION HAZARD ZONE C	001	DF	00120	P	D002 *
g.	X	TOXIC LIQUIDS, ORGANIC, N.O.S. (TOLUIDINE, LECITHIN) 6.1, UN 2810, II	001	DF	00120	P	~~D~~ NONE
h.	X	CORROSIVE SOLIDS, N.O.S. 8, UN 1759, II	001	DM	00020	P	NONE
i.	X	WASTE CORROSIVE LIQUIDS, FLAMMABLE, N.O.S. 8, UN 2920, II	001	DM	00020	P	D002

S. Additional Descriptions for Materials Listed Above

b) U165 i) D001

d) DOT-E 11043

f) DOT-E 11043

T. Handling Codes for Wastes Listed Above

S-01

32. Special Handing Instructions and Additional Information

a) m/L-23 d) m/L-26 g) m/L-29

b) m/L-24 e) m/L-27 h) m/L-30

c) m/L-25 f) m/L-28 i) m/L-31

TRANSPORTER

33. Transporter ____ Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date (Month Day Year)

34. Transporter ____ Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date (Month Day Year)

FACILITY

35. Discrepancy Indication Space

Line a. Corrected

EPA Form 8700-22A (Rev. 10-92) Previous editions are obsolete.

ORIGINAL - RETURN TO GENERATOR

(Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-30-99

RM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator's US EPA ID No. MSD008182081 Manifest Document No. 8217917

22. Page 5 of 5

Information in the shaded areas is not required by Federal law.

23. Generator's Name: HERCULES, INC.

L. State Manifest Document Number

M. State Generator's ID

24. Transporter ____ Company Name

25. US EPA ID Number

N. State Transporter's ID

O. Transporter's Phone

26. Transporter ____ Company Name

27. US EPA ID Number

P. State Transporter's ID

Q. Transporter's Phone

	28. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	29. Containers No.	29. Containers Type	30. Total Quantity	31. Unit Wt/Vol	R. Waste No.
a.	WASTE CORROSIVE LIQUIDS, TOXIC, N.O.S. (AMMONIUM HYDROXIDE, POTASSIUM CYANIDE) 6.1, UN 2922, II	X	001	DM	00020	P	D003
b.	WASTE AMMONIA SOLUTIONS, 8, UN 2672, II	X	001	DF	00120	P	D002
c.	WASTE FLAMMABLE LIQUIDS, N.O.S. 3, UN 1993, II	X	001	DM	00220	P	D001
d.	WASTE MAGNESIUM PERCHLORATE, 5.1, UN 1475, II	X	001	DM	00010	P	D001
e.	WASTE FLAMMABLE LIQUIDS, N.O.S. 3, UN 1993, II	X	001	DF	00120	P	D001
f.	WASTE ORGANIC PEROXIDE TYPE C, LIQUID, (CUMENE HYDROPEROXIDE, t-BUTYL HYDROPEROXIDE) 5.2, UN 3103, II	X	001	DF	00080	P	D001
g.			37		~~4,140 lbs~~ +120		
h.					4,020		
i.							

S. Additional Descriptions for Materials Listed Above
a) D002, D019, P098; DOT-E 9723
c) D038, 4154, 4196, 4019, 4122

T. Handling Codes for Wastes Listed Above
S-01

32. Special Handing Instructions and Additional Information
a) m/L-32
b) m/L-33
c) m/L-34
d) m/L-35
e) m/L-36
f) m/L-37
g)
h)
i)

TRANSPORTER

33. Transporter ____ Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date (Month Day Year)

34. Transporter ____ Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date (Month Day Year)

FACILITY

35. Discrepancy Indication Space

EPA Form 8700-22A (Rev. 10-92) Previous editions are obsolete.

ORIGINAL – RETURN TO GENERATOR

Hattiesburg - Work Procedures General Operations	Status: ○ Maintenance ● Work
TITLE: Hazardous Waste Storage - Inspection Procedure	ISSUED: 01/18/2000
DOCUMENT NUMBER: Water Treatment--1001	REVISION: 0
DOCUMENT REFERENCE: Loghazwa.wpd/5/98	OWNER: E.R. Harvell

1.0 Scope

1.1 This work instruction establishes the procedure for monitoring and inspection of the Hazardous Waste Storage Area.

2.0 Application

2.1 This work instruction applies to the persons having responsibilities under this procedure.

3.0 Associated Documents/Materials

3.1 Hazardous Waste Log Sheet - Weekly Inspections - File:loghazwa.wpd/5/98

5.0 Instruction

5.1 Responsibilities

5.1.1 The Facilities Area - Operating Foreman is responsible for ensuring compliance with this work instruction. In his absence the Facilities Area Supervisor and/or Power House and Waste Treatment personnel are responsible for the proper execution of these procedures.

5.2 Inspection/Maintenance

5.2.1 The Hazardous Waste Storage Pad area shall be inspected on a weekly basis. The area is to be inspected and the inspection log - " Hazardous Waste Log Sheet - Weekly Inspections" - shall be properly filled out and dated. The log shall be placed in the weather-tight box mounted on a column adjacent to the area.

Note: The inspection and documentation guidelines are on the log sheet itself.

End of Docurr ent

Hattiesburg - Work Procedures General Operations	Status: ○ Maintenance ● Work
TITLE: #1 Lift Station	ISSUED: 01/17/2000
DOCUMENT NUMBER: General Shop--1000	REVISION: 0
DOCUMENT REFERENCE:	OWNER: E.R. Harvell

1.0 Scope

1.1 This work instruction establishes the procedure for monitoring and maintenance of #1 Lift Station.

2.0 Application

2.1 This work instruction applies to the persons having responsibilities under this procedure.

3.0 Instruction

3.1 Responsibilities

3.1.1 The Maintenance Co-ordinator/Leader is responsible for ensuring compliance with this work instruction. In his absence the Facilities Area Supervisor and/or Auto Shop mechanic personnel are responsible for the proper execution of these procedures.

3.2 Inspections/Maintenance

3.2.2 Maintenance and upkeep of #1 Lift Station shall be the responsibility of the of the above indicated personnel.

3.2.3 #1 Lift Station shall be inspected on a weekly basis. If light oils are present and require removal, these materials shall be stored in suitable containers; labelled "used oils", and the containers are to be placed behind the auto shop on the concrete storage area.

End of Document


NOTICE
90 DAY HAZARDOUS
WASTE
ACCUMULATION
12 9'99

III. CLEAN WATER ACT

A. Proper Procedure for the pH Probe - Area of Deficiency No. 1

EPA's Clean Water Inspection Report indicates that the operator did not use the proper analytical technique with regard to the pH probe. In particular, a cloth was used to wipe the pH probe instead of rinsing the probe with deionized water. Despite Hercules' training and instruction regarding the proper procedure for calibrating the pH probe, an operator improperly calibrated the pH probe during the Inspection. After the Inspection, the employee was reminded of the proper procedure and has used the proper procedure since the date of the Inspection. *See* Exhibit 1.

B. Oil Skimmer - Area of Concern No. 1

The Clean Water Inspection Report alleges that, at the time of the Inspection, one of the two oil skimmers on the sedimentation basin was out of service. Hercules' Permit does not require two oil skimmers; however, Hercules has two oil skimmers at the sedimentation basin. Although the west skimmer was in operation at the time of the Inspection, the east skimmer was temporarily out of service.

C. Backup Power or Shut Down Procedures in the Event of Main Power Interruption - Area of Concern No. 2

The Clean Water Inspection Report claims that Hercules failed to maintain a backup power or shut down procedure in the event of main power interruption at the plant as required under Hercules' NPDES Permit. Although the procedure was not formally documented, prior to the Inspection, Hercules employees were aware of the backup power or shut down procedure in the event of main power interruption at the plant. After the Inspection, Hercules formally

documented its procedure in the event of power interruption and reminded its employees of the procedure. *See* Exhibits 2 and 3.

To: James P. Prescott/Hercules@HERCULES, T. E. Moree/Hercules@HERCULES, Jesse L. Jefferson/Hercules@HERCULES, John R. Husbands/Hercules@HERCULES
cc: Raymond E. Poole/Hercules@HERCULES
From: Randy Harvell/Hercules
Date: 07/06/99 02:47:13 PM
Subject: pH

Please read and follow the requirements as per Charlie's attached memo.

These are "requirements" by the EPA(state & Federal) and must be followed per their testing methods.

Thanks and advise any comments.

To: Randy Harvell/Hercules@HERCULES
cc:
From: Charles S. Jordan/Hercules
Date: 07/06/99 02:37:16 PM
Subject: pH

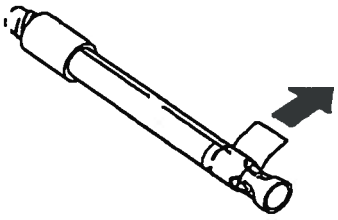
Pls make sure everyone is **using distilled water** to wash the probe according to the procedure. Also, we must start using 4, 7, 10 buffer for calibration. USE ALL THREE . The expiration date must also be good on the solutions.

If the flume has not been repaired from last time we must get it done ASAP.

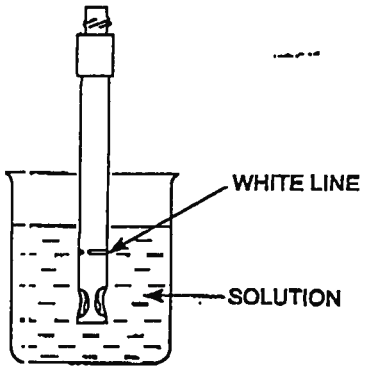
BECKMAN

Futura Plus™ Gel-Filled Combination Electrodes

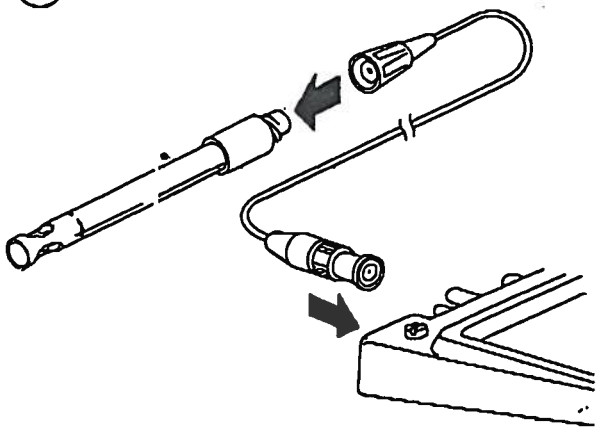
1 REMOVE THE PLASTIC TAPE FROM THE ELECTRODE BODY. The tape must be removed when the electrode is in use to permit contact between the test solution and the reference gel through the reference junction.



