Environmental Company
AIR TOX
Environmental Solutions For Today's Industries

July 7, 1997

Mr. Alan Hicks
U.S. EPA, Region I
New England Regional Laboratory
60 Westview Street
Lexington, MA 02173

Re: Emissions Test Protocol and Intent-to-Test Notification

Dear Mr. Hicks:

Please find the included "Chromium Emissions Test Protocol" and "Intent-to-Test Notification" for Superior Plating located in Southport, Connecticut. Air Tox Environmental Company and Superior Plating wish to schedule chromium emissions compliance testing during the on July 22, 1997.

The purpose of this testing is to demonstrate compliance with the National Emissions Standards for Hard and Decorative Chromium Electroplating, which were published in the Federal Registar on January 25, 1995.

Please direct all correspondence concerning this protocol to:

Dan Aune
Air Tox Environmental Company, Inc.
P.O. Box 239
Willington, CT 06279
Tel: (860) 487-5606
Fax: (860) 487-5607

Sincerely,
Air Tox Environmental Company, Inc.

Dan Aune

Dan Aune
Business Manager

cc: George Miller, Connecticut DEP
Roy Crystal, U.S. EPA Region 1

Twin Fiber-bed
Chromium Electroplating Demisters

EMISSIONS TEST PROTOCOL

Superior Plating Co.
Southport, Connecticut

Prepared for:

Mr. Richard Durazzo
Superior Plating Co.

Prepared by:

Dan E. Aune
Project Manager

July 1997

Air Tox Project No. 96029

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1.0 INTRODUCTION

Air Tox Environmental Company, Inc. of Willington, Connecticut has been retained by Superior Plating of Southport, Connecticut to perform compliance testing on two fiber bed emissions control devices servicing multiple hard chrome electroplating processes. The purpose of this testing is to fulfill the compliance testing requirements of the Chromium NESHAP MACT emission rate standard of 0.015 mg/dscm.

The test program described within this protocol will be performed on August 29, 1997. Each of the two fiber bed control devices will be tested simultaneously using two chromium emissions sampling trains. The compliance program will be completed under the supervision of John Schneider or Dan Aune of Air Tox and Richard Durazzo of Superior Plating.

Section 2.0 of this protocol presents the scope of the sampling program. A description of the process and operations is presented in Section 3.0. Sampling and analytical methodologies, including a detailed description of the sampling train, are presented in Section 4.0. Air Tox's quality assurance plan is detailed in Section 5.0. A copy of the notification of performance test form, calibration sheets, sample field data sheets, and example calculations are contained in the Appendix.

2.0 SCOPE OF THE SAMPLING PROGRAM

The purpose of this testing program is to demonstrate compliance with The National Emissions Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Anodizing Tanks, which were published in the Federal Register on January 25, 1995.

Superior Plating utilizes two fiber bed demisters (FBDs) to control chromium emissions from 21 hard chrome electroplating tanks. The chromium mist generated by the tanks is pulled from each tank through single sided lateral exhaust hoods and then through a tunnel system to FBD#2 or FBD #3. Schematics of the tunnel configuration is included in the appendix of this protocol. A 23,000 acfm fan is utilized to pull the vapors through FBD #2 and out through a 48" X 48" square stack, and a 45,000 acfm fan is utilized to pull the vapor through FBD #3 and out through a 48" X 48" square stack. The testing program described in this protocol will demonstrate that chromium emissions from these stacks are less than 0.015 mg/dscm.

Chromium sampling and analysis will be carried out on each of the two stacks in accordance with EPA Method 306A (60 FR 4986). The test program will also utilize EPA Reference Methods 1 and 2. As specified in Method 306A, three two-hour sample tests will be completed for each stack. Analysis of the test samples will be performed by an accredited laboratory for total chromium. The total chromium content and test data will then be used to calculate the total chromium emission rate for each test in mg/dscm. The results of each stack's three sample runs will then be averaged and compared to the emissions rate limit of 0.015 mg/dscm.

The configuration of the FBDs is such that there is no means of cleaning the fiber beds without removing them from the demister housing. Based on preliminary testing, we have determined a two week period of time from one fiber bed cleaning to the next fiber bed cleaning ensures the fiber beds effectively control chromium emissions to less than 0.015 mg/dscm. Bi-weekly cleaning of the fiber beds is a requirement that Superior Plating has included in their required Operation and Maintenance Plan. Schematics of the control devices are contained in the appendix of this protocol.

