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Dow U.S.A.

The Dow Chemical Company
P.O. Box 150
Plaquemine, Louisiana 70765-0150

August 20, 1992

HAND DELIVERED

Mr. Allyn M. Davis, Director
Hazardous Waste Division
U.S. Environmental Protection Agency
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

COMPLIANCE TEST NOTIFICATION
VINYL II PLANT BOILERS F-410 AND F-420
THE DOW CHEMICAL COMPANY,
LOUISIANA DIVISION
LAD008187080

Dear Mr. Davis:

Dow received a hazardous waste permit on May 19, 1989 for its facility located in Plaquemine, Louisiana. In addition to the previously permitted activities, Dow operates four existing industrial boilers which burn hazardous wastes and which are now operating under the interim status provisions of the new Boiler and Industrial Furnace rules.

On August 21, 1991 we submitted a Certification of Pre-compliance for the four boilers in the Louisiana Division in compliance with these regulations. Today, we are submitting Certifications of Compliance as required under 40 CFR 266.103(c) for boilers F-410 and F-420, which are located in our Vinyl II plant. Per approval granted by EPA in a letter dated August 11, 1992, we are submitting data from unit F-410 in lieu of additional testing on identical boiler system F-420.

If there should be any questions regarding this matter please call Edward Anthony at (504)382-4044 or me at (504)389-6131.

Sincerely,

Stanley G. Cole
Environmental Manager

cc: Glenn Miller, LDEQ

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

AUG 11 1992

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AUG 21 1992

ENVIRONMENTAL SERVICES

Mr. Stanley G. Cole, Environmental Manager
DOW Chemical Company
Louisiana Division
P.O. Box 150
Plaquemine, Louisiana 70765-0150

Re: Approval of request to use compliance test data from one boiler
in lieu of testing an additional similar onsite boiler

Dear Mr. Cole:

This letter is in response to the request by DOW Chemical Company in Plaquemine, Louisiana, to use compliance test data from one boiler in lieu of conducting compliance tests on an additional similar onsite boiler under 40 CFR §266.103(c)(3) of the Boiler and Industrial Furnace (BIF) Rule.

According to 40 CFR §266.103(c)(3), the authorized agency shall provide a written approval to use compliance test data in lieu of testing a similar unit if the hazardous wastes, the devices, and the operating conditions are sufficiently similar, and the data from the compliance test is adequate to meet the conditions specified to certify compliance. We have reviewed the information submitted and have determined the boilers at DOW Chemical to be similar. Based on the following understanding, the request is approved.

A compliance test will be done on Boiler F-410 in accordance with all applicable requirements in the BIF Rule. The emission limits and operating parameters established for Boiler F-410 during the compliance test will apply directly to the remaining boiler and a complete and accurate Certification of Compliance must be submitted to the Environmental Protection Agency no later than August 21, 1992.

Please be advised any noncompliance demonstrated from either the testing or the Certification of Compliance for the fully tested boiler may result in a loss of authorization to burn hazardous waste in all boilers.

Sincerely yours,

Allyn M. Davis, Director
Hazardous Waste Management Division (6H)

cc: Ross Williams, LDEQ

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F-410

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COMPLIANCE CERTIFICATION FORM 1 (CC-1)
GENERAL FACILITY AND TESTING INFORMATION

☒ Initial Certification ☐ Revised Certification ☐ Recertification

1. EPA Facility I.D. Number:	LAD 008187080
2. Facility Name	The Dow Chemical Company Louisiana Division
Contact Person:	Stanley G. Cole Environmental Manager
Telephone Number:	(504) 389-6131
Facility Address:	The Dow Chemical Company P.O. Box 150 Plaquemine LA 70765
3. Type of boiler / industrial furnace:	Fire Tube Boiler F-410 Vinyl II Plant
4. Person responsible for conducting compliance test: (Attach statement of qualifications)	David Martin Air Quality Department Manager
Telephone Number:	(205) 271-1444
Company Name:	CH2M Hill
Address:	2567 Fairlane Drive Montgomery AL 36116
5. Date(s) of compliance test:	July 7 - 9, 1992
6. Person responsible for QA/QC:	Clinton Hunt
Title:	Senior Environmental Chemist The Dow Chemical Company
Telephone Number:	(504) 389-1676
Attach a statement certifying that procedures prescribed in QA/QC plan submitted with Compliance Test Notification Form 3 (CTN-3) have been followed, or a description of any changes and an explanation of why changes were necessary.	

I certify under penalty of law that this information was prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gathered and evaluated the information and supporting documentation. Copies of all emissions tests, dispersion modeling results, and other information used to determine conformance with the requirements of §266.103(c) are available at the facility, and can be obtained from the facility contact person listed above. Based on my inquiry of the person or persons who manages the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I also acknowledge that the operating conditions established in this certification pursuant to §266.103(c)(4)(iv) are enforceable limits at which the facility can legally operate during interim status until (1) a revised certification of compliance is submitted or (2) an operating permit is issued.

Signature:  Date: August 20, 1992

Title: General Manager, Louisiana Division

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COMPLIANCE CERTIFICATION FORM 2 (CC-2)

DEVIATIONS FROM SUBMITTED NOTIFICATION OF COMPLIANCE TEST

1. Were there any changes in the unit configuration prior to or during testing that would alter any of the information submitted on Form CTN-2 of the unit's Notification of Compliance Test?
 Yes X No

If yes, describe these changes and why they were necessary and attach an amended Form CTN-2 describing the unit as actually tested. (Attach additional sheets if necessary).

2. Were there any changes in the planned test conditions prior to or during testing that alter any of the information submitted on Form CTN-3 of the unit's Notification of Compliance Test?
 X Yes No

If yes, describe these changes and why they were necessary and attach an amended Form CTN-3 describing test conditions. (Attach additional sheets if necessary).

The original submittal specified three test conditions for this unit. The first two test conditions were designed to show compliance with all applicable pre-compliance limits while resolving conflicting parameters of maximum thermal input and maximum chlorine load. The plan was to augment the composition of the process vent feed to provide a high BTU load in Test Condition 1 and a high chlorine load in Test Condition 2. However, this was found to be an impractical operation. Instead, a way was devised to produce a vent feed with a composition intermediate between high BTU content and high chlorine content for use in Test Condition 1. Test Condition 2 was, therefore, set aside. Test Condition 3 to demonstrate compliance with §266.103(g) is retained.

Please see comments on the following page regarding the amount of ash fed during the compliance test.

Finally, some minor changes in the original submittal were discussed in a letter to E.P.A. on June 5, 1992. A copy of the letter is attached.

COMMENTS REGARDING THE AMOUNT OF ASH FED

Introduction:

In the Certification of Pre-compliance, the allowable limit for ash in the hazardous waste feeds to units F-410 and F-420 was set at 1.99 pounds per hour. Based on the waste characterization for the T-400 hazardous waste feed stream established for Pre-compliance, this limit should not have been exceeded during the Compliance Tests. However, data gathered during the Compliance Test show that the rate of ash fed with this stream was much higher than set in the Certification of Pre-compliance. In spite of the high ash feed rate, emissions of particulate were well below the allowable limit set in the regulations. Therefore, we are establishing this new limit for allowable ash feed to the units in lieu of submitting a new Pre-compliance Certification.

Background:

Preliminary testing for the Certification of Pre-compliance showed that unit F-410 was capable of emissions in excess of the allowable regulatory limit at high hazardous waste feed rates. A large part of these emissions are salt, carried over from the caustic scrubber as an entrained mist.

Particulate emissions were measured from the unit in the presence and in the absence of hazardous waste feed in order to determine the significance of salt emissions to the total emissions. A total allowable emissions rate was calculated from the stack velocity (based on an allowable limit of 0.08 gr./dscf, corrected to 7% oxygen), and the salt emissions were subtracted from this value to determine the allowable non-salt emissions rate. In order to assure compliance, the very conservative assumption was made that all ash in the feed would be emitted unattenuated as particulate matter. The flow rate limit for hazardous waste to the unit was set based on these ash feed limits.

Basis for New Ash Feed Limits

Emissions data gathered during the Compliance Test show that the assumption of unattenuated emission of ash as particulate is too conservative. Particulate emissions were more than twenty (20) times lower than the regulatory limit. In fact, total particulate emissions were lower than the originally estimated salt emissions, indicating that particulate removal by the unit is essentially total.

Since the preliminary Pre-compliance testing was completed, the control systems for both of these boilers have been converted over to new, state-of-the-art systems. Improved control may be responsible for the improvement in emissions. The air pollution control devices on units F-410 and F-420 were actually designed for

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replacement boilers twice the size of the existing units. Their ability to capture particulate is more than adequate to assure low emissions of "true particulate." Salt carry-over as entrained mist is the result of a lack of de-mister pads on the scrubbers.

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COMPLIANCE CERTIFICATION FORM 3 (CC-3) **SUMMARY OF COMPLIANCE TEST EMISSIONS**

Complete a separate form for each test condition (if more than 1) under each mode of operation for each unit.