2 IMMERSE ELECTRODE IN KCl SOLUTION OR ELECTRODE SOAKING SOLUTION (Part No. 566576) FOR AT LEAST 3 MINUTES. The solution must reach the level of the white line on the electrode.

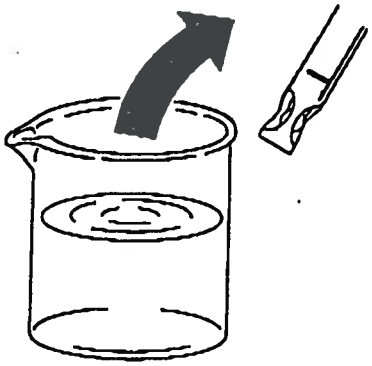


3 CONNECT CABLE. Connect keeper cable to electrode and pH meter.



4 STANDARDIZE AND MEASURE pH as directed in pH meter instructions. IMPORTANT: The solution must reach at least the level of the white line on the electrode.

5 REMOVE ELECTRODE FROM SAMPLE. When measurement is complete, remove electrode from sample and rinse electrode with deionized water to minimize contamination of bulb and reference junction with sample.



If you experience any problems with your Beckman electrode, refer to the troubleshooting guide on the following page. If problems persist, call Beckman at the toll-free number below:

[Peel-off label with Hotline number]

STORAGE

IMPORTANT STORAGE NOTICE:
Always keep the electrode DRY when not in use. Never store in solution.

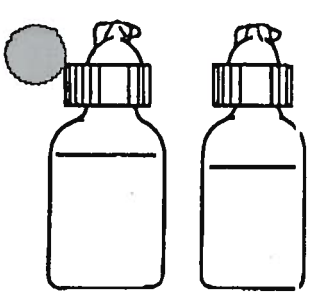
1 Short-term storage (less than three days): Rinse electrode with deionized water and leave hanging dry in air.

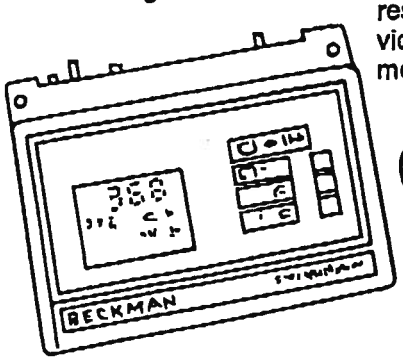
2 Long-term storage (longer than three days): Replace the tape at the white line at the bulb end of the electrode and store dry.

Beckman Instruments, Inc. • Scientific Instruments Division • Fullerton, CA 92634-3100

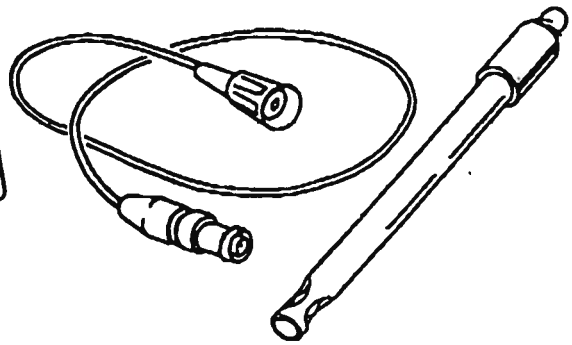
TROUBLESHOOTING

If you have problems making pH measurements, there may be a problem with the electrode, the cable, the meter, or even with the testing solutions.





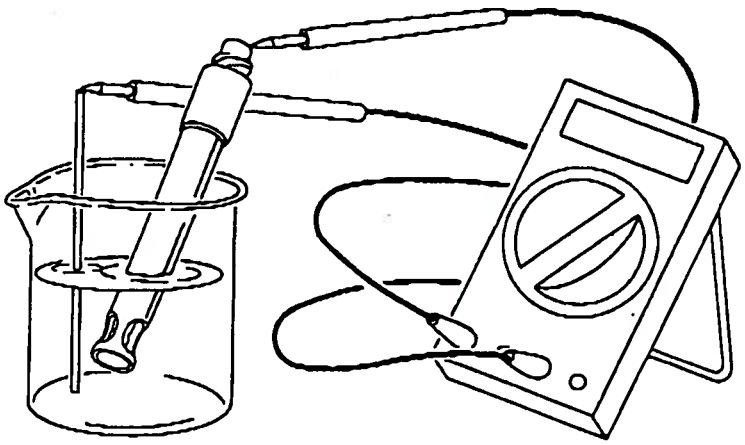
The easiest way to verify whether the difficulty is in the electrode is to replace your electrode with a known good electrode and see whether the problem goes away. If the problem appears to reside with the electrode, the following table provides a guide to possible causes and recommended actions.



SYMPTOM	POSSIBLE CAUSE	VERIFICATION	ACTION
Slow response†	1) Clogged junction	Junction resistance test††	Rejuvenate junction (See below)
	2) Contaminated bulb	—	Rejuvenate bulb (See below)
Drifting, unstable reading	1) Clogged junction	Junction resistance test††	Rejuvenate junction (See below)
Low span*	1) Contaminated bulb	—	Rejuvenate bulb (See below)
Zero span* (i.e., meter shows pH 7 for all buffers)	1) Cracked bulb or body	—	Replace electrode
?/ or ERROR on pH meter display	1) See pH meter instructions	—	See pH meter instructions

†RESPONSE: Electrode should reach 95% of final reading within 45 seconds in standard buffer. Response time will be slower if electrode is not stirred briefly in solution, or if measurements are made in weakly buffered solutions.

††JUNCTION RESISTANCE: Immerse electrode and a wire lead in pH 7 buffer. Touch test probes of an ohmmeter briefly to wire lead and reference connector. Resistance should be less than 20,000 ohms.



*SPAN: Set meter controls to normal positions (slope at 100%, temperature at room temperature). Standardize in pH 4 buffer (single-point standardization), then rinse electrode and measure pH 10 buffer. Reading should be in the range of pH 9.7 to pH 10.3; if less than pH 9.7, span is too low.

REJUVENATION

Rejuvenation of Bulb

Slow response or poor span (see TROUBLESHOOTING section above) may occur because of contamination of the pH-sensing bulb. This is especially likely if the electrode has been permitted to dry out and become encrusted with salt deposits. One or more of the following steps, in order of preference, may rejuvenate the bulb:

1. Soak in 1M HCl for 1 hour. Rinse thoroughly in deionized water.

2. Soak alternately in 1M HCl and 1M NaOH for one minute in each solution, cycling several times. Then soak in pH 4 buffer for 1 hour.

3. Clean bulb with 50/50 mixture of acetone and isopropyl alcohol.

4. Prepare a solution of 10% NH_4HF_2. Immerse bulb for 10 to 20 seconds in this solution and then rinse immediately in tap water, dip for 10 to 20 seconds in 5 to 6 molar HCl, and rinse again in tap water. Soak in pH 4 buffer for about one hour. NOTE: Use this method as a last resort. NH_4HF_2 solution etches the glass and hence may shorten the life of the electrode.

Rejuvenation of Clogged Junction

The most effective procedure to clear a clogged reference junction (see TROUBLESHOOTING above) is to soak electrode in 3 to 4 molar NH_4OH for 20 to 30 minutes, rinse thoroughly with water, and soak 15 minutes in pH 4 buffer. If 3–4M NH_4OH does not solve the problem, try concentrated NH_4OH for twenty minutes. If NH_4OH is unavailable, an alternative is to soak in a heated solution of saturated KCl; warm solution to 40°C–50°C and allow it to cool to room temperature with electrode immersed. If neither KCl nor NH_4OH is available, the electrode may be soaked overnight in filling solution, but this procedure is not as effective as either of the above.

If electrode has been used with proteinaceous samples, a clogged junction can sometimes be cleared by soaking 2 hours in 8M urea. Then rinse thoroughly with deionized water and soak 15 minutes in pH 4 buffer.

Charlie,

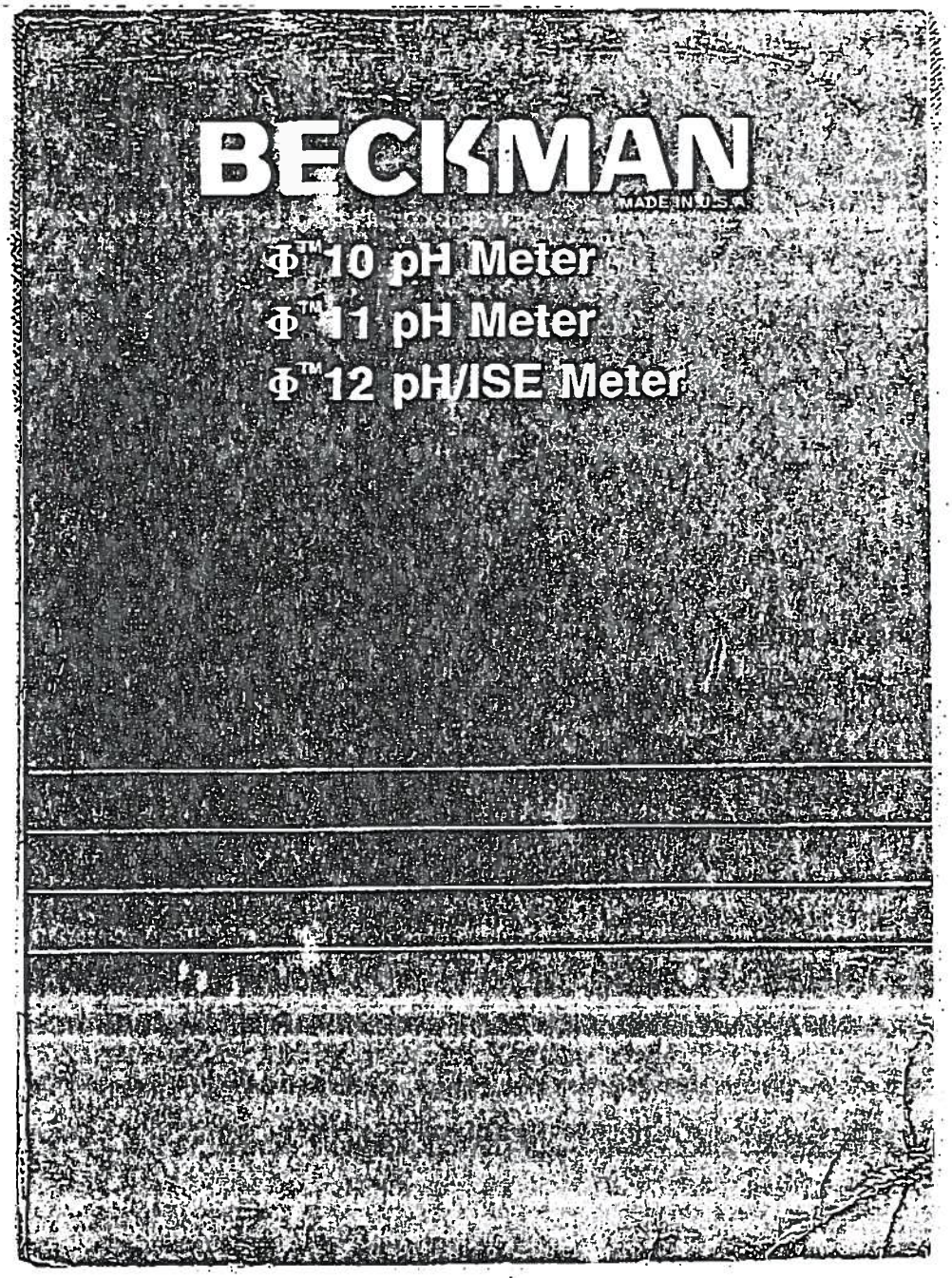
We calibrate on 10 and 7

Check it on 4

Date started 7-31-99

*West skimmer installed Feb. 15, 1995

No written documentation on which skimmer was out of service. Alex believes it was the East skimmer. It was out of service because of a faulty pump motor which was tripping the electric breaker. The pump is used to pump any skimmed petroleum out of the collection tank.