Superior has installed kilowatt-hour meters on each of the four bus-drops that feed the tank rectifiers. Our observations from preliminary testing suggest that the fiber beds become progressively saturated with chromium over time and loading from the bottom upwards. Note that the air flow is upwards from the bottom of the fiber bed through to the top. The fiber beds effectively control emissions until the point where they become completely saturated with chromium from bottom to top. One of our testing goals will be to quantify a maximum cumulative kilowatt-hour reading for each control device that predicts the saturation point. The fiber beds will be washed down

prior to becoming saturated. These kilowatt hour readings will be established as one of Superior Plating's monitored parameters.

Pressure-drop measurements of the FBDs will be taken at 10 minute intervals during the testing. The pressure-drop measurements established during the testing will also be used to verify continual compliance.

It is the intention of the testing to establish the following criteria for maintaining continual compliance with Superior Plating's emissions limit of 0.015 mg/dscm.

1. Fiber beds will be washed down bi-weekly
2. The maximum kilo-watt hour readings established during testing will not be exceeded prior to washdown of fiber beds.
3. A compliance range for pressure drop will be established for each FBD.

3.0 PROCESS AND OPERATIONS

Superior Plating is a custom job shop that performs hard chrome electroplating for the aircraft industry, gun manufacturers, machinery, cylinders, bearings, and other miscellaneous parts where corrosion resistance, wear or hardness is required. Parts in general are various alloys of steel and aluminum.

Please refer to Table 3.1 for a listing of each of Superior Plating's tanks and their specifications. Superior Plating's maximum cumulative rectifier potential is 897 million ampere-hours per year, thus classifying their facility as a large source. The rectifier amperages during testing will be documented and presented in the performance test results report. Rectifier amperage data will be read from the ampere meters on each rectifier. This data will be taken on 10 minute intervals during testing. These ampere meters are calibrated every six months. Calibration documentation for these ampere meters will be included in the test report. Please refer to Table 3.2 for a listing of each tank and the expected amperages during testing. These expected amperages represent what Superior considers maximum production.

Pressure drop will also be read from magnehelic gauges installed on each of the FBD's during testing. This data will also be taken on 10 minute intervals.

Table 3.1 Tank Specifications

Tank Number	Tank Length	Tank Width	Tank Height	Fluid level	Volume (gallons)	Rectifier Amperage	CrO_3 Conc. (g/l)	Vented to FBD
18	84	36	48	42	550	10000	240-270	#2
19	156	48	60	54	1750	9000	250-280	#2
20	120	36	36	31.5	589	7500	375-420	#2
21	48	48	48	45	449	1500	275-300	#2
23	288	42	48	42	2199	12500	250-280	#2
24	84	36	96	90	1178	9000	250-280	#2
31	84	36	48	42	550	4000	240-260	#3
32	84	36	48	42	550	9300	240-260	#3
33	84	36	72	66	864	7500	240-260	#3
34	84	36	48	42	550	3800	240-260	#3
37	144	36	48	42	943	15000	240-270	#3
43	84	36	48	42	550	4500	240-260	#3
44	144	36	48	42	943	7500	240-260	#3
45	120	36	48	42	785	4800	250-280	#3
46	120	36	48	42	785	9500	275-300	#3
55	36	36	120	112	628	4000	250-280	#3
56	84	36	48	42	550	4500	275-300	#3
60	84	36	144	138	1807	9000	240-260	#3
61	84	36	144	138	1807	12000	240-260	#3
62	*NO RECTIFIERS CONNECTED, USED FOR CHROME RECYCLING ONLY.							#3
63	*NO RECTIFIERS CONNECTED, USED FOR CHROME RECYCLING ONLY.							#3
64A	24	48	52	46	229	4500	240-260	#3
64B	120	48	48	40	997	3000	325-425	#3
Cummulative Rectifier Amperage						152400		

Table 3.2

Expected Amperages during Testing

Tank Number	Total Rectifier Capacity	Expected Amperage During Testing	% of Total
18	10000	1600	16%
19	9000	3000	33%
20	7500	600	8%
21	1500	120	8%
23	12500	6000	48%
24	9000	3500	39%
31	4000	1000	25%
32	9300	1500	16%
33	7500	4000	53%
34	3800	1000	26%
37	15000	2500	17%
43	4500	500	11%
44	7500	2000	27%
45	4800	500	10%
46	9500	2800	29%
55	4000	800	20%
56	4500	1200	27%
60	9000	2300	26%
61	12000	2000	17%
62	0	0	
63	0	0	
64A	4500	2100	47%
64B	3000	1400	47%
	152400	40420	27%