1. Use the same identification codes as on Form CTN-3 for the following:

Unit # 1 ; Mode (letter) A ; Test Condition (1,2 or N/A)^a 1

Brief Description of Mode and Test Condition:

2. Purpose of Test (e.g. Demonstrate compliance with PM, metals, HCl, Cl₂ emission limits when firing sludges at maximum feed rate and flue gas flow): *Demonstrate compliance with PM, HCl/Cl and chromium VI standards at maximum thermal input rate and maximum chlorine load.*

3. Attach a complete copy of QA/QC results for each test.

4. Test Results:	Run No.			Avg. ^b	Allowable Emission Rate ^c	OK ^d
	1	2	3			
Date (month / day / year)	7/7/92	7/8/92	7/8/92			
Time Run Started (hr:min)	16:08	14:00	17:52			
Total Run Time (hr:min)	2:01	2:01	2:00			
Sootblow Time (mins) ^e			NA			
CO (ppmv @ 7% O ₂)						
Run Avg.	15.2	18.2	15.6			
Highest 60-min rolling avg.	45.3	18.2	17.8	27.1		
HC (ppmv @ 7% O ₂)						
Run Avg.	NA	NA	NA			
Highest 60-min rolling avg.	NA	NA	NA	NA		
PM emissions (gr / dscf)	0.0028	0.0039	0.0036	NA	0.08	Y
HCl emissions (g/hr)	122	196	249	NA	2270	Y
Cl ₂ emissions (g/hr)	7.8	5.9	5.2	NA	90.8	Y
Antimony (g/hr)	Metals	are	Adjusted	Tier1	3.63	Y
Arsenic (g/hr)					0.35	Y
Barium (g/hr)					1.82	Y
Beryllium (g/hr)					0.00	Y
Cadmium (g/hr)					1.27	Y
Chromium (g/hr)	0.05	0.03	0.01	NA	0.26	Y
Lead (g/hr)	Metals	are	Adjusted	Tier1	4.09	Y
Mercury (g/hr)					9.99	Y
Silver (g/hr)					227.00	Y
Thallium (g/hr)					0.00	Y

- a. If facility conducted tests at only one set of test conditions for the stated mode enter N/A. If two sets of test conditions were run for the mode, fill out a separate form for each set of test conditions, identifying the test conditions (1 or 2) as on Form CTN-3.
- b. If soot blowing or other daily activity that increases the PM emission rate was incorporated into the testing, calculate average using equation provided in instructions.
- c. Allowable levels are the same as indicated on Form PC-4.
- d. Check if each non-sootblowing run and average are less than or equal to allowable.
- e. Indicate sootblowing time or other activity that was incorporated into the testing.

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COMPLIANCE CERTIFICATION FORM 3 (CC-3) **SUMMARY OF COMPLIANCE TEST EMISSIONS**

Complete a separate form for each test condition (if more than 1) under each mode of operation for each unit.

1. Use the same identification codes as on Form CTN-3 for the following:

Unit # 1; Mode (letter) A; Test Condition (1,2 or N/A)^a 3

Brief Description of Mode and Test Condition:

2. Purpose of Test (e.g. Demonstrate compliance with PM, metals, HCl, Cl₂ emission limits when firing sludges at maximum feed rate and flue gas flow): *Determine minimum allowable temperature for feeding hazardous waste per §266.103 (g).*

3. Attach a complete copy of QA/QC results for each test.

4. Test Results:	Run No.			Avg. ^b	Allowable Emission Rate ^c	OK ^d
	1	2	3			
Date (month / day / year)	7/9/92	7/9/92	7/9/92			
Time Run Started (hr:min)	10:50	14:56	15:58			
Total Run Time (hr:min)	1:00	1:00	1:00			
Sootblow Time (mins) ^e			NA			
CO (ppmv @ 7% O ₂)						
Run Avg.	40.6	31.7	26.1			
Highest 60-min rolling avg.	45.2	46.2	31.9	41.4		
HC (ppmv @ 7% O ₂)						
Run Avg.						
Highest 60-min rolling avg.						
PM emissions (gr / dscf)						
HCl emissions (g/hr)						
Cl ₂ emissions (g/hr)						
Antimony (g/hr)						
Arsenic (g/hr)						
Barium (g/hr)						
Beryllium (g/hr)						
Cadmium (g/hr)						
Chromium (g/hr)						
Lead (g/hr)						
Mercury (g/hr)						
Silver (g/hr)						
Thallium (g/hr)						

- a. If facility conducted tests at only one set of test conditions for the stated mode enter N/A. If two sets of test conditions were run for the mode, fill out a separate form for each set of test conditions, identifying the test conditions (1 or 2) as on Form CTN-3.
- b. If soot blowing or other daily activity that increases the PM emission rate was incorporated into the testing, calculate average using equation provided in instructions.
- c. Allowable levels are the same as indicated on Form PC-4.
- d. Check if each non-sootblowing run and average are less than or equal to allowable.
- e. Indicate sootblowing time or other activity that was incorporated into the testing.

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COMPLIANCE CERTIFICATION FORM 4 (CC-4) SUMMARY OF COMPLIANCE TEST OPERATING CONDITIONS

Complete a separate form for each run of a specified test condition, use same identification codes as on Forms CC-3 and CTN-3.

1. Unit #: 1 Mode: A Test Condition (1,2, or N/A): 1
Run No.: 1 Test Date: 7/7/92

2. Run Start Time (hr:min): 16:08 Run End Time (hr:min): 21:18

If there were any interruptions in sampling, discuss cause, duration, and impact on sampling:
See discussions, next page

3. Operating Conditions:

	Run Avg.	60-min. Avg. ^a
Max. Production Rate (gallons condensate per minute)	38.6	41.1
Max. PM Control Device Inlet Temp (°F) ^b	449	451
Max. Combustion Chamber Temp.(°F) ^b	1985	1993
APCS Operating Parameters (list applicable parameters, see §266.103(c)(1)(ix-xiii))	Run Avg.	60-min. Avg. ^c
Acid absorber liquid-to-gas ratio	3.99	3.97
Scrubber liquid-to-gas ratio	0.58	0.55
Scrubber fluid pH	7.92	7.75
Scrubber blow-down rate (gallons per minute)	81.6	79.9

4. Description of All Fuel, Raw Material, and Waste Feed Streams:^d

Stream No. ^e	1	2	3	4
Stream Type (e.g. coal, shale, sludge, liquid solvents, etc.)	liquid waste	fuel gas	process vents	chromium VI solution
Category (e.g. Fuel, Raw Material, Pumpable HW)	pumpable HW	fuel	vent stream	chromium VI spill source
Mass Feed Rate (g/hr)	751,869	115,575	634,606	4,989
Thermal Feed Rate (Btu/hr)	11.39MM	5.48MM	9.17MM	0
Ash Feed Rate (g/hr) ^f	11,278	0	0	10
Chlorine and Chloride (g/hr)	605,162	0	138,471	0
Antimony (g/hr)	0	0	0	0
Arsenic (g/hr)	0	0	0	0
Barium (g/hr)	0.107	0	0	0
Beryllium (g/hr)	0	0	0	0
Cadmium (g/hr)	0.013	0	0	0
Chromium (g/hr)	0	0	0	3.6
Lead (g/hr)	0.107	0	0	0
Mercury (g/hr)	0	0	0	0
Silver (g/hr)	0.535	0	0	0
Thallium (g/hr)	0	0	0	0

^a Indicate highest or lowest 60-minute rolling average as appropriate.

^b Not applicable if complying with Tier I or adjusted Tier I metals feed rate screening limits.

^c Indicate highest 60-minute rolling averages for maximum flue gas flow rate and, if chosen, maximum suspended solids content of scrubber water where applicable. Indicate lowest 60-minute averages for all other APCS parameters.

^d Owners/operators of furnaces monitoring metals concentrations in collected PM are not required to determine metals feed rates in non hazardous waste feed streams.

^e Copy form and add additional pages if more than four streams were fed during test.

^f Owners/operators of cement and light-weight aggregate kilns are not required to determine ash feed rates of feed streams

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Sampling Interruptions on Run 1 of Test Condition 1

Stack sampling was interrupted twice during the first run of Test Condition 1. The reasons for the interruptions are detailed below.

The first interruption occurred at approximately twenty (20) minutes into the run. Hazardous waste flow was shut off when the hourly rolling average value for hazardous waste feed flow exceeded its trip point value. The flow indicator for the hazardous waste feed had gone almost instantaneously to its full scale value just before the trip, and since the unit was operating at a flow rate close to this hourly rolling average trip point, the high flow signal was sufficient to raise the hourly rolling average value above the trip point. Sampling was immediately suspended when the flow tripped. The high flow signal was traced to a plugging problem on one of the legs of the differential pressure cell on the flow orifice. The problem was remedied and the unit was re-started. After the unit was allowed to reach steady state, stack testing was resumed. Total suspension of stack testing was two hours and thirty-seven minutes.

At approximately fifteen minutes after the run was re-started following the traverse change, a power loss in the field interrupted sampling for about twenty-six (26) minutes. Sampling resumed once this problem was addressed, and the run was not interrupted again.

The integrity of the stack sampling was not compromised by either of these two interruptions. Prior to the resumption of sampling following the first (most prolonged) interruption, the system was allowed to equilibrate and the hourly rolling averages were allowed to return to their steady-state values before sampling was resumed.

COMPLIANCE CERTIFICATION FORM 4 (CC-4) **SUMMARY OF COMPLIANCE TEST OPERATING CONDITIONS**

Complete a separate form for each run of a specified test condition, use same identification codes as on Forms CC-3 and CTN-3.

- Unit #: 1 Mode: A Test Condition (1,2, or N/A): 1
Run No.: 2 Test Date: 7/8/92
- Run Start Time (hr:min): 14:00 Run End Time (hr:min): 16:05

If there were any interruptions in sampling, discuss cause, duration, and impact on sampling:

3. Operating Conditions:

	Run Avg.	60-min. Avg. ^a
Max. Production Rate (gallons condensate per minute)	39.7	40.2
Max. PM Control Device Inlet Temp (°F) ^b	453	455
Max. Combustion Chamber Temp.(°F) ^b	2006	2012
APCS Operating Parameters (list applicable parameters, see §266.103(c)(1)(ix-xiii))	Run Avg.	60-min. Avg. ^c
Acid absorber liquid-to-gas ratio	3.99	3.97
Scrubber liquid-to-gas ratio	0.57	0.55
Scrubber fluid pH	7.74	7.56
Scrubber blow-down rate (gallons per minute)	80.3	79.1

4. Description of All Fuel, Raw Material, and Waste Feed Streams:^d

Stream No. ^e	1	2	3	4
Stream Type (e.g. coal, shale, sludge, liquid solvents, etc.)	liquid waste	fuel gas	process vents	chromium VI solution
Category (e.g. Fuel, Raw Material, Pumpable HW)	pumpable HW	fuel	vent streams	chromium VI spill source
Mass Feed Rate (g/hr)	745,132	77,307	680,619	4,800
Thermal Feed Rate (Btu/hr)	11.22MM	3.66MM	9.89MM	0
Ash Feed Rate (g/hr) ^f	15,126	0	0	10
Chlorine and Chloride (g/hr)	594,923	0	156,610	0
Antimony (g/hr)	0	0	0	0
Arsenic (g/hr)	0	0	0	0
Barium (g/hr)	0.106	0	0	0
Beryllium (g/hr)	0	0	0	0
Cadmium (g/hr)	0.013	0	0	0
Chromium (g/hr)	0	0	0	3.4
Lead (g/hr)	0.106	0	0	0
Mercury (g/hr)	0	0	0	0
Silver (g/hr)	0.532	0	0	0
Thallium (g/hr)	0	0	0	0

^a Indicate highest or lowest 60-minute rolling average as appropriate.