BECKMAN
MADE IN U.S.A.
Φ™10 pH Meter
Φ™11 pH Meter
Φ™12 pH/ISE Meter

IF THE INSTRUMENT IS USED IN A MANNER OTHER THAN AS DESCRIBED, THE SAFETY AND PERFORMANCE OF THE INSTRUMENT CAN BE IMPAIRED.

NOTICE

When the battery is replaced and the pH Meter does not respond, depress and hold the [C] Key while turning instrument on and off several times until [ON, AUTO] shows in display.

WARRANTY

Your ϕ™ (pHI™) 10, 11, or 12 pH Meter is warranted to be free of manufacturing defects for one (1) year from the date of purchase. This does not include any defects that are the result of abuse or misuse of the instrument. Beckman Instruments, Inc., will, at Beckman's option, repair or replace your instrument with a comparable unit. This is a limited warranty. You may have additional rights under your state laws. Batteries are not included in this warranty.

CAUTION: To maintain FM approval, use only the electrodes listed in the "ELECTRODES, BUFFERS, AND ACCESSORIES" section.

WARNING: This equipment generates, uses, and can radiate radio frequency energy and may cause interference to radio communications. Improper installation or modification of the equipment may increase interference. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment.

Operation of this equipment in a residential area may cause interference, in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

BECKMAN

MADE IN U.S.A.

Φ™10 pH Meter
Φ™11 pH Meter
Φ™12 pH/ISE Meter

Beckman Instruments, Inc. • Analytical Business Unit • Fullerton, CA 92634-3100

FOR ACCURATE pH MEASUREMENTS WITH THE Φ10, Φ11, OR Φ12, THE FOLLOWING ITEMS ARE RECOMMENDED:

1. 
pH indicating electrode, Futura™ Plus.

AND

Cable with BNC connector, Futura.


Reference electrode, Futura Plus.

Cable with 2 mm pin connector, Futura.

OR

1. (ALT.) 
Combination electrode, Futura Plus.

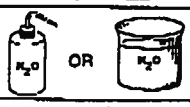
Cable with BNC connector, Futura.

2. 

Any two of the following standard pH buffers:

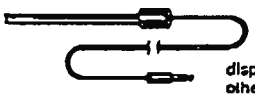
1.68 4.00 7.00 10.01 12.45

3. 
Two clean beakers or equivalent containers, approximately 100–250 mL, for containing the two standard buffers.

4. 

Squirt bottle or beaker containing deionized or distilled water for rinsing electrodes.

5. 
Clean towels, "Kimwipes™", etc., for blotting electrodes.

6. 
598115 Automatic Temperature Compensator (ATC) probe. Required if measurement and display of temperature or compensation for temperatures other than 25°C is desired.

7. 
SAMPLE

The sample to be measured.

For part numbers, see "Electrodes, Buffers, and Accessories."
For pH measurement procedure, see next page.

MEASURING pH (Φ10, Φ11, Φ12)

MEASURING mV AND RELATIVE mV (Φ11, Φ12)

MEASURING CONCENTRATION (Φ12)

INSTRUMENT FUNCTIONS AND FEATURES

ELECTRODES, BUFFERS, AND ACCESSORIES

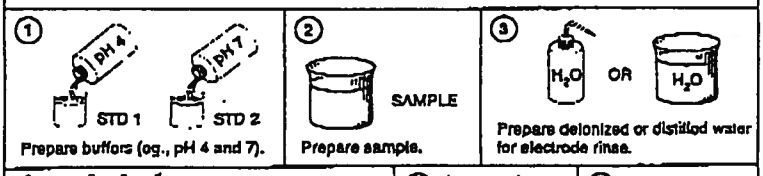
BATTERY REPLACEMENT, SERVICE AND TROUBLESHOOTING

SPECIFICATIONS

pH MEASUREMENT

(Two-standard method: Condensed instructions)

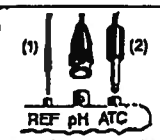
I. SETUP



① Prepare buffers (eg., pH 4 and 7).

② Prepare sample.

③ Prepare deionized or distilled water for electrode rinse.



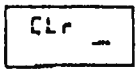
④ Connect electrodes to instrument.

(1) Omit reference if combination electrode is used.

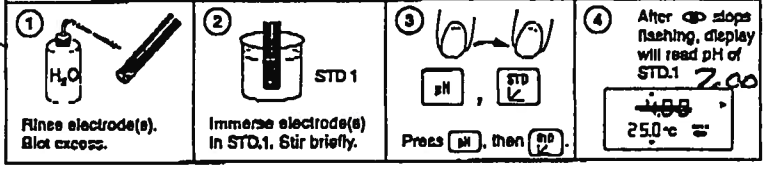
(2) ATC optional.

⑤ Turn on and clear instrument.

⑥ Display will read:



II. STANDARDIZE

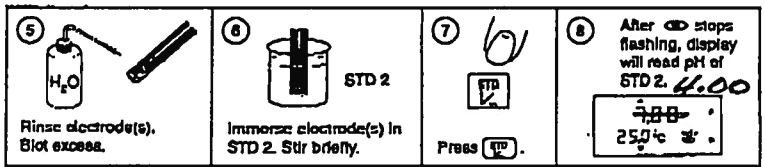


① Rinse electrode(s). Blot excess.

② Immerse electrode(s) in STD.1. Stir briefly.

③ Press pH, then STD.

④ After ⧖ stops flashing, display will read pH of STD.1 7.00



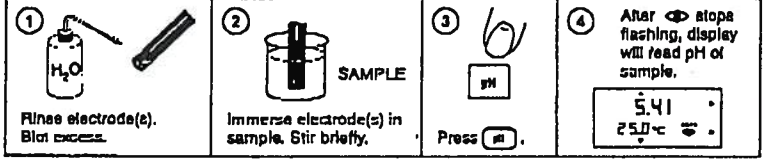
⑤ Rinse electrode(s). Blot excess.

⑥ Immerse electrode(s) in STD 2. Stir briefly.

⑦ Press STD.

⑧ After ⧖ stops flashing, display will read pH of STD 2. 4.00

III. MEASURE pH



① Rinse electrode(s). Blot excess.

② Immerse electrode(s) in sample. Stir briefly.

③ Press pH.

④ After ⧖ stops flashing, display will read pH of sample.

FOR MORE DETAILED INSTRUCTIONS ON pH MEASUREMENT, SEE NEXT PAGE.

MEASURING mV AND RELATIVE mV (Φ11, Φ12)

MEASURING CONCENTRATION (Φ12)

INSTRUMENT FUNCTIONS AND FEATURES

ELECTRODES, BUFFERS, AND ACCESSORIES

BATTERY REPLACEMENT, SERVICE AND TROUBLESHOOTING

SPECIFICATIONS

IF THE INSTRUMENT IS USED IN A MANNER OTHER THAN AS DESCRIBED, THE SAFETY AND PERFORMANCE OF THE INSTRUMENT CAN BE IMPAIRED.

pH MEASUREMENT: DETAILED INSTRUCTIONS

METHODS: The pHI 10, 11, and 12 can measure pH from 0 to 16.99. They will perform one- or two-point standardization automatically, using any buffer listed below, at any temperature between –5°C and 100°C.

STANDARD pH BUFFERS RECOGNIZED BY THE pHI 10, 11, AND 12:

1.68, 4.00, 7.00, 10.01, 12.45.

TWO-POINT STANDARDIZATION METHOD:

Two-point standardization, the preferred and more accurate method of pH measurement, should be used when pH accuracy of beyond ± 0.1 pH is required. Use buffers as close to the sample pH as possible; one above, and one below. (For example, if sample pH is about 8.5, use 7.00 and 10.01 pH buffers).

ONE-POINT STANDARDIZATION METHOD:

One-point standardization, a somewhat faster procedure, is recommended only if (a), accuracy of ± 0.1 pH unit is acceptable, and (b), sample *pH* is within 1.5 pH of that of the buffer used for standardization.

pH MEASUREMENT PROCEDURE:

1. Connect electrode(s) to appropriate input(s):
   a. If a *combination electrode* is used, connect it to the input marked "pH".
   b. If an *electrode pair* is used, connect the indicating electrode to the input marked "pH" and the reference electrode to the input marked "REF".
   c. For better accuracy, or when measuring and/or standardizing at a temperature of other than 25°C, connect a Beckman 698115 Automatic Temperature Compensator probe to input marked "ATC".

2. Press [⏻] to turn on instrument, then press [C] to clear. Display will show [Clr AUTO].

3. Rinse electrode(s) (and ATC if used) with deionized water. Blot excess.

4. Immerse electrode(s) (and ATC if used) in first standard. Stir briefly with electrodes to remove bubbles from electrode surfaces. Press [pH]. Displayed pH value will have a resolution of 0.01. If 0.1 resolution is desired, press [↓ pH].

5. Press [STD]. When [◁▷] stops flashing, display will show [pH value locked, ◁▷, ▶ std].

6. Rinse electrode(s) (and ATC probe if used) with deionized water. Blot excess. Proceed to appropriate step, according to desired type of standardization:
   a. If ONE-POINT standardization is to be used, instrument is ready for sample measurement; proceed to Step 9.
   b. If TWO-POINT standardization is desired, proceed to Step 7.