4.0 SAMPLING AND ANALYTICAL METHODOLOGIES

As stated earlier, chromium sampling and analysis will be carried out in accordance with EPA Method 306A (60 FR 4986). The testing program will also utilize EPA Reference Methods 1 and 2. One of the two Method 306A sampling trains assembled for this testing has been slightly modified to allow for better flexibility in adjusting to the desired sampling rate of 0.75 cfm. For clarity, only this modified sampling train has been described below. The second of the two trains will be identical except for the substitution of a Method 306 vacuum pump/dry gas meter assembly.

4.1 Apparatus

Measurements of stack gas velocity and volumetric flow rate will be taken using a S-type pitot tube and an incline manometer. An inclinometer will be attached to the pitot tube for cyclonics verification. Stack gas temperatures will be taken with an digital thermometer and K-type thermocouple.

The sampling train probe assembly consists of a thick-wall polypropylene probe nozzle sheathed within a section of 0.75 inch steel conduit. The exposed tip of the polypropylene probe is beveled. The probe assembly is attached to an "mason jar" impinger train assembly by a flexible polypropylene sample line.

The sample train impinger assembly consists of three one-quart "mason jars" with Teflon vacuum seal lids. The sample line is connected to a polypropylene impinger tube that passes through the first jar's vacuum seal lid and terminates 3/16 inches from the bottom of the jar. This first jar contains 250 ml of 0.1 N sodium hydroxide. The first jar's vacuum seal lid has an outlet that is connected to the second jar via a similar polypropylene impinger tube that terminates 1 inches from the bottom of the empty second jar. The outlet of the second jar is attached to the third jar containing silica gel via an impinger tube terminating 1/2 inches above the bottom of the third jar. The third jar outlet is attached to approximately 10 feet of polypropylene tubing that in turn is attached to a needle valve/vacuum pressure gauge assembly.

A needle valve/vacuum pressure gauge assembly replaces the critical orifice specified within Method 306A. Air Tox has chosen to use a needle valve to adjust the sample flow. Results of previous experimentation on Method 306A sampling trains utilizing a critical orifice have shown that it is nearly impossible to consistently approximate a flow rate of 0.75 cfm. There are many other variables affecting flow rate besides the diameter of the critical orifice such as length of sample lines and stack gas pressures. Air Tox has demonstrated in previous testing efforts that using a needle valve to adjust

the sample vacuum pressure to approximately -8" Hg will yield a sample flowrate of 0.75 cfm. The needle valve and or vacuum pressure is not adjusted after being initially set thus insuring a consistent sample flow at each sample point.

The needle valve/pressure gauge assembly is attached to the inlet of a Gast Model 0522-V103-G18DX vacuum pump. The new versions of this pump integrate a oil trap in the pump head assembly. The outlet of the pump is attached to the dry gas meter with polypropylene tubing. Dry gas temperature readings are taken with a dial thermometer mounted at the meter outlet.

As mentioned earlier, the reagent used in sampling is 0.1N sodium hydroxide. A polypropylene wash bottle containing this sodium hydroxide solution will be used in all wash-down and recovery procedures.

