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APR 8 1992
KERN COUNTY AIR
POLLUTION CONTROL DISTRICT

COMPANY : GOLDEN STATE METALS
UNIT : AUTO SHREDDER
DATE : 1-23&24-92
REPORT : 42-888

SUMMARY OF RESULTS

METHOD 5 - PARTICULATE	RUN 1	RUN 2	RUN 3	AVERAGE	PERMIT LIMITS
gr/DSCF	0.007965	0.002911		0.005438	NA
gr/SCF	0.007892	0.002882		0.005387	NA
LBS/HR	0.840	0.310		0.575	4.5

METALS, ASBESTOS, & PCB

ANALYSIS OF PARTICULATE CATCH (AVERAGE OF 2 RUNS)

	Cd *	Cr *	Pb **	Zn **	Asbestos **	PCB	PERMIT LIMITS
Total ug	25	25	30.5	173.7	0.101	3.5	NA
ug/DSCF	1.08E-05	1.08E-05	1.33E-05	7.54E-05	4.35E-08	1.51E-06	
ug/DSCM	3.06E-07	3.06E-07	3.77E-07	2.14E-06	1.23E-09	4.28E-08	
LBS/HR	1.16E-03	1.16E-03	1.42E-03	8.09E-03	4.69E-06	1.63E-04	

METHOD 501

PM-10, Particulate < 10 um	RUN 1	RUN 2		AVERAGE	PERMIT LIMITS
% PM-10	32	70.5		51.3	NA

Run #2 utilized five times the sample volume and should be considered more accurate than Run #1

METHOD 425 - HEXAVALENT CHROMIUM

	RUN 1 *	RUN 2 **	RUN 3 **	AVERAGE	PERMIT LIMITS
ug/DSCF	0.13	0.15	0.22	0.17	NA
ug/DSCM	4.73	5.35	7.82	5.97	
LBS/HR	2.18E-04	2.45E-04	3.59E-04	2.74E-04	

* Not detected, used 1/2 detection limit
** Partially detected, used 1/2 detection limit on the ND fraction.

INTRODUCTION

On January 23 & 24, 1992, Petro Chem Environmental Services (PCES) performed a series of emission source tests for Golden State Metals located in Kern County, Ca. The unit tested was the Auto Shredder Residue Separator. Concentrations and emissions of PM, PM-10, hexavalent chromium, heavy metals (Cd, Cr, Pb, Zn), asbestos, and PCB were determined using the following procedures:

Parameters	Method	# Test Runs
Particulate	EPA Method 5; Particulate	2
% H_2O	EPA Method 4; Condensation	2
% O_2, CO_2, and N_2	EPA Method 3; Orsat Analysis	2
Volume Flow Rate	EPA Method 2; Pitot Tube Traverse	2
PM-10 Particle Size Distribution	CARB Method 501; Mark III Cascade impactor with glass fiber substrates	2
Hexavalent Chromium	CARB Method 425; diphenylcarbazide spectrophotometric analysis, Enseco Labs	3
Metals (Cd, Cr, Pb, Zn)	ICP Analysis of particulate catch, Coast to Coast Analytical	2
PCB	ECP Analysis of particulate catch, Coast to Coast Analytical	2
Asbestos	TEM Analysis of particulate catch, EMS Labs	2

When pollutants (chrome, metals, PCB, Asbestos) were not detected in a sample run, the results were asterisked and one-half the detection limit was used for emission calculations. When pollutants were partially detected (one or more of the fractions of a run were not detected) the results are double asterisked and one-half the detection limit was used for those non-detected fractions.

All sampling was performed by Tim Brennan, Bob Martin, and Scott Davis of Petro Chem Environmental Services, Inc. The particulate and PM-10 analysis was performed by the PCES laboratory.