7. Immerse electrode(s) (and ATC if used) in second standard. Stir briefly with electrodes to remove bubbles from electrode surfaces. Press [STD]. When [◁▷] stops flashing, display will show [pH value locked, ◁▷, ▶ std1, ▶ std2].

8. Rinse electrode(s), (and ATC probe if used) with deionized water. Blot excess.

9. Immerse electrode(s) (and ATC if used) in sample. Stir briefly with electrodes. Press [pH]. When [◁▷] stops flashing, display will show [pH value locked, ◁▷]. Measurement is now complete. Repeat Steps 8 and 9, above, for additional samples.

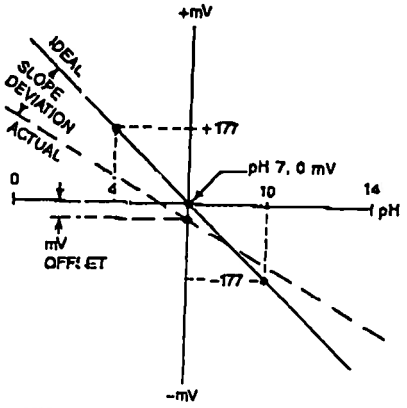
10. If *continuous* pH monitoring is desired, press [AUTO] to turn off Auto Read function.

IF THE INSTRUMENT IS USED IN A MANNER OTHER THAN AS DESCRIBED, THE SAFETY AND PERFORMANCE OF THE INSTRUMENT CAN BE IMPAIRED.

pH MEASUREMENT: PRINCIPLES AND THEORY

The pHI 10/11/12 pH Meter is essentially a high-impedance voltmeter with a microcomputer that translates voltage and temperature data into pH units. At 25°C, the ideal pH electrode system develops –59 mV per pH unit increase, with 7.00 pH = 0 mV.

Standardization allows the meter to compensate for non-ideal electrode characteristics. One-point standardization compensates for millivolt offset; two-point standardization compensates for both millivolt offset and slope deviation. See diagram below.



Ideal and Actual Electrode Response Compared

The pHI 10, 11, and 12 may be standardized with any of five standard pH buffers: 1.68, 4.00, 7.00, 10.01, and 12.45. Standardization may be accomplished with any two buffers, used in any order (and at any temperature, if ATC is used). When (Ψ) is pressed, the instrument automatically recognizes the buffer.

The relationship between pH and electrode voltage changes with temperature. For precise pH measurements or temperatures not close to 25°C, a Beckman 598115 ATC (Automatic Temperature Compensator) probe should be used. With this probe, the instrument automatically compensates for the temperature characteristics of the buffer, permitting a sample to be measured at any temperature, even if different from the buffer temperatures. With ATC, the instrument measures and displays temperatures from –5°C to 100°C.

If an ATC probe is *not* used, the instrument defaults and displays 25°C.

The pH calculation is based on the Nernst equation:

$$E = E_o - \frac{2.3\,RT}{nF} \log a_i$$

E is the total potential, in millivolts, developed between the sensing and reference electrodes; E_o varies with the choice of electrodes, temperature, and pressure; $2.3RT/nF$ is the Nernst factor (R and F are constants, n is the charge on the ion, including sign, T is the temperature in degrees Kelvin), and a_i is the activity of the ion to which the electrode is responding.

For further information on principles and theory of pH measurement, refer to The Beckman Handbook of Applied Electrochemistry (Beckman Bulletin 7736).

MEASURING mV AND RELATIVE mV (Φ11, Φ12)

FOR ACCURATE mV MEASUREMENTS WITH THE Φ11 OR Φ12, THE FOLLOWING ITEMS ARE RECOMMENDED:		
1.		pH indicating electrode, Futura II. Futura II cable with BNC connector. NOTE: If combination pH electrode is used, omit separate reference electrode (item 2, below).
OR		
1a.		Metallic electrode with 2 mm pin connector + pin-to-BNC adaptor.
OR		
1b.		Ion-Selective electrode with BNC connector (or U.S. standard connector + U.S. standard-to-BNC adaptor).
2.		Reference electrode, Futura II. Cable with 2 mm pin connector, Futura II. NOTE: Omit reference electrode if combination pH electrode is used.
3.		Standard solution(s) appropriate to the application.

4.		Clean beaker(s) or equivalent container(s), 100–250 mL, for containing standard solution(s).
5.	 OR 	Squirt bottle or beaker containing deionized or distilled water for rinsing electrodes.
6.		Clean towels, "Kimwipes™", etc., for blotting electrodes.
7.	 SAMPLE	The sample to be measured.

For part numbers, see "Electrodes, Buffers, and Accessories."
For mV measurement procedures, see next page.

MEASURING mV AND RELATIVE mV (Φ11, Φ12)

MEASURING CONCENTRATION (Φ12)

INSTRUMENT FUNCTIONS AND FEATURES

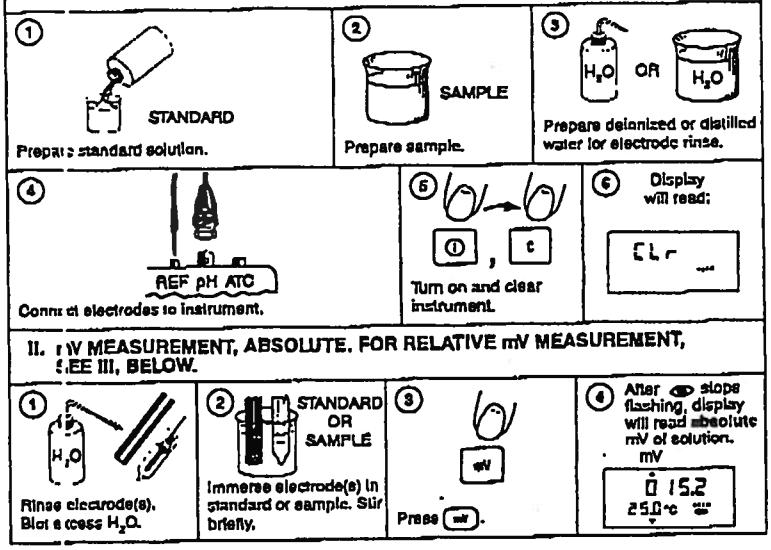
ELECTRODES, BUFFERS, AND ACCESSORIES

BATTERY REPLACEMENT, SERVICE AND TROUBLESHOOTING

SPECIFICATIONS

mV MEASUREMENT: CONDENSED INSTRUCTIONS

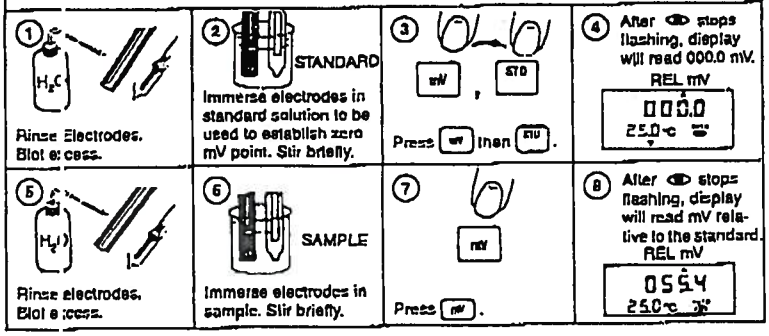
I. SETUP



II. mV MEASUREMENT, ABSOLUTE. FOR RELATIVE mV MEASUREMENT, SEE III, BELOW.

For RELATIVE mV Measurement, Proceed with following steps:

III. mV MEASUREMENT, RELATIVE



NOTE
INSTRUMENT WILL REMAIN IN RELATIVE mV MODE UNTIL EITHER pH, CONC, OR C IS PRESSED.

FOR MORE DETAILED INSTRUCTIONS ON mV MEASUREMENT, PROCEED TO NEXT PAGE.

MEASURING CONCENTRATION (Φ12)

INSTRUMENT FUNCTIONS AND FEATURES

ELECTRODES, BUFFERS, AND ACCESSORIES

BATTERY REPLACEMENT, SERVICE AND TROUBLESHOOTING

SPECIFICATIONS

mV MEASUREMENT: DETAILED INSTRUCTIONS

mV MEASUREMENT: TYPICAL USES

Some uses of the mV mode are monitoring chemical reactions, quantifying ions, and determining the oxidizing-reducing potential (ORP) of a given sample. Because such measurements are usually not specific for a particular ion or species, readings must be interpreted carefully to obtain meaningful results. The user should have an understanding of the reaction that is occurring, or is desired, and of any sample components that could potentially interfere. For more detailed information, refer to the Beckman Handbook of Applied Electrochemistry (Beckman Bulletin 7739).

The mV mode may also be used with ion-selective electrodes. The relative mV mode can be used in the standard addition or standard subtraction method of ion analysis.

STANDARD SOLUTION(S)

Make up appropriate standard solution(s) to provide known voltage(s), depending on the reference electrode used and the temperature. For example, common standards used in redox measurements are pH 4 and pH 7 buffers saturated with quinhydrone.

mV MEASUREMENT PROCEDURE

1. Connect electrodes to appropriate inputs:
   a. Connect indicating electrode to input marked "pH". A Pin-to-BNC Adaptor may be required as most metallic electrodes have a pin connector.
   b. Connect reference electrode to input marked "REF".
2. Press (ON) to turn on instrument, then press (CE) to clear. Display will show [Clr, AUTO].
3. Rinse electrodes with deionized water. Blot excess.
4. Immerse electrodes in desired solution. Press (mV). Displayed value is *absolute* mV, as indicated by display of [mV ▲]. When [◁▷] stops flashing, display will show [mV reading locked, ◁▷].

RELATIVE mV MEASUREMENT PROCEDURE

1. Perform steps 1 through 3 of mV MEASUREMENT PROCEDURE, above.
2. Immerse electrodes in standard solution to be used to establish the zero mV point. Press (mV), then (STO). When [◁▷] stops flashing, display will read [000.0 mV]. Note that, in mV mode, pressing (STO) causes the instrument to establish the zero mV point at the value of the current reading. If desired, this step may be repeated at any time to re-establish the zero mV point.
3. Rinse electrodes with deionized water. Blot excess.
4. Immerse electrodes in sample. Press (mV). Displayed value is *relative* mV, as indicated by display of [REL mV]. When [◁▷] stops flashing, display will show (sample relative mV value locked, ◁▷). Absolute mV reading of the standard solution is *automatically* subtracted from the absolute mV reading of the sample, resulting in a relative mV reading for the sample.
5. If *continuous* readout of relative mV is desired, press (AUTO) to turn off Auto Read function.