4.2 Procedures

4.2.1 Measurement of Stack Gas Velocity

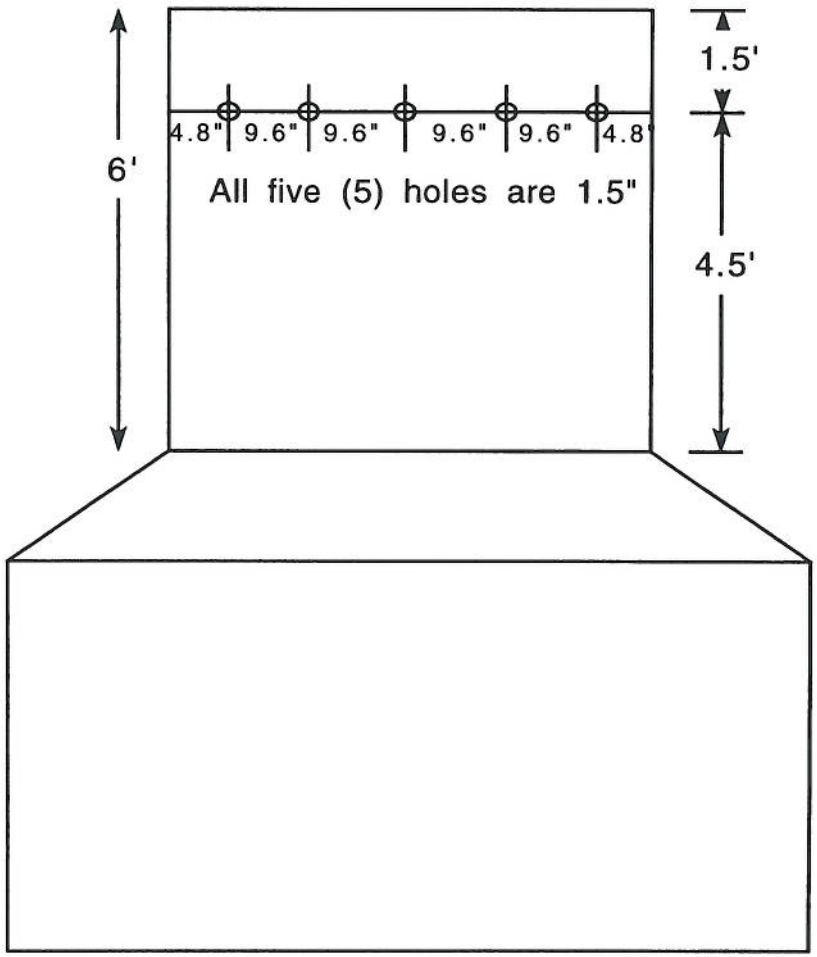
Both of Superior's stacks are identical. They are both 48" X 48" square stacks. Port and traverse point locations have been determined in accordance with EPA Method 1. Measurements of ΔP and cyclonic flow will be taken at each of the five traverse points in ports number 1 through 5 according to Methods 1 and 2. A total of 25 sampling points will be used on each stack. The ΔP measurements will be taken using the S-type pitot tube and a incline manometer. The flow angle measurements will be taken at each traverse point using a inclinometer attached to the pitot tube. These measurements will be taken once at the beginning of the test day. Diagram 4.1 illustrates the stack sampling locations for both stacks.

The ΔP numbers will be input into a computer spreadsheet that will calculate the "point sampling times" according to equation 306A-1 of the method. The flow angles will also be averaged to verify the average is less than 20 degrees thus verifying that no cyclonics are present.