COMPANY : GOLDEN STATE METALS
UNIT : AUTO SHREDDER
DATE : 1-23&24-92
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METHOD 5
FIELD DATA @ 60°F

	RUN #: 1	2
	TIME: 1033	1228
Vm (dry gas sampled)	33.52	34.94
Y (meter calib. factor)	1.004973	1.004973
P bar (Barometric pressure)	30.06	30.06
P static (stack pressure, " H2O)	-0.7	-0.7
Delta H (differential meter press, " H2O)	0.74	0.78
Tm (meter temperature, R°)	503	508
Vol H2O mls	7	7.7
Vm(std),dscf	35.05	36.18
Bws-H2O vapor	0.0092	0.0098
MF-moisture factor	0.9908	0.9902
% CO2	0	0
% O2	20.9	20.9
% N2	79.1	79.1
Md-MW stk gas,dry	28.84	28.84
Ms-MW stk gas,wet	28.74	28.73
Cp-pitot tube	0.84	0.84
Avg sq rt ^p	0.856	0.881
T stack, R°	517	519
Stack area,ft2	4.34	4.34
Vs-fps	47.59	49.09
Qstd-dscfm	12386	12720
Area noz,ft2	2.07E-04	2.07E-04
Sample time	60	60
% Isokinetic	98.7	99.2

COMPANY : GOLDEN STATE METALS
UNIT : AUTO SHREDDER
DATE : 1-23-92
REPORT : 42-888

RUN #1

EPA METHOD 5
@ 60° F

PARTICULATE RESULTS:	net mg	gr/dscf	gr/scf	lbs/hr
Probe & Nozzle:	10.5	0.004613	0.004570	0.490
Filter:	7.33	0.003220	0.003190	0.340
Condensables:	0.3	0.000131	0.000130	0.010
Total:	18.13	0.007965	0.007892	0.840

ADDITIONAL DATA:

TIME						
start	finish	%O2	%CO2	%H2O	Vm(std)	DSCFM
1033	1133	20.9	0	0.92	35.05	12386

RUN #2

PARTICULATE RESULTS:	net mg	gr/dscf	gr/scf	lbs/hr
Probe & Nozzle:	5	0.002128	0.002107	0.230
Filter:	0.94	0.000400	0.000396	0.040
Condensables:	0.9	0.000383	0.000379	0.040
Total:	6.84	0.002911	0.002882	0.310

ADDITIONAL DATA:

TIME						
start	finish	%O2	%CO2	%H2O	Vm(std)	DSCFM
1228	1328	20.9	0	0.98	36.18	12720