NOTE

VOLTAGE DIFFERENCE BETWEEN STANDARD SOLUTION AND SAMPLE MUST NOT EXCEED 1000 mV. MAXIMUM DISPLAY RANGE IN mV MODE IS ±999.9 mV.

NOTE

IN mV MODE, THE 598115 AUTOMATIC TEMPERATURE COMPENSATOR PROBE MAY BE USED FOR TEMPERATURE *MEASUREMENT* AND *DISPLAY*, BUT DOES *NOT* HAVE ANY *TEMPERATURE-COMPENSATING* EFFECT.

MEASURING CONCENTRATION (Φ12)

INSTRUMENT FUNCTIONS AND FEATURES

ELECTRODES, BUFFERS, AND ACCESSORIES

BATTERY REPLACEMENT, SERVICE AND TROUBLESHOOTING

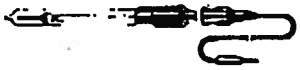
SPECIFICATIONS

FOR ACCURATE CONCENTRATION MEASUREMENTS WITH THE Φ12, THE FOLLOWING ITEMS ARE RECOMMENDED:

1.  Ion-Selective electrode with BNC connector.

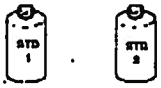
OR

1a.  Ion-Selective electrode with U.S. standard connector + U.S. standard-to-BNC adaptor.

2.  Reference electrode, Futura II.

Futura II cable with 2 mm pin connector.

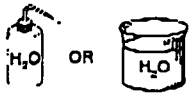
NOTE: Depending on the application, a salt-bridge or double-junction electrode may be required.

3.  Two standard solutions of appropriate concentration, selected from the following values: 1.00, 2.50, 5.00, 10.00, 25.0, 50.0, 100.0, 250.0, 500, and 1000 units. Concentration can be expressed in any desired units such as ppm, mM, mg/L, and oz/gal.

Make up these solutions per procedure or by diluting a stock solution to suit your requirement.

NOTE
CONCENTRATION UNITS FOR BOTH STANDARD SOLUTIONS MUST BE THE SAME AS DESIRED FOR SAMPLE READINGS.

4.  Two clean beakers or equivalent containers, approximately 100–250 mL, for containing the two standard solutions.

5.  Squirt bottle or beaker containing deionized or distilled water for rinsing electrodes.

6.  Clean towels, "Kimwipes™", etc., for blotting electrodes.

7.  SAMPLE The sample to be measured.

For part numbers, see "Electrodes, Buffers, and Accessories."
For concentration measurement procedure, see next page.

MEASURING CONCENTRATION (Φ12)

INSTRUMENT FUNCTIONS AND FEATURES

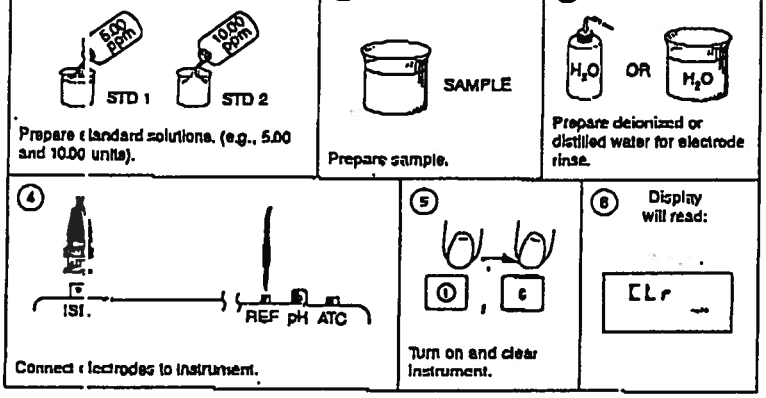
ELECTRODES, BUFFERS, AND ACCESSORIES

BATTERY REPLACEMENT, SERVICE AND TROUBLESHOOTING

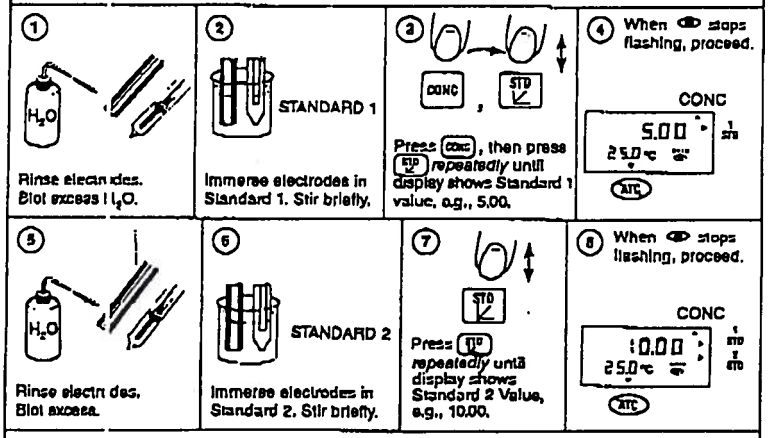
SPECIFICATIONS

CONCENTRATION MEASUREMENT: CONDENSED INSTRUCTIONS FOR TWO-STANDARD OPERATION

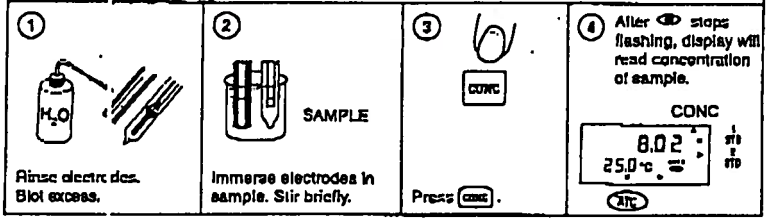
I. SETUP



II. STANDARDIZE



III. MEASURE CONCENTRATION



FOR MORE DETAILED INSTRUCTIONS ON CONCENTRATION MEASUREMENT, PROCEED TO NEXT PAGE.

INSTRUMENT FUNCTIONS AND FEATURES

ELECTRODES, BUFFERS, AND ACCESSORIES

CONCENTRATION MEASUREMENT: DETAILED INSTRUCTIONS

The following procedure, utilizing two-point standardization, can be used to measure concentrations of ions in almost any desired units.

STANDARD SOLUTIONS:

Standards can be made from any type of solution, with concentrations selected from the following values: 1.00, 2.50, 5.00, 10.00, 25.0, 50.0, 100.0, 250.0, 500, and 1000 units.

Units of concentration may be any that the user finds convenient. **CONCENTRATION UNITS FOR BOTH STANDARD SOLUTIONS MUST BE THE SAME AS DESIRED FOR SAMPLE READINGS.**

Some examples of units are: parts per million, percent, moles per liter, parts per billion, milliequivalents per liter, and ounces per gallon.

Select two standard values as close as possible to the anticipated sample value, preferably with one standard value below and one standard value above the sample. For example, if sample solution is about 150 millimoles per liter (mM), make up standards of 100 mM and 250 mM. If sample concentration varies widely, for example, between 10 molal and 75 molal, make up standards of 10 molal and 100 molal.

Standards and samples should be at the same temperature to avoid temperature-dependent variations in readings.

NOTE

Standard and sample solutions may require ionic strength adjustment or interfering ion removal. Consult electrode instructions for details.

CONCENTRATION MEASUREMENT PROCEDURE:

1. Connect electrodes to appropriate inputs:
   a. Connect ion-selective electrode to input marked "ISE".
   b. Connect reference electrode to input marked "REF".

   NOTE

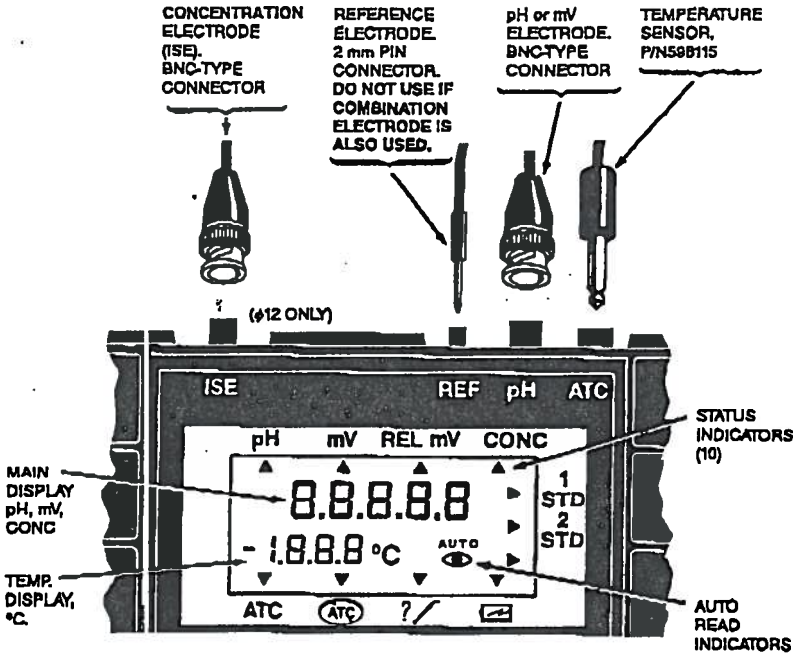
   If, in addition to the ion-selective electrode, a combination pH electrode is connected to the instrument AND is to be immersed in the same solution, DO NOT use a separate reference electrode.

2. Press [ON] to turn on instrument, then press [C] to clear. Display will show [Clr, AUTO].
3. Rinse electrodes with deionized water. Blot excess.
4. Immerse electrodes in first standard solution. Press [CONC], then press [▲] as many times as needed for the concentration value of the first standard to show on the display. When [▲] is pressed repeatedly, the display steps through the following values: 1.00, 2.50, 5.00, 10, 25, 50, 100, 250, 500, and 1000 concentration units. For example, if the concentration of the standard is 100 units, press [▲] seven times and the display will show [100]. When [◀▶] stops flashing, display will show [100 locked, ◀▶ , ▶ STD].
5. Rinse electrodes with deionized water. Blot excess.
6. Immerse electrodes in second standard solution. The first and second standards must be different, but can be measured in any order. Press [▲] as many times as needed for the display to show the concentration value of the second standard, e.g., 250. When [◀▶] stops flashing, display will show [250 locked, ◀▶ , ▶ STD].
7. Rinse electrodes with deionized water. Blot excess.
8. Immerse electrodes in sample. Press [CONC]. When [◀▶] stops flashing, display will show [sample value locked, ◀▶]. Measurement is now complete. Repeat Steps 7 and 8, above, for additional samples.
9. If *continuous* concentration readout is desired, press [AUTO] to turn *on* Auto Read function.