^b Not applicable if complying with Tier I or adjusted Tier I metals feed rate screening limits.

^c Indicate highest 60-minute rolling averages for maximum flue gas flow rate and, if chosen, maximum suspended solids content of scrubber water where applicable. Indicate lowest 60-minute averages for all other APCS parameters.

^d Owners/operators of furnaces monitoring metals concentrations in collected PM are not required to determine metals feed rates in non hazardous waste feed streams.

^e Copy form and add additional pages if more than four streams were fed during test.

^f Owners/operators of cement and light-weight aggregate kilns are not required to determine ash feed rates of feed streams

COMPLIANCE CERTIFICATION FORM 4 (CC-4) **SUMMARY OF COMPLIANCE TEST OPERATING CONDITIONS**

Complete a separate form for each run of a specified test condition, use same identification codes as on Forms CC-3 and CTN-3.

1. Unit #: 1 Mode: A Test Condition (1,2, or N/A): 1
Run No.: 3 Test Date: 7/8/92

2. Run Start Time (hr:min): 17:52 Run End Time (hr:min): 19:56

If there were any interruptions in sampling, discuss cause, duration, and impact on sampling:

3. Operating Conditions:

	Run Avg.	60-min. Avg. ^a
Max. Production Rate (gallons condensate per minute)	39.3	39.8
Max. PM Control Device Inlet Temp (°F) ^b	452	451
Max. Combustion Chamber Temp.(°F) ^b	1988	2,000
APCS Operating Parameters (list applicable parameters, see §266.103(c)(1)(ix-xiii))	Run Avg.	60-min. Avg. ^c
Acid absorber liquid-to-gas ratio	3.99	3.97
Scrubber liquid-to-gas ratio	0.56	0.55
Scrubber fluid pH	7.52	7.51
Scrubber blow-down rate (gallons per minute)	79.2	78.8

4. Description of All Fuel, Raw Material, and Waste Feed Streams:^d

Stream No. ^e	1	2	3	4
Stream Type (e.g. coal, shale, sludge, liquid solvents, etc.)	liquid waste	fuel gas	process vents	chromium VI solution
Category (e.g. Fuel, Raw Material, Pumpable HW)	pumpable HW	fuel	vent stream	chromium VI spill source
Mass Feed Rate (g/hr)	744,578	77,330	683,084	4,800
Thermal Feed Rate (Btu/hr)	11.54MM	3.67MM	8.25MM	0
Ash Feed Rate (g/hr) ^f	6,488	0	0	10
Chlorine and Chloride (g/hr)	587,736	0	138,939	0
Antimony (g/hr)	0	0	0	0
Arsenic (g/hr)	0	0	0	0
Barium (g/hr)	0.106	0	0	0
Beryllium (g/hr)	0	0	0	0
Cadmium (g/hr)	0.013	0	0	0
Chromium (g/hr)	0	0	0	3.4
Lead (g/hr)	0.106	0	0	0
Mercury (g/hr)	0	0	0	0
Silver (g/hr)	0.532	0	0	0
Thallium (g/hr)	0	0	0	0

^a Indicate highest or lowest 60-minute rolling average as appropriate.

^b Not applicable if complying with Tier I or adjusted Tier I metals feed rate screening limits.

^c Indicate highest 60-minute rolling averages for maximum flue gas flow rate and, if chosen, maximum suspended solids content of scrubber water where applicable. Indicate lowest 60-minute averages for all other APCS parameters.

^d Owners/operators of furnaces monitoring metals concentrations in collected PM are not required to determine metals feed rates in non hazardous waste feed streams.

^e Copy form and add additional pages if more than four streams were fed during test.

^f Owners/operators of cement and light-weight aggregate kilns are not required to determine ash feed rates of feed streams

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COMPLIANCE CERTIFICATION FORM 4 (CC-4) **SUMMARY OF COMPLIANCE TEST OPERATING CONDITIONS**

Complete a separate form for each run of a specified test condition, use same identification codes as on Forms CC-3 and CTN-3.

1. Unit #: 1 Mode: A Test Condition (1,2, or N/A): 3
Run No.: 1 Test Date: 7/9/92

2. Run Start Time (hr:min): 10:50 Run End Time (hr:min): 11:51

If there were any interruptions in sampling, discuss cause, duration, and impact on sampling:

3. Operating Conditions:

	Run Avg.	60-min. Avg. ^a
Max. Production Rate (gallons condensate per minute)	NA	NA
Max. PM Control Device Inlet Temp (°F) ^b	NA	NA
Minimum Combustion Chamber Temp. (°F) ^b	1566	1569
APCS Operating Parameters (list applicable parameters, see §266.103(c)(1)(ix-xiii))	Run Avg.	60-min. Avg. ^c

4. Description of All Fuel, Raw Material, and Waste Feed Streams:^d

Stream No. ^e	1	2	3	4
Stream Type (e.g. coal, shale, sludge, liquid solvents, etc.)	liquid waste	fuel gas	process vents	
Category (e.g. Fuel, Raw Material, Pumpable HW)	pumpable HW	fuel	vent stream	
Mass Feed Rate (g/hr)	747,211	82,033	101,796	
Thermal Feed Rate (Btu/hr)	11.98MM	3.89MM	1.32MM	
Ash Feed Rate (g/hr) ^f	24,658	0	0	
Chlorine and Chloride (g/hr)	577,486	0	18,069	
Antimony (g/hr)	0	0	0	
Arsenic (g/hr)	0	0	0	
Barium (g/hr)	0.107	0	0	
Beryllium (g/hr)	0	0	0	
Cadmium (g/hr)	0.013	0	0	
Chromium (g/hr) ^g	1.5	0	0	
Lead (g/hr)	0.107	0	0	
Mercury (g/hr)	0	0	0	
Silver (g/hr)	0.534	0	0	
Thallium (g/hr)	0	0	0	

^a Indicate highest or lowest 60-minute rolling average as appropriate.

^b Not applicable if complying with Tier I or adjusted Tier I metals feed rate screening limits.

^c Indicate highest 60-minute rolling averages for maximum flue gas flow rate and, if chosen, maximum suspended solids content of scrubber water where applicable. Indicate lowest 60-minute averages for all other APCS parameters.

^d Owners/operators of furnaces monitoring metals concentrations in collected PM are not required to determine metals feed rates in non hazardous waste feed streams.

^e Copy form and add additional pages if more than four streams were fed during test.

^f Owners/operators of cement and light-weight aggregate kilns are not required to determine ash feed rates of feed streams

^g All metals feed rates based on waste characterization; no analyses performed.

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COMPLIANCE CERTIFICATION FORM 4 (CC-4) **SUMMARY OF COMPLIANCE TEST OPERATING CONDITIONS**

Complete a separate form for each run of a specified test condition, use same identification codes as on Forms CC-3 and CTN-3.

1. Unit #: 1 Mode: A Test Condition (1,2, or N/A): 3
 Run No.: 2 Test Date: 7/9/92

2. Run Start Time (hr:min): 14:56 Run End Time (hr:min): 15:57

If there were any interruptions in sampling, discuss cause, duration, and impact on sampling:

3. Operating Conditions:

	Run Avg.	60-min. Avg. ^a
Max. Production Rate (gallons condensate per minute)	NA	NA
Max. PM Control Device Inlet Temp (°F) ^b	NA	NA
Minimum Combustion Chamber Temp.(°F) ^b	1574	1574
APCS Operating Parameters (list applicable parameters, see §266.103(c)(1)(ix-xiii))	Run Avg.	60-min. Avg. ^c

4. Description of All Fuel, Raw Material, and Waste Feed Streams:^d

Stream No. ^e	1	2	3	4
Stream Type (e.g. coal, shale, sludge, liquid solvents, etc.)	liquid waste	fuel gas	process vents	
Category (e.g. Fuel, Raw Material, Pumpable HW)	pumpable HW	fuel	wast stream	
Mass Feed Rate (g/hr)	746,321	140,704	101,928	
Thermal Feed Rate (Btu/hr)	11.85MM	6.67MM	1.43MM	
Ash Feed Rate (g/hr) ^f	20,151	0	0	
Chlorine and Chloride (g/hr)	592,870	0	22,006	
Antimony (g/hr)	0	0	0	
Arsenic (g/hr)	0	0	0	
Barium (g/hr)	0.107	0	0	
Beryllium (g/hr)	0	0	0	
Cadmium (g/hr)	0.013	0	0	
Chromium (g/hr) ^g	1.5	0	0	
Lead (g/hr)	0.107	0	0	
Mercury (g/hr)	0	0	0	
Silver (g/hr)	0.533	0	0	
Thallium (g/hr)	0	0	0	

^a Indicate highest or lowest 60-minute rolling average as appropriate.

^b Not applicable if complying with Tier I or adjusted Tier I metals feed rate screening limits.

^c Indicate highest 60-minute rolling averages for maximum flue gas flow rate and, if chosen, maximum suspended solids content of scrubber water where applicable. Indicate lowest 60-minute averages for all other APCS parameters.

^d Owners/operators of furnaces monitoring metals concentrations in collected PM are not required to determine metals feed rates in non hazardous waste feed streams.

^e Copy form and add additional pages if more than four streams were fed during test.

^f Owners/operators of cement and light-weight aggregate kilns are not required to determine ash feed rates of feed streams

^g All metals feed rates based on waste characterization; no analyses performed.