4.2.2 Sampling

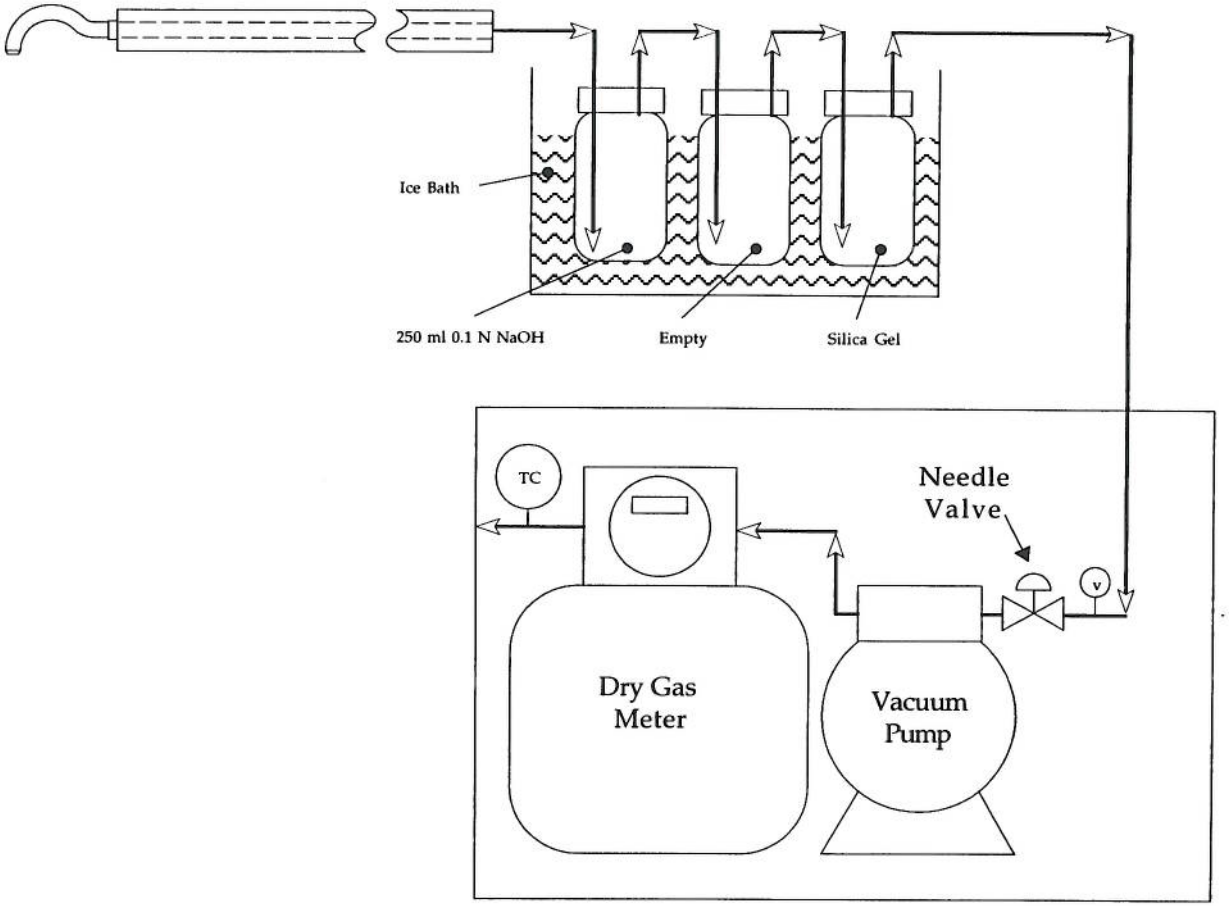
The sampling train will be assembled as shown in Diagram 4.2 (Diagram 4.3 illustrates the assembly of second train utilizing the Method 306 vacuum pump/dry gas meter assembly). The first impinger jar will be pre-rinsed with 0.1N sodium hydroxide and then charged with 250 ml of 0.1N sodium hydroxide. The second impinger jar will also be rinsed with the 0.1N sodium hydroxide and then left empty. The third impinger jar will be charged with silica gel. After charging, the three impinger jars will be iced down. The sample train will be leak checked prior to each testing period.

Diagram 4.1



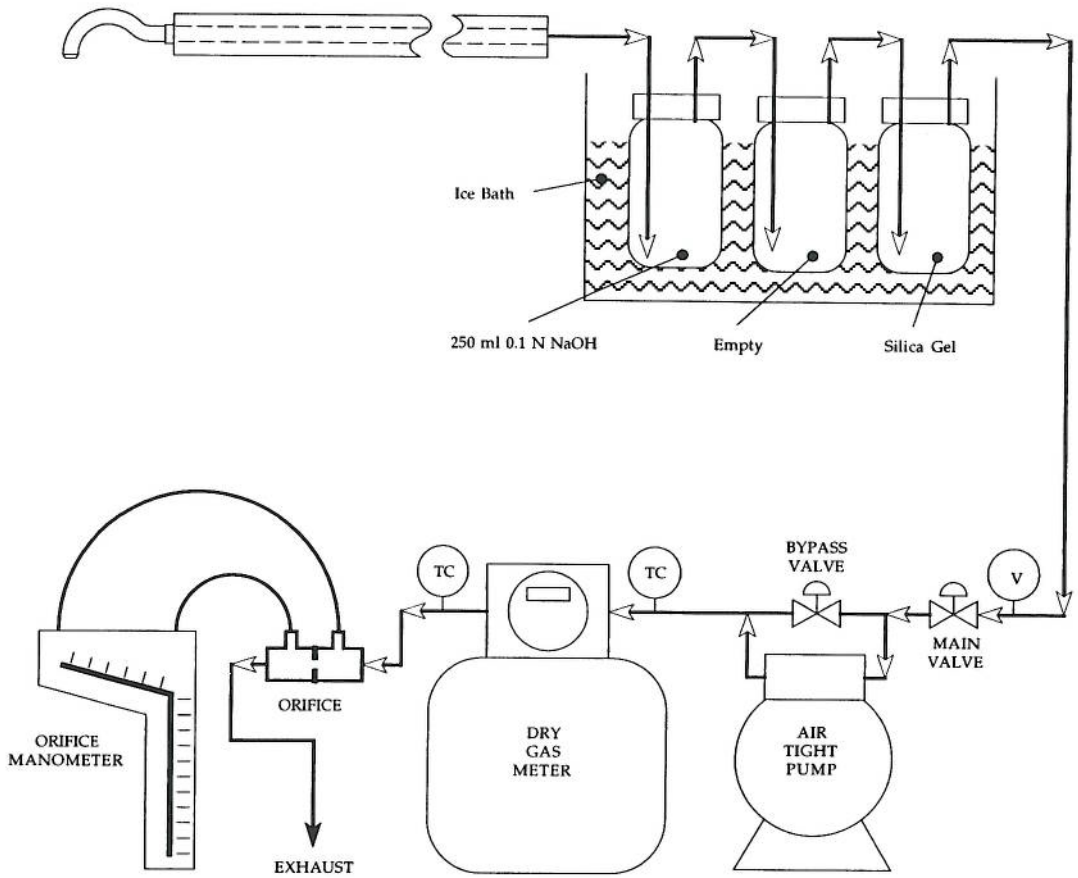
KEY:	CUSTOMER: Superior Plating Company	AIR TOX ENVIRONMENTAL CO., INC. 165 RIVER ROAD, PO BOX 239 WILLINGTON, CONNECTICUT 06279		
	LOCATION: Southport Connecticut			
	TITLE: Samping Port Locations for Two Identical Stacks	DATE MADE: 6/23/97	DATE PRINTED:	DATE REVIEWED:
		PROJECT NO:	DRAWING NO.:	PAGE NO.:
		PREPARED BY: DEA	REVIEWED BY:	APPROVED BY:

Diagram 4.2



KEY:	CUSTOMER: Superior Plating	AIR TOX ENVIRONMENTAL CO., INC. 165 RIVER ROAD, PO BOX 239 WILLINGTON, CONNECTICUT 06279		
	LOCATION: Southport, Connecticut			
	TITLE: Method 306A Sampling Train	DATE MADE: 5/5/97	DATE PRINTED:	DATE REVIEWED:
		PROJECT NO:	DRAWING NO.:	PAGE NO.:
		PREPARED BY: DEA	REVIEWED BY:	APPROVED BY:

Diagram 4.3



KEY:	CUSTOMER: Superior Plating	AIR TOX ENVIRONMENTAL CO., INC. 165 RIVER ROAD, PO BOX 239 WILLINGTON, CONNECTICUT 06279		
	LOCATION: Southport, Connecticut			
	TITLE: Method 306A Sampling Train	DATE MADE: 3/18/97	DATE PRINTED:	DATE REVIEWED:
		PROJECT NO:	DRAWING NO.:	PAGE NO.:
		PREPARED BY: DEA	REVIEWED BY:	APPROVED BY:

After leak checking the sampling train, the probe/nozzle will be inserted into the stack at port 1, traverse point 1. The vacuum pump will be turned on and a correct vacuum pressure will be set immediately. The probe nozzle will be held at each traverse point for the time interval calculated for that point. At the end of the first port traverse, the vacuum pump will be turned off until the probe is moved into the next port. Each of the four remaining ports will be traversed in the same manner as the first port. The overall duration of each sample run will be one hour. Each point sampling time will be calculated per the following equation.

$$\text{Minutes at point n} = \frac{\sqrt{\text{Point n } \Delta P}}{\left(\sqrt{\Delta P}\right)\text{avg}} \text{ x 5.0 minutes}$$

After the sample train passes a post-test leak check, the sample will be recovered. The first jar will function as the sample container jar. The outside of the first impinger stem will be rinsed into the first jar as well as the contents of the second jar and the tube that connects the first and second jar. The probe/nozzle and sampling line are also rinsed into the first jar. This is done by injecting the 0.1N sodium hydroxide into the end of the probe/nozzle and sampling line while drooped between two people and then raising the tubing to force the sodium hydroxide down the tube to be released into the first impinger jar. This will be repeated three times. The collected sample will be sealed in the jar and labeled with a sample number. The liquid level will be marked to gauge any sample loss.