INSTRUMENT FUNCTIONS AND FEATURES

ELECTRODES, BUFFERS, AND ACCESSORIES

ELECTRODE CONNECTIONS



D SPLAY FEATURES AND STATUS INDICATORS

DISPLAY

Main Display The large digits show the following:

1. Readout of the measured variable: pH, mV, or concentration.
2. [Clr] is displayed, indicating that instrument is cleared, when [E] is pressed.
3. Error message:

   [Er] indicates an excessive, potentially damaging, input voltage, typically caused by static electricity when the electrode pair is not in solution. In this case, immerse electrodes in solution, press [E], and proceed with measurement. If [Er] again appears, check connections and electrodes for possible open circuit.

Temperature Display (°C) The small digits display temperature in °C. Will read 25°C if ATC not plugged in.

AUTO AUTO READ ON/OFF indicator for AUTO READ ON/OFF *Key*, described subsequently.

AUTO READ Status Indicator (eye symbol). Functions during standardization and when instrument is in AUTO mode. During *standardization*, the eye symbol starts flashing when [STD] is pressed, and locks on when the reading has stabilized. During *sample measurement* in AUTO mode, the eye symbol starts flashing when a mode key is pressed, and locks on when the reading has stabilized. The reading remains locked until a mode key is pressed. If an interval of approximately 30 minutes elapses without a key being pressed, the instrument turns off automatically to conserve the batteries, but retains all standardization data in memory.

STATUS INDICATORS

▼ ATC Indicates that ATC is plugged in. The instrument measures and displays temperature within the range of –5 °C and 100°C. Display of [Er] indicates that the temperature sensed is outside the measurement range, or the ATC is nonfunctional.

▼ (ATC) Indicates that ATC is *not* plugged in. The temperature reading defaults to 25°C.

▲ pH Indicates that instrument is in pH mode.

▲ mV Indicates that instrument is in mV mode.

▲ REL mV Indicates that instrument is in relative mV mode.

Φ11 and Φ12 only.

▲ CONC Indicates that instrument is in concentration mode. Φ12 only.

▶ 1 STD Indicates that one standard has been used to standardize for the selected measurement mode (pH or CONC).

▶ 2 STD Indicates that two standards have been used to standardize for the selected measurement mode (pH or CONC).

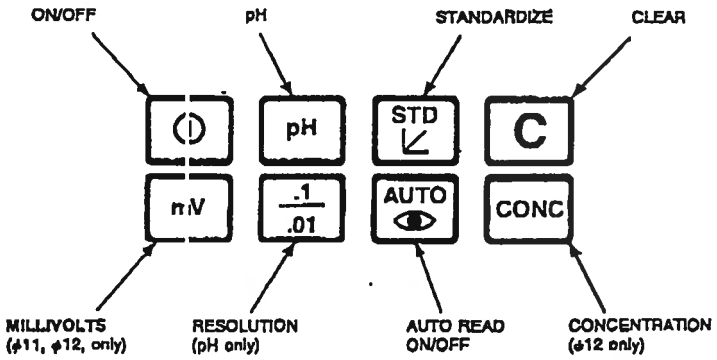
▼ ?/ Indicates a questionable electrode and/or standardization.

▼ Indicates that batteries should be replaced.

INSTRUMENT FUNCTIONS AND FEATURES

ELECTRODES, BUFFERS, AND ACCESSORIES

KEYPAD



KEYPAD FUNCTIONS

KEY

Instrument ON/OFF Key. When OFF, the instrument retains the standardization data in memory. Instrument shuts off automatically after 30 minutes of inactivity if AUTO READ is ON. (See below.)

Clear Key. Clears instrument, resetting all standardization data to default values, and returning instrument to AUTO Mode.

Auto Read Key. Turns Auto Read function ON and OFF:

1. When Auto Read is ON:
   a. The word [AUTO] appears on the display.
   b. The instrument tests the electrode signal for stability. During this test, [◉] flashes ON and OFF. When the signal has met the stability requirement (see SPECIFICATIONS), [◉] remains on continuously, and the digital display locks onto the reading. No further measurements are made until a key is pressed.
   c. After 30 minutes without keypad input, the instrument turns off automatically but retains all standardization data.
2. When Auto Read is OFF:
   a. [AUTO] disappears from display.
   b. The instrument continuously measures and displays in the selected mode: pH, mV, or CONC.
   c. After 1 to 2 hours without keypad input, the instrument turns off automatically but retains all standardization data.

pH Resolution Selection Key. Changes resolution of the displayed pH reading from 0.01 to 0.1 pH unit, or vice versa. At the lower resolution (0.1), time required for the Auto Read to lock is shorter. (See SPECIFICATIONS).

Selects the pH measurement mode.

Selects the mV mode (pH/ 11, pH/ 12), for measurement of either absolute or relative millivolts. See MEASURING mV AND RELATIVE mV.

Selects the concentration measurement mode (pH/ 12). Used with specific ion electrodes.

Standardize Key. Standardizes instrument. Depends upon mode.

a. pH Mode: [STD] Key causes the instrument to automatically identify the pH value of the buffer from any one of the following: 1.68, 4.00, 7.00, 10.01, and 12.45.
b. mV Mode (pH/ 11, pH/ 12): [STD] Key causes the instrument to establish the zero-millivolt level at the value of the current reading. Instrument is now in Relative mV mode.
c. CONC Mode (pH/ 12): Repeated pressing of [STD] Key causes the instrument to step through the following sequence of values: 1.00, 2.50, 5.00, 10, 25, 50, 100, 250, 500, and 1000 concentration units.

1. FUTURA PLUS ELECTRODES

COMBINATION ELECTRODES:

	Standard 5" x 1/2"	Probe 6-10" x 3/8"	Test-Tube 6-9" x 5-6mm
Glass Body Ag/AgCl, Refillable	39539, 39540	39531	39532
Glass Body Calomel, Refillable	39537	39538	39535, 39536 (7")
Epoxy Body Calomel, Refillable	39848	—	39849
Epoxy Body Ag/AgCl, Refillable	39840, 39841	39843	39845
Epoxy Body Ag/AgCl, Gel Filled	39846	39842	39844
Epoxy Body, Star Ag/AgCl Refillable	39847		
Glass Body, Star Ag/AgCl Refillable	39534		
Flat Bulb, Epoxy Body	39533		

ELECTRODE PAIRS:

pH INDICATING ELECTRODES:

0–14 pH, Spherical Bulb	39321
0–11 pH, Dome Bulb (Durable)	39322

METALLIC ELECTRODES:

Silver Billet	39261
Platinum Inlay	39273

REFERENCE ELECTRODES:

Calomel Half Cell, Quartz Fiber Junction	39422
Calomel Half Cell, Ceramic Frit Junction	39423
Ag/AgCl Half Cell, Quartz Fiber Junction	39424
Calomel Half Cell, Sleeve Double Junction	39419
Calomel Half Cell, Inverted Sleeve Junction	39420
Ag/AgCl Half Cell, Inverted Sleeve Junction	39421

2. FUTURA KEEPER CABLES

COMBINATION AND INDICATING ELECTRODE CABLES

1m,	BNC Connector	597578
2m,	BNC Connector	597579
6m,	BNC Connector	597580

REFERENCE ELECTRODE KEEPER CABLES

1m,	2mm Pin Connector	598982
2m,	2mm Pin Connector	598983
6m,	2mm Pin Connector	598984

3. SALT BRIDGE: 533853

4. SUBMERSIBLE COMBINATION pH ELECTRODE WITH ATC: 39530

5. AUTOMATIC TEMPERATURE COMPENSATOR, 598115:

Permits temperature measurement and display, and temperature compensation of pH and ion-selective electrodes, within range of –5°C to 100°C. Epoxy body. For use with standard 5-inch (13-cm) electrodes. Includes 39" (1 meter) cable with miniature phone jack.

6. ELECTRODE ADAPTORS:

582962 Standard to BNC Adaptor

Adapts Glass Electrode (GE) BNC terminal on pHI Series pH Meters to accommodate electrodes with U.S. Standard Connectors.

582357 PIN to BNC Adaptor

Adapts Glass Electrode (GE) BNC terminal on pHI Series pH Meters to accommodate electrodes with PIN Connectors.

Typically used to connect metallic electrodes.

7. BUFFERS

	6 Pack of Pints	1 Gallon	5 Gallons	Powder (Colorless)
pH 4 Buffer (red)	582517	566001	582822	3005
pH 7 Buffer (green)	582521	566003	582823	3007
pH 10 Buffer (blue)	582525	566006	582824	3010
pH 12.45				

8. FILLING SOLUTIONS

Description	Quantity	Part No.
Combination Electrode Filling Solution or Ag/AgCl Reference Electrode Filling Solution (4M KCl/AgCl saturated: to be used with Ag/AgCl Internals)	4-pack of 100 mL bottles	566467
Reference Electrode Filling Solution (saturated KCl to be used with Calomel Internals)	4-pack of 100 mL bottles	566468
Electrode Soaking Solution	4-pack of 100 mL bottles	566576
Salt Bridge Solution, Contains Sodium Nitrate and Sodium Acetate	4-pack of 100 mL bottles	566469
Filling Solution, 1M, KCl Saturated with AgCl (Star-Series electrodes only)	4-pack of 100 mL	598943

9. pHI START-UP KIT:

39831 Electrode, Cable, Thermocompensator, Sample Buffers, Filling solution — Part No. 123135

10. pHI STAND LAB ORGANIZER — 123136

11. pHI DELUXE FIELD CASE — 123128

12. pHI SOFT CASE — 123127

13. pHI MOUNT, WALL/SHELF BRACKET — 592190

FOR PRICE AND DELIVERY INFORMATION, CALL 1-800-742-2345.

BATTERY REPLACEMENT

Your ϕ10, 11, or 12 is powered by two 3.6 volt lithium batteries. Expected battery life is over 1,000 hours of continuous operation. Replacement batteries can be obtained by ordering Part No. 945574 from your local Beckman office. (In U.S. call 1-800-742-2345.)