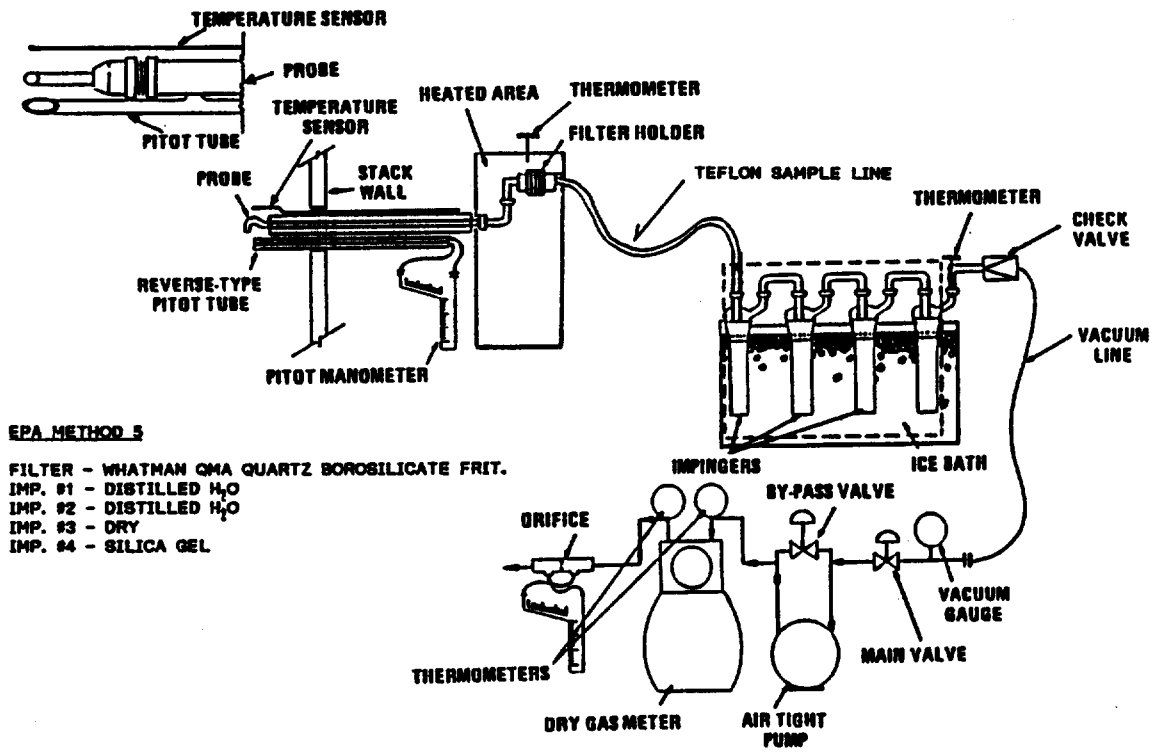
SAMPLING AND ANALYTIC PROCEDURES

REF: EPA Code of Federal Regulations, Title 40, Part 60, Appendix A. Method 1, 2, 3, 4, and 5

Sampling Apparatus

The sampling apparatus consisted of a nozzle, a heater wrapped probe, and a heated filter holder (see data sheets for type of nozzle, probe, and filter). The filter was connected to a heated teflon filter-to-impinger line. A series of impingers (see data sheet for type and contents) was connected in tandem and immersed in an ice bath. Following the absorption train was a gas pump, dry test meter, and a calibrated restriction orifice fitted with a magnehelic differential pressure gauge. A type 'S' pitot tube and temperature probe was then positioned alongside the probe terminating at the sample nozzle for the purpose of monitoring duct conditions throughout the test.

Sampling Diagram



EPA Method 1: Sampling and Velocity Traverses for Stationary Sources

Prior to the source test a site assessment was performed in order to locate sample points for obtaining the best representative measurements of pollution concentrations and volumetric flow rates. EPA Method 1 takes into account duct area, straight run and cyclonic or stratified flow patterns.

EPA Method 2: Velocity and Volumetric Flow Rates

A computer was used in selection of suitable sample/traverse points. The calibrated pitot tube was connected to a magnehelic gauge and leak checked. A temperature and Δ-P was then recorded at each traverse point and a duct static pressure was also measured and recorded. A volume flow rate was calculated from the measured required traverse points.

EPA Method 3: % CO_2, % O_2, Dry Molecular Weight

Concurrent with each particulate sampling, an integrated gas sample was withdrawn from the summation of the traverse points through the train and collected at the outlet of the meter into a sample bag. Then the contents of the sample bladder were analyzed by Orsat for fixed gas composition.

EPA Method 4: Percent Water

Tare weights of the charged individual impingers was recorded. After sampling, the final weights was then recorded. Percent water was calculated from the weight of water collected and the dry gas volume sampled.

EPA Method 5: Particulate Emissions

A series of preliminary measurements was made prior to conducting the particulate test. EPA Methods 1, 2, and 3 was performed to determine location and number of traverse points, average gas velocity, and pressure and gas molecular weight. Percent water was determined by a psychrometric chart or from combustion analysis of the fixed gases. The results of these measurements were entered into the field computer for the purpose of determining an appropriate nozzle size for isokinetic sampling.

The method 5 apparatus was then prepared on-site in the mobile laboratory. The absorption train was charged with freshly prepared chemicals, weighted on a calibrated digital balance to the nearest 0.1 grams, and assembled. The probe was brushed out and rinsed with distilled water and acetone, then the filter holder was charged. The sampling apparatus was sealed and transported to the sampling site were it was assembled and leak tested at 15 inches mercury vacuum.