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COMPLIANCE CERTIFICATION FORM 4 (CC-4) **SUMMARY OF COMPLIANCE TEST OPERATING CONDITIONS**

Complete a separate form for each run of a specified test condition, use same identification codes as on Forms CC-3 and CTN-3.

1. Unit #: 1 Mode: A Test Condition (1,2, or N/A): 3
 Run No.: 3 Test Date: 7/9/92

2. Run Start Time (hr:min): 15:59 Run End Time (hr:min): 16:59

If there were any interruptions in sampling, discuss cause, duration, and impact on sampling:

3. Operating Conditions:

	Run Avg.	60-min. Avg. ^a
Max. Production Rate (gallons condensate per minute)	NA	NA
Max. PM Control Device Inlet Temp (°F) ^b	NA	NA
Minimum Combustion Chamber Temp.(°F) ^b	1581	1581
APCS Operating Parameters (list applicable parameters, see §266.103(c)(1)(ix-xiii))	Run Avg.	60-min. Avg. ^c

4. Description of All Fuel, Raw Material, and Waste Feed Streams:^d

Stream No. ^e	1	2	3	4
Stream Type (e.g. coal, shale, sludge, liquid solvents, etc.)	liquid waste	fuel gas	process waste	
Category (e.g. Fuel, Raw Material, Pumpable HW)	pumpable HW	fuel	waste stream	
Mass Feed Rate (g/hr)	746,589	77,262	101,319	
Thermal Feed Rate (Btu/hr)	11.96MM	3.66MM	1.37MM	
Ash Feed Rate (g/hr) ^f	15,678	0	0	
Chlorine and Chloride (g/hr)	578,628	0	21,095	
Antimony (g/hr)	0	0	0	
Arsenic (g/hr)	0	0	0	
Barium (g/hr)	0.107	0	0	
Beryllium (g/hr)	0	0	0	
Cadmium (g/hr)	0.013	0	0	
Chromium (g/hr) ^g	1.5	0	0	
Lead (g/hr)	0.107	0	0	
Mercury (g/hr)	0	0	0	
Silver (g/hr)	0.533	0	0	
Thallium (g/hr)	0	0	0	

^a Indicate highest or lowest 60-minute rolling average as appropriate.

^b Not applicable if complying with Tier I or adjusted Tier I metals feed rate screening limits.

^c Indicate highest 60-minute rolling averages for maximum flue gas flow rate and, if chosen, maximum suspended solids content of scrubber water where applicable. Indicate lowest 60-minute averages for all other APCS parameters.

^d Owners/operators of furnaces monitoring metals concentrations in collected PM are not required to determine metals feed rates in non hazardous waste feed streams.

^e Copy form and add additional pages if more than four streams were fed during test.

^f Owners/operators of cement and light-weight aggregate kilns are not required to determine ash feed rates of feed streams

^g All metals feed rates based on waste characterization; no analyses performed.

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COMPLIANCE CERTIFICATION FORM 5 (CC-5)

SUMMARY OF OPERATING AND FEED RATE LIMITS FOR A SPECIFIC MODE

1. Unit #: 1 Mode: A Run No.: 1-3 Test Date: 7/7/92 - 7/8/92

2. Operating Conditions:

Max. PM Control Device Inlet Temp (°F) ^{b,e}	452
Max. Combustion Chamber Temp.(°F) ^b	2002
Minimum Combustion Chamber Temp.(°F)	1575
APCS Operating Parameters (list applicable parameters, see §266.103(c)(1)(ix-xiii))	
Acid absorber liquid-to-gas ratio	3.97
Scrubber liquid-to-gas ratio	0.55
Scrubber fluid pH	7.61
Scrubber blow-down rate (gallons per minute)	79.3
Max. Production Rate (gallons condensate per minute)	40.4
Max. Total HW Feed Rate (g/hr)	747,193
Max. Total Pumpable HW Feed Rate (g/hr) ^b	747,193
Max. Total Chlorine and Chloride Feed Rate (g/hr)	740,614
Max. Total Ash Feed Rate (g/hr) ^d	10,974

3. Maximum Metals Feed Rates

	Total Feed Streams ^e	Total HW Feed Streams	Total Pumpable HW Feed Streams
Antimony (g/hr)	3.63	NA	3.63
Arsenic (g/hr)	0.35	NA	0.35
Barium (g/hr)	1.82	NA	1.82
Beryllium (g/hr)	0	NA	0
Cadmium (g/hr)	1.27	NA	1.27
Chromium (g/hr)	3.5	NA	3.5
Lead (g/hr)	4.09	NA	4.09
Mercury (g/hr)	9.99	NA	9.99
Silver (g/hr)	227	NA	227
Thallium (g/hr)	0	NA	0

4. CO, HC, and PM Limits

CO (ppmv @ 7% O ₂) ^{f,h}	100
HC (ppmv as propane @ 7% O ₂) ^{c,g,h}	NA
PM (gr/dscf @ 7% O ₂) ⁱ	0.08

^a Asterisk any parameter not determined under the primary test conditions.

^b Not applicable if complying with Tier I or adjusted Tier I metals feed rate screening limits..

^c If applicable, attach documentation that the increased cancer risk to the MEI from emissions of dioxins and furans is not greater than 1 in 100,000.

^d Not required for cement and light-weight aggregate kilns.

^e Not required for furnaces monitoring metals concentrations in collected PM.

^f If under Tier I, CO limit is 100 ppmv. If under Tier II, limit is the average over all runs of the HHA CO level for each run.

^h If under Tier I, HC limit is not applicable. If under Tier II 20 ppmv HC limit because of organic matter in raw material feedstocks, the interim HC and CO limits are the baseline limits proposed in the Part B permit application or the limits established by the Director as a condition of a time extension for certification of compliance.

ⁱ 0.08 gr/dscf or existing permit, whichever is more stringent.

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COMPLIANCE CERTIFICATION FORM 1 (CC-1)
GENERAL FACILITY AND TESTING INFORMATION

☒ Initial Certification ☐ Revised Certification ☐ Recertification

1. EPA Facility I.D. Number:	LAD 008187080
2. Facility Name	The Dow Chemical Company Louisiana Division
Contact Person:	Stanley G. Cole Environmental Manager
Telephone Number:	(504) 389-6131
Facility Address:	The Dow Chemical Company P.O. Box 150 Plaquemine LA 70765
3. Type of boiler / industrial furnace:	Fire Tube Boiler F-420 Vinyl II Plant
4. Person responsible for conducting compliance test: (Attach statement of qualifications)	David Martin Air Quality Department Manager
Telephone Number:	(205) 271-1444
Company Name:	CH2M Hill
Address:	2567 Fairlane Drive Montgomery AL 36116
5. Date(s) of compliance test:	July 7 - 9, 1992
6. Person responsible for QA/QC:	Clinton Hunt
Title:	Senior Environmental Chemist The Dow Chemical Company
Telephone Number:	(504) 389-1676
Attach a statement certifying that procedures prescribed in QA/QC plan submitted with Compliance Test Notification Form 3 (CTN-3) have been followed, or a description of any changes and an explanation of why changes were necessary.	

I certify under penalty of law that this information was prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gathered and evaluated the information and supporting documentation. Copies of all emissions tests, dispersion modeling results, and other information used to determine conformance with the requirements of §266.103(c) are available at the facility, and can be obtained from the facility contact person listed above. Based on my inquiry of the person or persons who manages the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I also acknowledge that the operating conditions established in this certification pursuant to §266.103(c)(4)(iv) are enforceable limits at which the facility can legally operate during interim status until (1) a revised certification of compliance is submitted or (2) an operating permit is issued.

Signature: 

Date: August 20, 1992

Title: General Manager, Louisiana Division

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COMPLIANCE CERTIFICATION FORM 2 (CC-2)

DEVIATIONS FROM SUBMITTED NOTIFICATION OF COMPLIANCE TEST

1. Were there any changes in the unit configuration prior to or during testing that would alter any of the information submitted on Form CTN-2 of the unit's Notification of Compliance Test?
 Yes X No

If yes, describe these changes and why they were necessary and attach an amended Form CTN-2 describing the unit as actually tested. (Attach additional sheets if necessary).

2. Were there any changes in the planned test conditions prior to or during testing that alter any of the information submitted on Form CTN-3 of the unit's Notification of Compliance Test?
 X Yes No

If yes, describe these changes and why they were necessary and attach an amended Form CTN-3 describing test conditions. (Attach additional sheets if necessary).

The original submittal specified three test conditions for this unit. The first two test conditions were designed to show compliance with all applicable pre-compliance limits while resolving conflicting parameters of maximum thermal input and maximum chlorine load. The plan was to augment the composition of the process vent feed to provide a high BTU load in Test Condition 1 and a high chlorine load in Test Condition 2. However, this was found to be an impractical operation. Instead, a way was devised to produce a vent feed with a composition intermediate between high BTU contents and high chlorine contents for use in Test Condition 1. Test Condition 2 was, therefore, set aside. Test Condition 3 to demonstrate compliance with §266.103(g) is retained.

Please see comments on the following page regarding the amount of ash fed during the compliance test.

Finally, some minor changes in the original submittal were discussed in a letter to E.P.A. on June 5, 1992. A copy of the letter is attached.

COMMENTS REGARDING THE AMOUNT OF ASH FED

Introduction:

In the Certification of Pre-compliance, the allowable limit for ash in the hazardous waste feeds to units F-410 and F-420 was set at 1.99 pounds per hour. Based on the waste characterization for the T-400 hazardous waste feed stream established for Pre-compliance, this limit should not have been exceeded during the Compliance Tests. However, data gathered during the Compliance Test show that the rate of ash fed with this stream was much higher than set in the Certification of Pre-compliance. In spite of the high ash feed rate, emissions of particulate were well below the allowable limit set in the regulations. Therefore, we are establishing this new limit for allowable ash feed to the units in lieu of submitting a new Pre-compliance Certification.

Background:

Preliminary testing for the Certification of Pre-compliance showed that unit F-410 was capable of emissions in excess of the allowable regulatory limit at high hazardous waste feed rates. A large part of these emissions are salt, carried over from the caustic scrubber as an entrained mist.