Acceptable replacement batteries are also available on a worldwide basis:

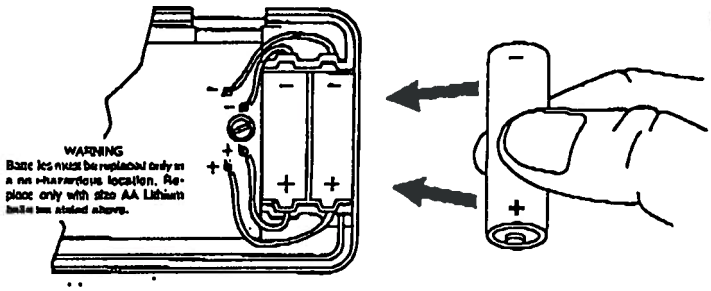
Mfr	Part No.
Electrochem Industries	38940-TC
Power Conversion Inc.	TO6-41
Saft Advanced Battery Div.	LS6
Tadiran	TL-2100 AA/S

Local suppliers may be found in your telephone directory.

> Note that these batteries are 3.6 volt lithium cells. Do not attempt to replace them with 1.5 volt alkaline or carbon-zinc cells. Replace only with the batteries stated above.

If instrument display indicates low battery voltage  or if display is blank when instrument is turned on, batteries should be replaced:

1. Remove 2 Phillips screws and bottom cover from instrument.
2. Lift out old batteries.
3. Note (+) and (–) markings in battery compartment.
4. Check (+) and (–) markings on batteries and insert as shown:



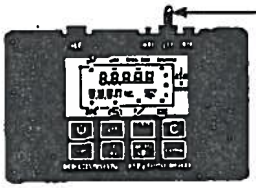
5. Be sure to keep fingers off of battery contacts and battery terminals. Only hold battery as shown.
6. Replace back cover and screws.

> IMPORTANT: A "BREAK-IN" PERIOD OF UP TO 30 MINUTES IS REQUIRED WHEN SOME NEW LITHIUM BATTERIES ARE FIRST PLACED INTO SERVICE. DURING THIS PERIOD, THE LOW BATTERY SYMBOL AND SOME "GHOSTING" MAY APPEAR ON THE DISPLAY. IF SO, LEAVE INSTRUMENT ON FOR 20–30 MINUTES AND THEN PRESS [C]. THE LOW BATTERY SYMBOL AND "GHOSTING" SHOULD DISAPPEAR.

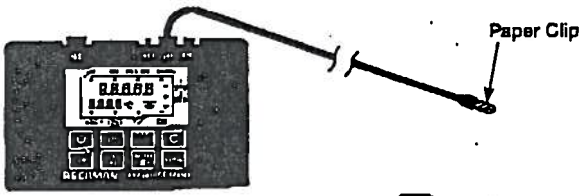
TROUBLESHOOTING PROCEDURE

1. Disconnect electrode cable(s) from instrument. Press [ⓘ] to turn on instrument, then press [C] to clear. Display should show [Cle AUTO]. If not, replace batteries per BATTERY REPLACEMENT, above. If instrument is still inoperative, call Service Hot Line: 1-800-662-6217.

2. Insert one end of a paper clip into the small hole in the center of the "pH" input connector. Hold the other end of the clip to the inside barrel of the same connector as shown.



3. Press [pH], then [STD]. The display should lock at pH 7.00, indicating a one-point standardization.
   a. If instrument passes test, go to Step 4.
   b. If instrument fails test, call Service Hot Line: 1-800-662-6217.
4. Reconnect pH electrode cable to "pH" input connector. Short the input connector of the cable.



   Press [pH] and then [STD]. Display should lock at pH 7.00. Press [pH], then remove paper clip. Reading should drift.
   a. If instrument passes test, go to Step 5.
   b. If instrument fails test, call Beckman Electrochemistry Applications:
      1-800-854-8057 Outside California
      714-871-4848 Within California
5. Reconnect pH electrode(s). Immerse electrode(s) in pH 4 buffer and perform one-point standardization. Then immerse electrode(s) in pH 10 buffer and take pH reading. At 25°C, the reading should be between 9.7 and 10.1 pH.
   a. If the test is passed, the pH meter, cable, and electrode(s) are functioning properly.
   b. If test is failed, the pH electrode(s) must be rejuvenated or replaced. The electrode rejuvenation procedure is given in the electrode instruction sheet. After rejuvenation, retest per Step 5, above.

SPECIFICATIONS

INSTRUMENT BECKMAN PART NO.	pHI 10 123132	pHI 11 123133	pHI 12 123134
pH MEASUREMENT			
Range	0 to 15.99 pH	0 to 15.99 pH	0 to 15.99 pH
Resolution (Selectable)	0.01, 0.1 pH unit	0.01, 0.1 pH unit	0.01, 0.1 pH unit
Relative Accuracy	±0.01 pH	±0.01 pH	±0.01 pH
Auto Read Mode	0.1 pH Resolution: Display locks after reading is stable within 1.0 mV for 4 seconds. 0.01 pH Resolution: Display locks after reading is stable within 0.5 mV for 8 seconds.		
Buffers Recognized by Instrument: 1.68, 4.00, 7.00, 10.01, 12.45 pH.			
MILLIVOLT MEASUREMENT			
Range	—	−999.9 to +999.9 mV	−999.9 to +999.9 mV
Resolution	—	0.1 mV	0.1 mV
Accuracy	—	±0.2 mV ±0.02% of reading, relative mV	±0.2 mV ±0.02% of reading, relative mV
Auto Read Mode	—	Display locks after reading is stable within 0.5 mV for 8 seconds.	
CONCENTRATION MEASUREMENT			
mV Accuracy	—	—	±0.1 mV
Auto Read Mode	—	—	Display locks after reading is stable within 0.25 mV for 8 seconds.
Useable Standard Values	—	—	Two values, in any desired units, selected from the following: 1.0, 2.5, 5.0, 10, 25, 50, 100, 250, 500, and 1000.

TEMPERATURE MEASUREMENT (ALL MODELS)

Range: −5°C to 100°C
Resolution: 0.1°C
Accuracy (with Beckman 598115 Probe): ±0.5°C

MISCELLANEOUS (ALL MODELS)

Input Connections:
1. BNC input for pH, mV, and concentration.
2. 2-mm pin connector for reference electrode.
3. Miniature phone jack for Beckman 598115 Automatic Temperature Compensator.

Operating Temperature: 15°C to 40°C, ambient, non-condensing.
Power Source: Two lithium cells, 3.6 volts each, AA Size.

Error Indications:
1. Input overvoltage (all modes)
2. Temperature compensation non-functional
3. Low batteries
4. Questionable electrode/standardization.

Size: 5.2 inches × 3.8 inches × 1.3 inches.

HERCULES

Interoffice Memo

July 23, 1999

PLANT NOTICE

ELECTRICAL POWER FAILURE
(Regulatory Compliance)

If electrical power is required, in order to maintain compliance with the conditions and prohibitions of our wastewater permits, the permitee shall either:

a) Provide an alternate power source to operate the wastewater control facilities (including all lift stations and sumps); or, if such alternative power is not in existence, and no date for its implementation appears in the permit;

b) HALT, REDUCE, OR OTHERWISE CONTROL PRODUCTION AND/OR ALL WASTEWATER FLOWS UPON REDUCTION, LOSS, OR FAILURE OF THE PRIMARY SOURCE OF POWER TO THE WASTEWATER CONTROL FACILITIES.

Our vision is for each area to document compliance with option "b", based upon process knowledge.

Charles S. Jordan
Environmental Coordinator

CSJ/vrf

Hattiesburg - Work Procedures General Operations	Status: ○ Maintenance ● Work
TITLE: Loss of Power - Shutdown Procedure	ISSUED: 01/18/2000
DOCUMENT NUMBER: Water Treatment--1002	REVISION: 0
DOCUMENT REFERENCE:	OWNER: E.R. Harvell

1.0 Scope

1.1 This work instruction establishes the procedure for monitoring and operating the Waste Treatment area and associated auxiliary facilities including #6 Lift station during anticipated and/or actual loss of electrical power incidents.

2.0 Application

2.1 This work instruction applies to those persons having responsibilities under this procedure.

5.0 Instruction

5.1 Responsibilities

5.1.1 The Operating Personnel(Waste Treatment and Power House) are responsible for ensuring compliance with this work instruction.

5.2 Operating Procedure

5.2.1 In anticipation of a loss of electrical power (i.e. a storm is approaching or a climatic event has been announced), the operator is to initiate proactive steps to lower the levels in the impoundment basin to the minimum levels possible to obtain as much "freeboard" as possible in the basin.

5.2.2 In the event of loss of electrical power in the area affecting the operation of #6 lift station and/or the impoundment basin, sump, and associated facilities, the operator is to make an immediate assessment of the containment levels and potential problems that made be presented as a result of the loss of power. After the assessment has been made and it is apparent that the loss of power

may cause overflow of contaminated materials into uncontaminated areas, all contributing operations including Zeon shall be shutdown until the loss of power has been restored.

Note: The general guidelines for action are. If the impoundment basin has reached a level of 6"(approx. 2 hour holding) from the top, the operator shall notify all the operating departments (including Zeon) that an alert exists and to take appropriate steps to reduce their wastewater output. If the impoundment basin reaches a level of 3"(approx. 1 hour holding) from the top, then the operator shall notify all operating departments (including Zeon) to shutdown contributing operations immediately.

End of Document

STANDARD OPERATING PROCEDURES REVISED: 1/00
SECTION: Emergency Shut Down

Emergency Shutdown Procedures

It is imperative that during an emergency that a rapid, but safe shutdown sequence be followed to prevent negative impact to employees, environment, equipment, and product. The intent is to minimize secondary effects from and emergency situation. Specific emergency conditions are as follows:

1. Electric Power Off
2. Lift Station #3 Failure

1. Electric Power Off

1.1. Description

1.1.1. Because of the loss of Power to the area, Lift Station #3 will become inoperative causing potential overflow. To reduce the chance of overflow, it is imperative that as much as possible process water to the lift station be avoided. The major load of water to the lift station is if catalyst regeneration is being performed.

1.2. Shut Down Sequence.

1.2.1. Turn off all water to the catalyst regeneration area.

2. Lift Station #3 Failure

2.1. Description

2.1.1. In the event of a pump, electrical, or instrumentation failure at Lift Station #5, the situation is to be treated similar to the "Electrical Power Off" situation in #1 (above) except the Power House Operator is to be notified to not perform any blowdowns until further notice.

2.2. Shut Down Sequence.

2.2.1. Turn off all water to the catalyst regeneration area

2.2.2. Notify the PowerHouse Operator of the problem at #3 Lift Station and instruct the Operator to not perform any boiler blowdowns until the problem is corrected.

Emergency Shutdown Procedures

It is imperative that during an emergency that a rapid, but safe shutdown sequence be followed to prevent negative impact to employees, environment, equipment, and product. The intent is to minimize secondary effects from and emergency situation. Specific emergency conditions are as follows:

1. Electric Power Off
2. Lift Station #5 Failure
3. Excessive Rain Fall

1. Electric Power Off

1.1. Description

1.1.1. Because of the loss of Power to the area, Lift Station #5 will become inoperative causing potential overflow. To reduce the chance of overflow, it is imperative that as much as possible process water to the lift station be avoided. Processes to be shut down are the vacuum system to the Nitrile still.