4.2.3 Laboratory Analysis

Each of the sampling procedures outlined above will be repeated until three Two-hour samples have been collected. These samples will then be sent to Environmental Health Labs (EHL) of Cromwell, Connecticut. EHL is an accredited laboratory for this type of analysis. In accordance with method 306A, the samples will be analyzed by atomic adsorption spectrophotometry (AA). Prior to being analyzed by the AA, the samples will be digested with acid to concentrate the sample and provide a lower detection limit. The lower detection limit for the AA is <2.5 ug based on an average sample volume of 500 ml.

5.0 QUALITY ASSURANCE

The project manager is responsible for implementation of the quality assurance program as applied to this project. Implementation of quality assurance procedures for source measurement programs is designed so work is done:

- By competent, trained individuals experienced in the methodologies being used.
- Using properly calibrated equipment.
- Using approved procedures for sample handling and documentation.

Measurement devices, pitot tubes, dry gas meters, and thermocouples are uniquely identified and calibrated with documented procedures and acceptance criteria before and after each field effort. Records of all calibration data are maintained in the files.

Data are recorded on standard forms. Bound field notebooks are used to record observations and miscellaneous elements affecting data, calculations, or evaluation.

Prior to the test program Air Tox provides calibrations of all pitot tubes, dry gas meters, orifice meters, sampling nozzles, and thermocouples which are used during the test. All calibrations are performed within four months prior to the test date.

Probe and fiber bed temperatures will be +/- 25 °F of the specified temperature.

In addition to the test samples, blank samples of reagents will be collected at the test site for background analyses. All blank samples will be analyzed in conjunction with actual test samples. Sampling results will be corrected for these backgrounds if required.

Appropriate sample recovery data will be recorded on the sample identification and handling logs, chain of custody forms and analytical data forms as presented in the Appendix. Recovered samples will be stored in shock-proof containers for storage and shipment for analyses.

Specific details of Air Tox's QA program for stationary air pollution sources may be found in "Quality Assurance Handbook for Air Pollution Measurement Systems", Volume III (EPA-600/4-7-027b).

Appendix

NOTIFICATION OF PERFORMANCE TEST
(This notification is not required if you do not have to conduct a performance test under the regulation.)

Applicable Rule: 40 CFR Part 63, Subpart N--National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks

1. Print or type the following for each plant in which chromium electroplating and/or chromium anodizing operations are performed:

Owner/Operator/Title JOHN RAYMOND / OWNER.
Street Address LACEY PLACE
City SOUTHPORT State CT Zip Code 06490
Plant Name SUPERIOR PLATING CO.
Plant Phone Number (203) 255 - 1501
Plant Contact/Title RICHARD DURAZZO
Plant Address (if different than owner/operator's):
Street Address
City State Zip Code

2. Complete the following table. If additional lines are needed, make copies of this page.

Type of control technique	Control System ID #	ID # of tank ducted to control system	Type of tank	Date of performance test
FIBER BED DEMISTER	#2	#18	HARD CHROME	7/22/97
		#19	HARD CHROME	
		#20	HARD CHROME	
		#21, #22	HARD CHROME	
		#23, #24	HARD CHROME	
FIBER BED DEMISTER	#3	#31, #32, #33	HARD CHROME	7/22/97
		#34, #37, #43, #44	HARD CHROME	
		#45, #46, #55	HARD CHROME	
		#56, #60, #61, #62	HARD CHROME	
		#63, #64A, #64B	HARD CHROME	

Cummulative Potential Rectifier Capacity

$(\sum C_R)(8{,}400)(0.7)$ = Ampere-hours per year

Superior Plating's $(\sum C_R)$= 152,400

(152400)(8400)(0.7)= 896,112,000 Ampere-hours per year

CHROMIUM METER CALIBRATION WORKSHEET

CHROME METER NAME/#:	#3	DATE:	6/13/97		
BAROMETRIC PRESSURE	29.59	TECH.:	Erik Mallory		
STANDARD METER Y:	1.002	PRE-CAL:	x	POST-CAL:	

STANDARD METER			CHROMIUM METER		
ORIFICE SETTING ΔH in. H2O	VOLUME Vm (cubic ft.)	AVERAGE TEMP (°F)	VOLUME Vm (cubic ft.)	TEMP. tmi (°F)	Y FACTOR
1.9	21.84	77	22.50	73	0.98
1.9	21.76	78	22.50	75	0.98
1.9	21.81	81	22.50	75	0.98
				AVERAGE	0.98

Chromium Field Data Sheet

USEPA Reference Method 306A
Rectangular Duct

Facility: _____ Stack No. or ID _____
Location: _____ Stack Diameter _____
Operator: _____ Pitot Coeff. (Cp) _____
Date: / / _____ Baro. Press (Pbar) _____ "Hg
Run No. _____