Particulate emissions were measured from the unit in the presence and in the absence of hazardous waste feed in order to determine the significance of salt emissions to the total emissions. A total allowable emissions rate was calculated from the stack velocity (based on an allowable limit of 0.08 gr./dscf, corrected to 7% oxygen), and the salt emissions were subtracted from this value to determine the allowable non-salt emissions rate. In order to assure compliance, the very conservative assumption was made that all ash in the feed would be emitted unattenuated as particulate matter. The flow rate limit for hazardous waste to the unit was set based on these ash feed limits.

Basis for New Ash Feed Limits

Emissions data gathered during the Compliance Test show that the assumption of unattenuated emission of ash as particulate is too conservative. Particulate emissions were more than twenty (20) times lower than the regulatory limit. In fact, total particulate emissions were lower than the originally estimated salt emissions, indicating that particulate removal by the unit is essentially total.

Since the preliminary Pre-compliance testing was completed, the control systems for both of these boilers have been converted over to new, state-of-the-art systems. Improved control may be responsible for the improvement in emissions. The air pollution control devices on units F-410 and F-420 were actually designed for

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replacement boilers twice the size of the existing units. Their ability to capture particulate is more than adequate to assure low emissions of "true particulate." Salt carry-over as entrained mist is the result of a lack of de-mister pads on the scrubbers.

COMPLIANCE CERTIFICATION FORM 3 (CC-3) **SUMMARY OF COMPLIANCE TEST EMISSIONS**

Complete a separate form for each test condition (if more than 1) under each mode of operation for each unit.

1. Use the same identification codes as on Form CTN-3 for the following:

Unit # 2; Mode (letter) A; Test Condition (1,2 or N/A)^a 1.

Brief Description of Mode and Test Condition:

2. Purpose of Test (e.g. Demonstrate compliance with PM, metals, HCl, Cl₂ emission limits when firing sludges at maximum feed rate and flue gas flow): *Demonstrate compliance with PM, HCl/Cl₂ and chromium VI standards at maximum thermal input rate and maximum chlorine load.*

3. Attach a complete copy of QA/QC results for each test.

4. Test Results:	Run No.			Avg. ^b	Allowable Emission Rate ^c	OK ^d
	1	2	3			
Date (month / day / year)	7/7/92	7/8/92	7/8/92			
Time Run Started (hr:min)	16:08	14:00	17:52			
Total Run Time (hr:min)	2:01	2:01	2:00			
Sootblow Time (mins) ^e			NA			
CO (ppmv @ 7% O ₂)						
Run Avg.	15.2	18.2	15.6			
Highest 60-min rolling avg.	45.3	18.2	17.8	27.1		
HC (ppmv @ 7% O ₂)						
Run Avg.	NA	NA	NA			
Highest 60-min rolling avg.	NA	NA	NA	NA		
PM emissions (gr / dscf)	0.0028	0.0039	0.0036	NA	0.08	Y
HCl emissions (g/hr)	122	196	249	NA	2270	Y
Cl ₂ emissions (g/hr)	7.8	5.9	5.2	NA	90.8	Y
Antimony (g/hr)	Metals	are	Adjusted	Tier1	3.63	Y
Arsenic (g/hr)					0.35	Y
Barium (g/hr)					1.82	Y
Beryllium (g/hr)					0.00	Y
Cadmium (g/hr)					1.27	Y
Chromium (g/hr)	0.05	0.03	0.01	NA	0.26	Y
Lead (g/hr)	Metals	are	Adjusted	Tier1	4.09	Y
Mercury (g/hr)					9.99	Y
Silver (g/hr)					227.00	Y
Thallium (g/hr)					0.00	Y

- a. If facility conducted tests at only one set of test conditions for the stated mode enter N/A. If two sets of test conditions were run for the mode, fill out a separate form for each set of test conditions, identifying the test conditions (1 or 2) as on Form CTN-3.
- b. If soot blowing or other daily activity that increases the PM emission rate was incorporated into the testing, calculate average using equation provided in instructions.
- c. Allowable levels are the same as indicated on Form PC-4.
- d. Check if each non-sootblowing run and average are less than or equal to allowable.
- e. Indicate sootblowing time or other activity that was incorporated into the testing.

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COMPLIANCE CERTIFICATION FORM 3 (CC-3) **SUMMARY OF COMPLIANCE TEST EMISSIONS**

Complete a separate form for each test condition (if more than 1) under each mode of operation for each unit.

1. Use the same identification codes as on Form CTN-3 for the following:

Unit # 2 ; Mode (letter) A ; Test Condition (1,2 or N/A)^a 3.

Brief Description of Mode and Test Condition:

2. Purpose of Test (e.g. Demonstrate compliance with PM, metals, HCl, Cl₂ emission limits when firing sludges at maximum feed rate and flue gas flow): *Determine minimum allowable temperature for feeding hazardous waste per §266.103 (g).*

3. Attach a complete copy of QA/QC results for each test.

4. Test Results:	Run No.			Avg. ^b	Allowable Emission Rate ^c	OK ^d
	1	2	3			
Date (month / day / year)	7/9/92	7/9/92	7/9/92			
Time Run Started (hr:min)	10:50	14:56	15:58			
Total Run Time (hr:min)	1:00	1:00	1:00			
Sootblow Time (mins) ^e			NA			
CO (ppmv @ 7% O ₂)						
Run Avg.	40.6	31.7	26.1			
Highest 60-min rolling avg.	45.2	46.2	31.9	41.4		
HC (ppmv @ 7% O ₂)						
Run Avg.						
Highest 60-min rolling avg.						
PM emissions (gr / dscf)						
HCl emissions (g/hr)						
Cl ₂ emissions (g/hr)						
Antimony (g/hr)						
Arsenic (g/hr)						
Barium (g/hr)						
Beryllium (g/hr)						
Cadmium (g/hr)						
Chromium (g/hr)						
Lead (g/hr)						
Mercury (g/hr)						
Silver (g/hr)						
Thallium (g/hr)						

- a. If facility conducted tests at only one set of test conditions for the stated mode enter N/A. If two sets of test conditions were run for the mode, fill out a separate form for each set of test conditions, identifying the test conditions (1 or 2) as on Form CTN-3.
- b. If soot blowing or other daily activity that increases the PM emission rate was incorporated into the testing, calculate average using equation provided in instructions.
- c. Allowable levels are the same as indicated on Form PC-4.
- d. Check if each non-sootblowing run and average are less than or equal to allowable.
- e. Indicate sootblowing time or other activity that was incorporated into the testing.

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COMPLIANCE CERTIFICATION FORM 4 (CC-4) **SUMMARY OF COMPLIANCE TEST OPERATING CONDITIONS**

Complete a separate form for each run of a specified test condition, use same identification codes as on Forms CC-3 and CTN-3.

1. Unit #: 2 Mode: A Test Condition (1,2, or N/A): 1
Run No.: 1 Test Date: 7/7/92

2. Run Start Time (hr:min): 16:08 Run End Time (hr:min): 21:18

If there were any interruptions in sampling, discuss cause, duration, and impact on sampling:
See discussions, next page

3. Operating Conditions:

	Run Avg.	60-min. Avg. ^a
Max. Production Rate (gallons condensate per minute)	38.6	41.1
Max. PM Control Device Inlet Temp (°F) ^b	449	451
Max. Combustion Chamber Temp.(°F) ^b	1985	1993
APCS Operating Parameters (list applicable parameters, see §266.103(c)(1)(ix-xiii))	Run Avg.	60-min. Avg. ^c
Acid absorber liquid-to-gas ratio	3.99	3.97
Scrubber liquid-to-gas ratio	0.58	0.55
Scrubber fluid pH	7.92	7.75
Scrubber blow-down rate (gallons per minute)	81.6	79.9

4. Description of All Fuel, Raw Material, and Waste Feed Streams:^d

Stream No. ^e	1	2	3	4
Stream Type (e.g. coal, shale, sludge, liquid solvents, etc.)	liquid waste	fuel gas	process vents	chromium VI solution
Category (e.g. Fuel, Raw Material, Pumpable HW)	pumpable HW	fuel	vent stream	chromium VI spill source
Mass Feed Rate (g/hr)	751,869	115,575	634,606	4,989
Thermal Feed Rate (Btu/hr)	11.39MM	5.48MM	9.17MM	0
Ash Feed Rate (g/hr) ^f	11,278	0	0	10
Chlorine and Chloride (g/hr)	605,162	0	138,471	0
Antimony (g/hr)	0	0	0	0
Arsenic (g/hr)	0	0	0	0
Barium (g/hr)	0.107	0	0	0
Beryllium (g/hr)	0	0	0	0
Cadmium (g/hr)	0.013	0	0	0
Chromium (g/hr)	0	0	0	3.6
Lead (g/hr)	0.107	0	0	0
Mercury (g/hr)	0	0	0	0
Silver (g/hr)	0.535	0	0	0
Thallium (g/hr)	0	0	0	0

^a Indicate highest or lowest 60-minute rolling average as appropriate.

^b Not applicable if complying with Tier I or adjusted Tier I metals feed rate screening limits.

^c Indicate highest 60-minute rolling averages for maximum flue gas flow rate and, if chosen, maximum suspended solids content of scrubber water where applicable. Indicate lowest 60-minute averages for all other APCS parameters.

^d Owners/operators of furnaces monitoring metals concentrations in collected PM are not required to determine metals feed rates in non hazardous waste feed streams.

^e Copy form and add additional pages if more than four streams were fed during test.

^f Owners/operators of cement and light-weight aggregate kilns are not required to determine ash feed rates of feed streams

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Sampling Interruptions on Run 1 of Test Condition 1

Stack sampling was interrupted twice during the first run of Test Condition 1. The reasons for the interruptions are detailed below.