1.2. Shut Down Sequence.

1.2.1. Turn off the steam and water valves to the jets.

2. Lift Station #5 Failure

2.1. Description

2.1.1. In the event of a pump, electrical, or instrumentation failure at Lift Station #5, the situation is to be treated similar to the "Electrical Power Off" situation in #1 (above).

2.2. Shut Down Sequence.

2.2.1. Place the still into total reflux.

2.2.2. Turn off the steam and water valves to the jets.

3. Excessive Rain Fall

3.1. Description

3.1.1. In the event of excessive rainfall, Lift Station #5 pump capacities may not be able to keep up with the demand. The operator will be alarmed by the high level alarm to indicate when a problem exists. If this situation occurs, the amount of effluents going to the lift station needs to be reduced.

3.2. Shut Down Sequence

3.2.1. Place the still into total reflux.

3.2.2. Turn off the steam and water valves to the jets.

Emergency Shutdown Procedures

It is imperative that during an emergency that a rapid, but safe shutdown sequence be followed to prevent negative impacts to employees, environment, equipment, and product. The intent is to minimize secondary effects from an emergency situation. Specific emergency conditions are as follows:

1. Electric Power Off But Steam Still On
2. Loss of 90 PSIG Steam Supply
3. Loss of 300 PSIG Steam Supply
4. Loss of Sump Instrumentation or Mechanical Equipment
5. Loss of Low Pressure of Cooling Water

1. Electric Power Off But Steam Still On

1.1. Description

1.1.1. Because of the loss of power in the area would interrupt the function of the caustic pumps, agitator, and on-line Ph measurements, the shut down of equipment creating an inflow to the sump must be conducted as soon as it is safe to do so.

1.2. Shut Down Sequence.

1.2.1. Turn off water to the vent scrubber.

1.2.2. Close T-31 pump discharge valve.

1.2.3. Close T-23 pump discharge valve.

1.2.4. Valve off outlet line from T-30.

1.2.5. Valve off back of T-26 coming from T-25.

1.2.6. Valve off Hydrolyzer steam sparge and purge line to Decomposer.

1.2.7. Valve off feed to the Hydrolyzer, Hydrolyzer feed pump, and T-25 pump. Cut off water to T-25 and the Hydrolyzer.

1.2.8. Valve water out of Decomposer.

1.2.9. Valve off evaporator feed (Poly-Pale and Melhi).

1.2.10. Drain water off T-116 as necessary to keep its level out of the vent. Check and valve off if necessary to keep oils from siphoning into the sump.

1.2.11. Valve off under T-20 and the rosin valve at the mixer. Then, blow out the line to the sample drum.

1.2.12. Check with supervisor to determine when electric power will be restored. If power will be off more than three hours, drain the evaporators. If power will be off more than four hours, blow out from T-31 and drain the Heat-Treatment Unit, also.

1.2.13. Valve off and blow out lines from tanks, tank cars or trucks, melter, heat-treatment,

Melhi unit, and anywhere else rosin was being transferred.

1.2.14. Valve off Hydrolyzer coil steam.

1.2.15. Turn off Karbate cooling water supply.

1.3. Flow Verification

1.3.1. Check the sump to make sure the flow out of the sump has been minimized.

2. Loss of 90 PSIG Steam Supply

2.1. Description

2.1.1. Because of the loss of 90 psig steam in the area would be detrimental to Poly-Pale quality, the shut down of the Hydrolyzer and evaporators must be conducted as soon as it is safe to do so.

2.2. Shut Down Sequence

2.2.1. Close the manual Hydrolyzer steam sparge valve at the Hydrolyzer and adjust controller to quiet relief valve.

2.2.2. Shut down Poly-Pale Evaporator Unit.

2.2.3. Valve off steam to all three Karbate evaporators. Double check valving.

2.2.4. Find out approximately how long steam will be off. Notify area supervision.

2.2.4.1. If steam is not expected to be back on within 30 minutes, hook up tubing to put 150 psig steam into the 90 psig header to keep rosin lines from freezing. The 150 psig steam would have to be regulated to 90 psig before using on Karbate evaporators or on the Hydrolyzer sparge or coil.

2.2.4.2. If evaporators are to stay down, shut down the other building units except continue running the Melhi evaporators as long as there is feed solution and toluene storage room.

2.2.4.3. If Karbate evaporators are to be started with 150 psig steam, set controllers back to 5 psig and bring up gradually because evaporator pressure will be almost twice as high as with 90 psig steam.

3. Loss of 300 PSIG Steam Supply

3.1. Description

3.1.1. Because of the loss of 300 psig steam in the area detrimental to rosin plugging, the shut down of the operation is essential.

3.2. Shut Down Sequence

3.2.1. Shut off and valve off both evaporators feed pumps (Poly-Pale and Melhi).

3.2.2. Valve off behind T-26 coming from T-25.

3.2.3. Valve off under T-31 and the outlet valves from T-30.

3.2.4. Shut down and valve off all other building units as on a temporary shutdown.

3.2.5. Shut down melter, car pumping, and any pumping from tanks T-106, T-108, T-119, T-120, and T-130. The area across the railroad from the Poly-pale Processing Unit will get cold.

3.2.6. Close the main 300 psig steam valve (over street) and put 90 psig steam in the 150 psig steam header from the crossover in the front of the building on the second floor. Open the 300 to 150 psig regulating valve by-pass so 90 psig steam will also get into the 300 psig header.

3.2.7. Find out how long steam will be off. Notify area supervision. If 300 psig will be off over three hours, drain the evaporators. If it will be off more than four hours, drain the Heat Treatment Unit.

3.2.8. Complete shutting down all units but leave T-116 pump running to keep water out of vent system. Check to be sure oils don't siphon into the sump.

4. Loss of Sump Instrumentation or Mechanical Equipment

4.1. Description

4.1.1. The sump is a critical piece of the Poly-Pale process to ensure the Plant stays within environmental control. If at anytime there is an interruption to the sump operation such as agitation or Ph control equipment, the equipment must be shut down.

4.2. Shut Down Sequence

4.2.1. Turn off water to the vent scrubber.

4.2.2. Close T-31 pump discharge valve.

4.2.3. Close T-23 pump discharge valve.

4.2.4. Valve off outlet line from T-30.

4.2.5. Valve off back of T-26 coming from T-25.

4.2.6. Valve off Hydrolyzer steam sparge and purge line to Decomposer.

4.2.7. Valve off feed to the Hydrolyzer, Hydrolyzer feed pump, and T-25 pump. Cut off water to T-25 and the Hydrolyzer.

4.2.8. Valve water out of Decomposer.

4.2.9. Valve off evaporator feed (Poly-Pale and Melhi).

4.2.10. Drain water off T-116 as necessary to keep its level out of the vent. Check and valve off if necessary to keep oils from siphoning into the sump.

4.2.11. Valve off under T-20 and the rosin valve at the mixer. Then, blow out the line to the sample drum.

4.2.12. Check with supervisor to determine when electric power will be restored. If power will be off more than three hours, drain the evaporators. If power will be off more than four hours, blow out from T-31 and drain the Heat-Treatment Unit, also.

4.2.13. Valve off and blow out lines from tanks, tank cars or trucks, melter, heat-treatment, Melhi unit, and anywhere else rosin was being transferred.

4.2.14. Valve off Hydrolyzer coil steam.

4.2.15. Turn off Karbate cooling water supply.

4.3. Flow Verification

4.3.1. Check the sump to make sure the flow out of the sump has been minimized.

5. Loss or Low Pressure of Cooling Water

5.1. Description

5.1.1. Because cooling water for pumps and heat exchanges is critical to the corrosion protection

and safety of the Plant, as well Poly-Pale quality, it is imperative that the evaporators, rosin flow to the mixer, and Hydrolyzer be shut down.

5.2. Shut Down Sequence

5.2.1. Shut down and valve off from compressors.

5.2.2. Shut down Poly-Pale and Melhi evaporators.

5.2.3. Shut down mixer.

5.2.4. Shut down Hydrolyzer and the remainder of the process.

5.2.5. Find out how long water will be off and notify area supervisor.

002022 Hercules Incorporated

AI NAME: Hercules Inc

BRANCH: Chemical Branch

COUNTY: Forrest

REGION: SRO

SIC 1: 2822

Physical Address

Line 1: 613 West 7th Street
Line 2:
Line 3:
City: Hattiesburg
State: MS
Zip: 39401

Mailing Address

Line 1: 613 West 7th Street
Line 2:
Line 3:
City: Hattiesburg
State: MS
Zip: 39401

Locational Information

Latitude: **Longitude**
Section: **Township:** **Range:**

Historic Names, Active Permit Numbers, and Other Associated IDs

RELATION or PERMIT TYPE	ALT/HISTORIC ID	ALT / HISTORIC NAME	START DATE
Air-AIRS AFS	03500001	Hercules Inc	06/11/1991
Air-State Operating	080000001	Hercules Inc	06/11/1991
Air-Title V Operating	080000001	Hercules Inc	07/14/2000
Air-Title V Operating	080000001	Hercules Inc	09/15/2000
Air-Title V Operating	080000001	Hercules Inc	11/13/1998
GP-Sara Title III	MSR110153	Hercules Inc	10/17/1997
Hazardous Waste-EPA ID	MSD008182081	Hercules Inc	10/12/2000
Official Site Name	2022	Hercules Incorporated	06/11/1991
Water-NPDES	MS0001830	Hercules Inc	10/22/1991
Water-NPDES	MS0001830	Hercules Inc	09/30/1997
Water-NPDES	MS0001830	Hercules Inc	09/29/1986
Water-Pretreatment	MSP091286	Hercules Inc	03/12/1999

Water Information

BASIN	RECEIVING STREAMS
Pascagoula River Basin	1.)
	2.)
	3.)
	4.)

Staff to AI Assignments

002022 Hercules Incorporated

MDEQ STAFF	FUNCTIONAL AREA
Cook, Toby	Permitting, Branch Manager
Crawford, Louis	Permitting, Permit Writer
Sumrall, Rick	Compliance, Management
Patton, Jan	Compliance, Staff
Patton, Jan	Enforcement

Related People Information

PERSON NAME	REALTIONSHIP
Jordan, Charles	Is Air Permit Contact For
Jordan, Charles	Is Contact For
Langhans, Walter	Is Application Signatory for