Port #	Point No.	ΔP	Cyclonics	Port #	Point No.	ΔP	Cyclonics
1	1			4	1		
	2				2		
	3				3		
	4				4		
	5				5		
2	1			5	1		
	2				2		
	3				3		
	4				4		
	5				5		
3	1						
	2						
	3						
	4						
	5						

Chromium Field Data Sheet

USEPA Reference Method 306A

(1 Hour Test)

Facility:	_____	Stack No. or ID	_____
Location:	_____	Stack Diameter	_____ in.
Operator:	_____	Calibration Factor (Y)	_____
Date:	_____	Pitot Coeff. (Cp)	_____
Run No.	_____	Baro. Press (Pbar)	_____ "Hg

Leak rate before run	_____ cfm	Leak rate after run	_____ cfm
Stack Temp. Start	_____ °F	Stack Temp. End	_____ °F
Meter Volume Start	_____ cu. ft.	Meter Volume End	_____ cu. ft.

		SAMPLE PORTS #1 , #2, & #3					SAMPLE PORTS #4 & #5		
Port No.	Pt. No.	Time (min:sec)	Total Time (hr:min:sec)	Meter Temp. (deg F)	Port No.	Pt. No.	Time (min:sec)	Total Time (hr:min:sec)	Meter Temp. (deg F)
1	1				4	1			
	2					2			
	3					3			
	4					4			
	5					5			
2	1				5	1			
	2					2			
	3					3			
	4					4			
	5					5			
3	1								
	2								
	3								
	4								
	5								

Total Sample Volume _____ cu. ft.
(End Volume - Start Volume)

Average Meter Temp. _____ (deg F)

Calculated Stack Concentration - Chromium

$$C_{Cr} = \frac{(M_{Cr})(T_m + 460)}{(449.8)(Y_m)(V_m)(P_{bar})}$$

M_{Cr}= Amount of Cr in sample (µg)
T_m= Dry gas meter temperature
Y_m= Dry gas meter correction factor
V_m= Dry gas meter volume (ft^3)
P_{bar}= Barometric pressure

Test #1	C_{Cr}= 0 mg/dscm
	M_{Cr}= 0
	T_m= 0
	Y_m= 0
	V_m= 0
	P_{bar}= 0.00

Test #2	C_{Cr}= 0 mg/dscm
	M_{Cr}= 0
	T_m= 0
	Y_m= 0
	V_m= 0
	P_{bar}= 0.00

Test #3	C_{Cr}= 0 mg/dscm
	M_{Cr}= 0
	T_m= 0
	Y_m= 0
	V_m= 0
	P_{bar}= 0.00

Average emission rate =

Appendix

NOTIFICATION OF PERFORMANCE TEST
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Applicable Rule: **40 CFR Part 63, Subpart N–National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks**

1. **Print or type the following for each plant in which chromium electroplating and/or chromium anodizing operations are performed:**

Owner/Operator/Title JOHN RAYMOND / OWNER.
Street Address LACEY PLACE
City SOUTHPORT State CT Zip Code 06490
Plant Name SUPERIOR PLATING CO.
Plant Phone Number (203) 255 - 1501
Plant Contact/Title RICHARD DURAZZO
Plant Address (if different than owner/operator's):
Street Address _____
City _____ State _____ Zip Code _____

2. **Complete the following table. If additional lines are needed, make copies of this page.**

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		#19	HARD CHROME	
		#20	HARD CHROME	
		#21, #22	HARD CHROME	
		#23, #24	HARD CHROME	
FIBER BED DEMISTER	#3	#31, #32, #33	HARD CHROME	7/22/97
		#34, #37, #43, #44	HARD CHROME	
		#45, #46, #55	HARD CHROME	
		#56, #60, #61, #62	HARD CHROME	
		#63, #64A, #64B	HARD CHROME	

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		#20	HARD CHROME	
		#21, #22	HARD CHROME	
		#23, #24	HARD CHROME	
FIBER BED DEMISTER	#3	#31, #32, #33	HARD CHROME	7/22/97
		#34, #37, #43, #44	HARD CHROME	
		#45, #46, #55	HARD CHROME	
		#56, #60, #61, #62	HARD CHROME	
		#63, #64A, #64B	HARD CHROME	