The first interruption occurred at approximately twenty (20) minutes into the run. Hazardous waste flow was shut off when the hourly rolling average value for hazardous waste feed flow exceeded its trip point value. The flow indicator for the hazardous waste feed had gone almost instantaneously to its full scale value just before the trip, and since the unit was operating at a flow rate close to this hourly rolling average trip point, the high flow signal was sufficient to raise the hourly rolling average value above the trip point. Sampling was immediately suspended when the flow tripped. The high flow signal was traced to a plugging problem on one of the legs of the differential pressure cell on the flow orifice. The problem was remedied and the unit was re-started. After the unit was allowed to reach steady state, stack testing was resumed. Total suspension of stack testing was two hours and thirty-seven minutes.

At approximately fifteen minutes after the run was re-started following the traverse change, a power loss in the field interrupted sampling for about twenty-six (26) minutes. Sampling resumed once this problem was addressed, and the run was not interrupted again.

The integrity of the stack sampling was not compromised by either of these two interruptions. Prior to the resumption of sampling following the first (most prolonged) interruption, the system was allowed to equilibrate and the hourly rolling averages were allowed to return to their steady-state values before sampling was resumed.

COMPLIANCE CERTIFICATION FORM 4 (CC-4) **SUMMARY OF COMPLIANCE TEST OPERATING CONDITIONS**

Complete a separate form for each run of a specified test condition, use same identification codes as on Forms CC-3 and CTN-3.

- Unit #: 2 Mode: A Test Condition (1,2, or N/A): 1
Run No.: 3 Test Date: 7/8/92
- Run Start Time (hr:min): 17:52 Run End Time (hr:min): 19:56

If there were any interruptions in sampling, discuss cause, duration, and impact on sampling:

3. Operating Conditions:

	Run Avg.	60-min. Avg. ^a
Max. Production Rate (gallons condensate per minute)	39.3	39.8
Max. PM Control Device Inlet Temp (°F) ^b	452	451
Max. Combustion Chamber Temp. (°F) ^b	1988	2,000
APCS Operating Parameters (list applicable parameters, see §266.103(c)(1)(ix-xiii))	Run Avg.	60-min. Avg. ^c
Acid absorber liquid-to-gas ratio	3.99	3.97
Scrubber liquid-to-gas ratio	0.56	0.55
Scrubber fluid pH	7.52	7.51
Scrubber blow-down rate (gallons per minute)	79.2	78.8

4. Description of All Fuel, Raw Material, and Waste Feed Streams:^d

Stream No. ^e	1	2	3	4
Stream Type (e.g. coal, shale, sludge, liquid solvents, etc.)	liquid waste	fuel gas	process vents	chromium VI solution
Category (e.g. Fuel, Raw Material, Pumpable HW)	pumpable HW	fuel	vent stream	chromium VI spill source
Mass Feed Rate (g/hr)	744,578	77,330	683,084	4,800
Thermal Feed Rate (Btu/hr)	11.54MM	3.67MM	8.25MM	0
Ash Feed Rate (g/hr) ^f	6,488	0	0	10
Chlorine and Chloride (g/hr)	587,736	0	138,939	0
Antimony (g/hr)	0	0	0	0
Arsenic (g/hr)	0	0	0	0
Barium (g/hr)	0.106	0	0	0
Beryllium (g/hr)	0	0	0	0
Cadmium (g/hr)	0.013	0	0	0
Chromium (g/hr)	0	0	0	3.4
Lead (g/hr)	0.106	0	0	0
Mercury (g/hr)	0	0	0	0
Silver (g/hr)	0.532	0	0	0
Thallium (g/hr)	0	0	0	0

^a Indicate highest or lowest 60-minute rolling average as appropriate.

^b Not applicable if complying with Tier I or adjusted Tier I metals feed rate screening limits.

^c Indicate highest 60-minute rolling averages for maximum flue gas flow rate and, if chosen, maximum suspended solids content of scrubber water where applicable. Indicate lowest 60-minute averages for all other APCS parameters.

^d Owners/operators of furnaces monitoring metals concentrations in collected PM are not required to determine metals feed rates in non hazardous waste feed streams.

^e Copy form and add additional pages if more than four streams were fed during test.

^f Owners/operators of cement and light-weight aggregate kilns are not required to determine ash feed rates of feed streams

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COMPLIANCE CERTIFICATION FORM 4 (CC-4) **SUMMARY OF COMPLIANCE TEST OPERATING CONDITIONS**

Complete a separate form for each run of a specified test condition, use same identification codes as on Forms CC-3 and CTN-3.

- Unit #: 2 Mode: A Test Condition (1,2, or N/A): 1
Run No.: 2 Test Date: 7/8/92
- Run Start Time (hr:min): 14:00 Run End Time (hr:min): 16:05

If there were any interruptions in sampling, discuss cause, duration, and impact on sampling:

3. Operating Conditions:

	Run Avg.	60-min. Avg. ^a
Max. Production Rate (gallons condensate per minute)	39.7	40.2
Max. PM Control Device Inlet Temp (°F) ^b	453	455
Max. Combustion Chamber Temp. (°F) ^b	2006	2012
APCS Operating Parameters (list applicable parameters, see §266.103(c)(1)(ix-xiii))	Run Avg.	60-min. Avg. ^c
Acid absorber liquid-to-gas ratio	3.99	3.97
Scrubber liquid-to-gas ratio	0.57	0.55
Scrubber fluid pH	7.74	7.56
Scrubber blow-down rate (gallons per minute)	80.3	79.1

4. Description of All Fuel, Raw Material, and Waste Feed Streams:^d

Stream No. ^e	1	2	3	4
Stream Type (e.g. coal, shale, sludge, liquid solvents, etc.)	liquid waste	fuel gas	process vents	chromium VI solution
Category (e.g. Fuel, Raw Material, Pumpable HW)	pumpable HW	fuel	vent stream	chromium VI spill source
Mass Feed Rate (g/hr)	745,132	77,307	680,619	4,800
Thermal Feed Rate (Btu/hr)	11.22MM	3.66MM	9.89MM	0
Ash Feed Rate (g/hr) ^f	15,126	0	0	10
Chlorine and Chloride (g/hr)	594,923	0	156,610	0
Antimony (g/hr)	0	0	0	0
Arsenic (g/hr)	0	0	0	0
Barium (g/hr)	0.106	0	0	0
Beryllium (g/hr)	0	0	0	0
Cadmium (g/hr)	0.013	0	0	0
Chromium (g/hr)	0	0	0	3.4
Lead (g/hr)	0.106	0	0	0
Mercury (g/hr)	0	0	0	0
Silver (g/hr)	0.532	0	0	0
Thallium (g/hr)	0	0	0	0

^a Indicate highest or lowest 60-minute rolling average as appropriate.

^b Not applicable if complying with Tier I or adjusted Tier I metals feed rate screening limits.

^c Indicate highest 60-minute rolling averages for maximum flue gas flow rate and, if chosen, maximum suspended solids content of scrubber water where applicable. Indicate lowest 60-minute averages for all other APCS parameters.

^d Owners/operators of furnaces monitoring metals concentrations in collected PM are not required to determine metals feed rates in non hazardous waste feed streams.

^e Copy form and add additional pages if more than four streams were fed during test.

^f Owners/operators of cement and light-weight aggregate kilns are not required to determine ash feed rates of feed streams

DO A 035455
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COMPLIANCE CERTIFICATION FORM 4 (CC-4) **SUMMARY OF COMPLIANCE TEST OPERATING CONDITIONS**

Complete a separate form for each run of a specified test condition, use same identification codes as on Forms CC-3 and CTN-3.

1. Unit #: 2 Mode: A Test Condition (1,2, or N/A): 3
Run No.: 1 Test Date: 7/9/92

2. Run Start Time (hr:min): 10:50 Run End Time (hr:min): 11:51

If there were any interruptions in sampling, discuss cause, duration, and impact on sampling:

3. Operating Conditions:

	Run Avg.	60-min. Avg. ^a
Max. Production Rate (gallons condensate per minute)	NA	NA
Max. PM Control Device Inlet Temp (°F) ^b	NA	NA
Minimum Combustion Chamber Temp.(°F) ^b	1566	1569
APCS Operating Parameters (list applicable parameters, see §266.103(c)(1)(ix-xiii))	Run Avg.	60-min. Avg. ^c

4. Description of All Fuel, Raw Material, and Waste Feed Streams:^d

Stream No. ^e	1	2	3	4
Stream Type (e.g. coal, shale, sludge, liquid solvents, etc.)	liquid waste	fuel gas	process vents	
Category (e.g. Fuel, Raw Material, Pumpable HW)	pumpable HW	fuel	vent stream	
Mass Feed Rate (g/hr)	747,211	82,033	101,796	
Thermal Feed Rate (Btu/hr)	11.98MM	3.89MM	1.32MM	
Ash Feed Rate (g/hr) ^f	24,658	0	0	
Chlorine and Chloride (g/hr)	577,486	0	18,069	
Antimony (g/hr)	0	0	0	
Arsenic (g/hr)	0	0	0	
Barium (g/hr)	0.107	0	0	
Beryllium (g/hr)	0	0	0	
Cadmium (g/hr)	0.013	0	0	
Chromium (g/hr) ^g	1.5	0	0	
Lead (g/hr)	0.107	0	0	
Mercury (g/hr)	0	0	0	
Silver (g/hr)	0.534	0	0	
Thallium (g/hr)	0	0	0	

^a Indicate highest or lowest 60-minute rolling average as appropriate.

^b Not applicable if complying with Tier I or adjusted Tier I metals feed rate screening limits.

^c Indicate highest 60-minute rolling averages for maximum flue gas flow rate and, if chosen, maximum suspended solids content of scrubber water where applicable. Indicate lowest 60-minute averages for all other APCS parameters.

^d Owners/operators of furnaces monitoring metals concentrations in collected PM are not required to determine metals feed rates in non hazardous waste feed streams.

^e Copy form and add additional pages if more than four streams were fed during test.

^f Owners/operators of cement and light-weight aggregate kilns are not required to determine ash feed rates of feed streams

^g All metals feed rates based on waste characterization; no analyses performed.

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COMPLIANCE CERTIFICATION FORM 4 (CC-4) **SUMMARY OF COMPLIANCE TEST OPERATING CONDITIONS**

Complete a separate form for each run of a specified test condition, use same identification codes as on Forms CC-3 and CTN-3.

- Unit #: 2 Mode: A Test Condition (1,2, or N/A): 3
Run No.: 2 Test Date: 7/9/92
- Run Start Time (hr:min): 14:56 Run End Time (hr:min): 15:57

If there were any interruptions in sampling, discuss cause, duration, and impact on sampling:

3. Operating Conditions:

	Run Avg.	60-min. Avg. ^a
Max. Production Rate (gallons condensate per minute)	NA	NA
Max. PM Control Device Inlet Temp (°F) ^b	NA	NA
Minimum Combustion Chamber Temp.(°F) ^b	1574	1574
APCS Operating Parameters (list applicable parameters, see §266.103(c)(1)(ix-xiii))	Run Avg.	60-min. Avg. ^c

4. Description of All Fuel, Raw Material, and Waste Feed Streams:^d

Stream No. ^e	1	2	3	4
Stream Type (e.g. coal, shale, sludge, liquid solvents, etc.)	liquid waste	fuel gas	process vents	
Category (e.g. Fuel, Raw Material, Pumpable HW)	pumpable HW	fuel	vent stream	
Mass Feed Rate (g/hr)	746,321	140,704	101,928	
Thermal Feed Rate (Btu/hr)	11.85MM	6.67MM	1.43MM	
Ash Feed Rate (g/hr) ^f	20,151	0	0	
Chlorine and Chloride (g/hr)	592,870	0	22,006	
Antimony (g/hr)	0	0	0	
Arsenic (g/hr)	0	0	0	
Barium (g/hr)	0.107	0	0	
Beryllium (g/hr)	0	0	0	
Cadmium (g/hr)	0.013	0	0	
Chromium (g/hr) ^g	1.5	0	0	
Lead (g/hr)	0.107	0	0	
Mercury (g/hr)	0	0	0	
Silver (g/hr)	0.533	0	0	
Thallium (g/hr)	0	0	0	

^a Indicate highest or lowest 60-minute rolling average as appropriate.

^b Not applicable if complying with Tier I or adjusted Tier I metals feed rate screening limits.

^c Indicate highest 60-minute rolling averages for maximum flue gas flow rate and, if chosen, maximum suspended solids content of scrubber water where applicable. Indicate lowest 60-minute averages for all other APCS parameters.

^d Owners/operators of furnaces monitoring metals concentrations in collected PM are not required to determine metals feed rates in non hazardous waste feed streams.

^e Copy form and add additional pages if more than four streams were fed during test.

^f Owners/operators of cement and light-weight aggregate kilns are not required to determine ash feed rates of feed streams

^g All metals feed rates based on waste characterization; no analyses performed.

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COMPLIANCE CERTIFICATION FORM 4 (CC-4) **SUMMARY OF COMPLIANCE TEST OPERATING CONDITIONS**

Complete a separate form for each run of a specified test condition, use same identification codes as on Forms CC-3 and CTN-3.

1. Unit #: 2 Mode: A Test Condition (1,2, or N/A): 3
Run No.: 3 Test Date: 7/9/92

2. Run Start Time (hr:min): 15:59 Run End Time (hr:min): 16:59

If there were any interruptions in sampling, discuss cause, duration, and impact on sampling:

3. Operating Conditions:

	Run Avg.	60-min. Avg. ^a
Max. Production Rate (gallons condensate per minute)	NA	NA
Max. PM Control Device Inlet Temp (°F) ^b	NA	NA
Minimum Combustion Chamber Temp. (°F) ^b	1581	1581
APCS Operating Parameters (list applicable parameters, see §266.103(c)(1)(ix-xiii))	Run Avg.	60-min. Avg. ^c

4. Description of All Fuel, Raw Material, and Waste Feed Streams:^d

Stream No. ^e	1	2	3	4
Stream Type (e.g. coal, shale, sludge, liquid solvents, etc.)	liquid waste	fuel gas	process vents	
Category (e.g. Fuel, Raw Material, Pumpable HW)	pumpable HW	fuel	wast stream	
Mass Feed Rate (g/hr)	746,589	77,262	101,319	
Thermal Feed Rate (Btu/hr)	11.96MM	3.66MM	1.37MM	
Ash Feed Rate (g/hr) ^f	15,678	0	0	
Chlorine and Chloride (g/hr)	578,628	0	21,095	
Antimony (g/hr)	0	0	0	
Arsenic (g/hr)	0	0	0	
Barium (g/hr)	0.107	0	0	
Beryllium (g/hr)	0	0	0	
Cadmium (g/hr)	0.013	0	0	
Chromium (g/hr) ^g	1.5	0	0	
Lead (g/hr)	0.107	0	0	
Mercury (g/hr)	0	0	0	
Silver (g/hr)	0.533	0	0	
Thallium (g/hr)	0	0	0	

^a Indicate highest or lowest 60-minute rolling average as appropriate.

^b Not applicable if complying with Tier I or adjusted Tier I metals feed rate screening limits.

^c Indicate highest 60-minute rolling averages for maximum flue gas flow rate and, if chosen, maximum suspended solids content of scrubber water where applicable. Indicate lowest 60-minute averages for all other APCS parameters.

^d Owners/operators of furnaces monitoring metals concentrations in collected PM are not required to determine metals feed rates in non hazardous waste feed streams.

^e Copy form and add additional pages if more than four streams were fed during test.

^f Owners/operators of cement and light-weight aggregate kilns are not required to determine ash feed rates of feed streams

^g All metals feed rates based on waste characterization; no analyses performed.

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COMPLIANCE CERTIFICATION FORM 5 (CC-5)

SUMMARY OF OPERATING AND FEED RATE LIMITS FOR A SPECIFIC MODE

1. Unit #: 2 Mode: A Run No.: 1-3 Test Date: 7/7/92 - 7/8/92

2. Operating Conditions:

Max. PM Control Device Inlet Temp (°F) ^{b,e}	452
Max. Combustion Chamber Temp.(°F) ^b	2002
Minimum Combustion Chamber Temp.(°F)	1575
APCS Operating Parameters (list applicable parameters, see §266.103(c)(1)(ix-xiii))	
Acid absorber liquid-to-gas ratio	3.97
Scrubber liquid-to-gas ratio	0.55
Scrubber fluid pH	7.61
Scrubber blow-down rate (gallons per minute)	79.3
Max. Production Rate (gallons condensate per minute)	40.4
Max. Total HW Feed Rate (g/hr)	747,193
Max. Total Pumpable HW Feed Rate (g/hr) ^b	747,193
Max. Total Chlorine and Chloride Feed Rate (g/hr)	740,614
Max. Total Ash Feed Rate (g/hr) ^d	10,974

3. Maximum Metals Feed Rates

	Total Feed Streams ^c	Total HW Feed Streams	Total Pumpable HW Feed Streams
Antimony (g/hr)	3.63	NA	3.63
Arsenic (g/hr)	0.35	NA	0.35
Barium (g/hr)	1.82	NA	1.82
Beryllium (g/hr)	0	NA	0
Cadmium (g/hr)	1.27	NA	1.27
Chromium (g/hr)	3.5	NA	3.5
Lead (g/hr)	4.09	NA	4.09
Mercury (g/hr)	9.99	NA	9.99
Silver (g/hr)	227	NA	227
Thallium (g/hr)	0	NA	0

4. CO, HC, and PM Limits

CO (ppmv @ 7% O ₂) ^{f,h}	100
HC (ppmv as propane @ 7% O ₂) ^{c,g,h}	NA
PM (gr/dscf @ 7% O ₂) ⁱ	0.08

^a Asterisk any parameter not determined under the primary test conditions.

^b Not applicable if complying with Tier I or adjusted Tier I metals feed rate screening limits..

^c If applicable, attach documentation that the increased cancer risk to the MEI from emissions of dioxins and furans is not greater than 1 in 100,000.

^d Not required for cement and light-weight aggregate kilns.

^e Not required for furnaces monitoring metals concentrations in collected PM.

^f If under Tier I, CO limit is 100 ppmv. If under Tier II, limit is the average over all runs of the HHA CO level for each run.

^h If under Tier I, HC limit is not applicable. If under Tier II 20 ppmv HC limit because of organic matter in raw material feedstocks, the interim HC an CO limits are the baseline limits proposed in the Part B permit application or the limits established by the Director as a condition of a time extension for certification of compliance.

ⁱ 0.08 gr/dscf or existing permit, whichever is more stringent.

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Correspondence

DO A 035460
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**Dow U.S.A.**

The Dow Chemical Company
P.O. Box 180
Baker, Louisiana 70708-0180

June 5, 1992

Mr. Ruben Casso
Hazardous Waste Division
U.S. Environmental Protection Agency
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

COMPLIANCE TEST NOTIFICATIONS
REVISION OF QUALITY ASSURANCE PROJECT PLANS
THE DOW CHEMICAL COMPANY,
LOUISIANA DIVISION
LAD008187080

Dear Mr. Casso:

The Dow Chemical Company received a hazardous waste permit on May 19, 1989 for its facility located in Plaquemine, Louisiana. In addition to the previously permitted activities, Dow operates four existing industrial boilers which burn hazardous wastes and which are now operating under the interim status provisions of the new Boiler and Industrial Furnace (BIF) rules. As part of those interim status provisions, Dow has submitted three Compliance Test Notifications to the agency, as follows:

Glycol I Plant	March 17, 1992
Vinyl II Plant	April 22, 1992
Chlorinated Methanes Plant	April 29, 1992.

Each of these Compliance Test Notifications included a Quality Assurance Project Plan (QAPjP), detailing among other things 1) the interval for sampling the hazardous waste liquid feed stream into a composite sample during the Compliance Tests, and 2) the methodology for analysis of the vent feed stream to be fed to the unit at the Chlorinated Methanes Plant. The purpose of this letter is to document two modifications to our QAPjP's:

First, in preparation for the Compliance Test at our Glycol I Plant, we reviewed the pertinent sections of the Technical Implementation Document for EPA's Boiler and Industrial Furnace Regulations, which we received on March 31, 1992. At section 5.2.6.1 we noticed that a sampling interval of every fifteen (15) minutes is specified for the liquid hazardous waste feed to the BIF unit. Our QAPjP states an interval of every thirty (30) minutes. Therefore, we are hereby amending the sampling plans for each of the liquid hazardous waste feeds to specify an interval of every fifteen (15) minutes as specified in the above cited implementation document. All of our liquid hazardous waste feed data to be submitted with each Certification of Compliance will be based on samples composited at this shorter interval.

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Second, in preparation for the Compliance Test at our Chlorinated Methanes Plant, we have concluded that the methodology originally specified for analysis of the vent feed stream is inappropriate. The stream contains mostly hydrogen chloride gas and nitrogen, with some small amount of other chlorinated hydrocarbons. Therefore, rather than attempt to perform gas chromatography on the contents of the integrated gas bag (our originally specified plan), a measured aliquot from the bag will be captured on alkaline impingers and analyzed for hydrogen chloride according to EPA method 9057. We will make the conservative assumption when setting the compliance limits per 40 CFR 266.103(c)(1)(iii) that all of the chlorine contribution from the vent feed is from hydrogen chloride. Also, since this stream has essentially no heat value, we will not attempt a measurement of this parameter. Please note that this second modification applies only to the QAPJP for the Chlorinated Methanes Plant.

If you have any questions regarding these modifications please feel free to call me at (504) 382-4044.

Sincerely,



Edward B. Anthony
Environmental Project Specialist

DO A 035462
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Quality Assurance / Quality Control

August 19, 1992

QUALITY ASSURANCE STATEMENT

We hereby certify that, to the best of our knowledge and belief, the procedures prescribed in the QA/QC plan submitted with Compliance Test Notification Form 3 (CTN-3) for the boiler F-410 located at the Vinyl II Plant have been followed in the gathering of data presented in this document.



Clinton Hunt
Quality Assurance Coordinator
The Dow Chemical Company



Edward B. Anthony
Project Manager
The Dow Chemical Company

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M E M O R A N D U M

CHMHILL

TO: Project File

COPIES: Caroline Melton/MGM
Susan Douglas/BTR
Ed Anthony/Dow

FROM: David Martin/MGM

DATE: August 18, 1992

SUBJECT: QA/QC for Particulate Analysis Per USEPA Method 5

PROJECT: MGM33563.AO

For each particulate sample collected by USEPA Method 5, the following QA/QC procedures apply:

- Filters, Handling and Acceptance - glass fiber filters having at least 99.95 percent efficiency (<0.05 percent penetration) on 0.3 micron dioctyl phthalate smoke particles were used. The filters were checked against light for flaws and pinholes and labeled on the backside near the edge. They were desiccated for 24 hours at 20 +/- 5.6 degrees C, weighed to constant weight, and the results recorded to the nearest 0.1 mg in a permanent filter weighing log.
- Filters, Recovery and Storage - Filters were recovered from the Method 5 sampling train as specified in the Method. Filters were returned to their respective petri dishes, which were sealed, and labeled.
- Analytical Balance - The balance is serviced and certified annually. It can measure to within 0.1 mg.
- Probe or Front Wash - Acetone rinses of the probe assembly were collected in glass storage containers as specified in the method. The containers were labeled and the liquid level was marked for shipment.
- Probe or Front Wash - The wash sample was transferred to a tared 250 mL beaker and allowed to air dry, then desiccated and weighed to a constant weight.

The following general procedures were followed:

- All Weighings - Selected beakers and filters are routinely reweighed as an accuracy check of the weighing process.

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M E M O R A N D U M

Page 2

August 18, 1992

MGM33563.AO

- Blank - Filter and acetone blanks are included with each set of analyses.
- Calculations - Reweigh values and related math are rechecked by individuals other than the original analyst.

No unusual circumstances or problems were encountered with the analysis of Dow particulate samples.

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CERTIFICATE OF ANALYSIS

CUSTOMER: CH2M HILL

DATE RECEIVED: 7/14/92

SAMPLE TYPE: 0.1N KOH LIQUIDS

JOB/P.O. NUMBER:

PARAMETERS: HEXAVALENT CHROMIUM (Cr+6)

DATE REPORTED: 7/28/92

MARKS: 26114-01-->05

DETECTION LIMIT: 0.25 ug/L

LAB ID#	CLIENT SAMPLE ID	SAMPLE VOL.(ml)	pH of SAMPLE	CONC: Cr +6 (ug/L)	TOTAL Cr +6 (ug)
26114-01	T1 - R1 - WB	375	6.5	< 0.25	< 0.09
26114-02	T1 - R1 - RB	390	14.0	0.28	0.11
26114-03	T1 - R1 - CR	400	9.0	30.93	12.4
26114-04	T1 - R2 - CR	510	9.0	15.32	7.81
26114-05	T1 - R3 - CR	565	9.0	3.30	1.87

DUPLICATE: 26114-02
% DEVIATION: 4.926114-03
0.726114-04
7.0SPIKE: 26114-03
% RECOVERY: 10826114-03
99.0

Analyst:

N. Lajeune
Nadine Lajeune
Analytical Chemist

Reviewed by:

John Chapman
Vice Pres. R&DDO A 035467
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DOW Chemical, Plaquemine, LA MGM33565.A0 Vinyl II Emissions Testing Report Results Summary		
Particulate		
Run #	Emission Rate	
	lb/hr	gr/dscf (7% O ₂)
1	0.124	0.0028
2	0.182	0.0039
3	0.168	0.0036
Average	0.158	0.0034
Chloride/Chlorine – Draft		
Run #	Emission Rate	
	HCl Impingers 1&2 lb/hr	Cl Impingers 3&4 lb/hr
1	0.269	0.017
2	0.432	0.013
3	0.548	0.012
Average	0.416	0.014
Chromium + 6		
Run #	Emission Rate	
	lb/hr	g/hr
1	1.05E-04	4.78E-02
2	6.30E-05	2.86E-02
3	2.70E-05	1.23E-02
Average	6.51E-05	2.95E-02

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DOW Chemical, Plaquemine, LA
MGM33563.A0.05
HCl/Chlorine Results
Vinyl II

Sample No.	Lab #	HCl** (ug)	Cl2** (ug)	Sample Volume (ml)	Sample Conc. (ug/ml)	Corrected Conc. (ug/ml)	Corrected Conc. (ug)	Meter Volume (ft3)	Conc. (ug/ft3)	Flow (scfh)	Emission Rates (g/hr) / (lb/hr)
<i>Blanks</i>											
T1-R1-WB	333330 1	142		230	0.62						
T1-R1-AB	333330 2	84		205	0.41						
T1-R1-BB	333330 3		3150	235	13.40						
<i>Run 1</i>											
T1-R1-I1	333330 4	28900		260	111.15	110.74	28793	75.393	382	310596	118.620 / 0.261
T1-R1-I2	333330 5	872		160	5.45	5.04	806	75.393	11	310596	3.322 / 0.007
T1-R1-I34*	333330 6		6037	310	19.47	6.07	1882	75.393	25	310596	7.752 / 0.017
<i>Run 2</i>											
T1-R2-I1	333330 7	46800		230	203.48	203.07	46706	76.059	614	307119	188.593 / 0.415
T1-R2-I2	333330 8	1960		180	10.89	10.48	1886	76.059	25	307119	7.616 / 0.017
T1-R2-34	333330 9		5430	295	18.41	5.00	1476	76.059	19	307119	5.959 / 0.013
<i>Run 3</i>											
T1-R3-I1	333330 10	59700		235	254.04	253.63	59604	75.436	790	307787	243.190 / 0.536
T1-R3-I2	333330 11	1480		175	8.46	8.05	1408	75.436	19	307787	5.746 / 0.013
T1-R3-34	333330 12		5370	305	17.61	4.20	1282	75.436	17	307787	5.229 / 0.012

* Average of three analyses.

** Mass calculated from ug chloride corrected for molecular weight of HCl and Cl2, respectively.

CH2M HILL

DO A 035469
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Vinyl II

DATA SHEET for HCl/CL2 Emission Sampling Train										
Method: DOW 9057					Analyzed by: DS					
SAMPLE	VOL mL	MATRIX	DATE	CHLORIDE ug/mL	HCL ug	CL2 ug	HCL TV	CL2 TV	RPD	%R
33333-1	230	W	07/29/92	0.8	142					
33333-2	205	A	07/29/92	0.4	84	164				
33333-3	235	B	07/29/92	6.7		3150				
33333-4	260	A	07/31/92	108	28900					
33333-4P	260	A	07/31/92	110	29400				1.7	
33333-4M	260	A	07/31/92	212	56700		26700			104
33333-5	160	A	07/29/92	5.3	872					
33333-5P	160	A	07/29/92	5.0	823				5.8	
33333-5M	160	A	07/29/92	23.4	3850		3290			90.5
33333-6	310	B	07/29/92	8.3		5150				
33333-6M	310	B	07/29/92	25.8		16000		12400		87.5
33333-6D	310	B	07/29/92	25.5		15800		12400	1.2	85.9
33333-6	310	B	07/31/92	10.3		6390				
33333-6M	310	B	07/31/92	45.9		28500		24800		89.2
33333-6D	310	B	07/31/92	45.8		28400		24800	0.4	88.8
33333-6	310	B	07/29/92	10.6		6570				
33333-6M	310	B	07/29/92	86.3		53500		62000		75.7
33333-6D	310	B	07/29/92	86.8		53800		62000	0.6	76.2
33333-7	230	A	07/29/92	198	46800					
33333-8	180	A	07/29/92	10.8	1960					
33333-9	295	B	07/29/92	9.2		5430				
33333-10	235	A	07/31/92	247	59700					
33333-11	175	A	07/29/92	8.2	1480					
33333-12	305	B	07/29/92	8.8		5370				
33333-13	0	W	07/29/92	13.7						
33333-14	0	W	07/29/92	1.72						

CLAIR333

08/14/92

DO A 035470
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