The probe, filter and impinger line heaters were set at 250 °F and the probe was then positioned into the duct at the first traverse point with the nozzle out of the flow.

The nozzle was positioned into the gas flow and the vacuum pump was started immediately and adjusted to obtain an isokinetic sample rate. A complete traverse was performed while sampling at a minimum of two minutes per sample point. Upon completion of the traverse the vacuum pump was turned off and the probe was transferred into the next sample EPA port where an identical sample-traverse was then performed. Duct conditions (temperature, Δ-P)

and sampling conditions (meter temperature, volume and pressure, probe, filter, sample line, impinger temperatures, and absorption train vacuum) was monitored and recorded regularly for each sample point.

Upon completion of sampling, the apparatus was leak tested at a vacuum greater than the highest observed vacuum. The leak was recorded and the apparatus was then sealed and transported to the mobile laboratory. The heated filter-to-impinger line was rinsed with a known amount of distilled water into the first impinger.

The filter and any loose particulate was carefully removed from the filter holder with tweezers. It was then placed in a labeled petri dish and transported to the P.C.E.S. laboratory. The nozzle, probe, and filter top housing was rinsed and brushed three times with distilled water and acetone. The sample fractions were combined, bottled, labeled, and fluid level marked for transportation to the P.C.E.S. laboratory. Aliquots of distilled water and acetone were similarly treated for blank analysis.

The absorption train was inspected for abnormalities and disassembled. The impingers were weighed on a digital balance for a percent moisture determination. The contents of the impingers were quantitatively transferred into separate bottles, sealed, labeled, and fluid level marked for transportation to the P.C.E.S. laboratory for analysis, if required. Aliquots of the reagent grade impinger contents were saved for blank analysis.

The filter was transferred to an oven and heated at 105 °F for 2-3 hours and then placed in a desiccator for 24 hours. The filter was then weighed on a Mettler digital balance to the nearest 0.01 mg. Additional six hour desiccations and weighings were then performed until the difference between consecutive weighings were less than 0.5 mg or one percent of the total filtrate weight (weighed to a constant weight).

The nozzle/probe/filter top wash was then examined for any leakage during transportation and transferred to a tared evaporation dish. The wash was then evaporated at an elevated temperature, below the boiling point of the wash, with occasional swirling. The dish and wash residue was then desiccated and weighed to a constant weight.

If required by the regulatory agency, the contents of the first impinger were recovered and diluted volumetrically to a known volume. An aliquot of this sample was then evaporated, desiccated, and then weighed to a constant weight.

The net weight of particulate was calculated from the two fractions (three fractions including the impinger contents, if required). Concentrations (gr/DSCF) and emissions (lbs/hr) or other applicable units were then calculated and reported.

EPA METHOD 2
STACK GAS VELOCITY AND VOLUMETRIC FLOWRATE

Average Stack Gas Velocity
Eq. 2-6 & Eq. 2-9

$$P_g = \frac{\text{Static Pressure, } H_2O}{13.6}$$

$$P_s = P_{bar} + P_g$$

$$V_s = K_p \; C_p \left(\sqrt{\Delta P}\right) avg \sqrt{\frac{T_{s\,(avg)}}{P_s \; M_s}}$$

Average Stack Gas Dry Volumetric Flow Rate
Eq. 2-10

$$Q_{std} = 60 \left(1 - B_{ws}\right) \; v_s \; A \left(\frac{T_{std}}{T_{s\,(avg)}}\right) \left(\frac{P_s}{P_{std}}\right)$$

$$\frac{Q_{std}}{MF} = SCFM$$

EPA METHOD 3
DRY MOLECULAR WEIGHT OF STACK GAS
Eq. 3-2

$$M_d = 0.44\,(\%\,CO_2) + 0.320\,(\%\,O_2) + 0.280\,(\%\,N_2 + \%\,CO)$$

Wet Molecular Weight of Stack Gas

$$M_s = M_d\,\left(1 - B_{ws}\right) + 18\left(B_{ws}\right)$$

EPA METHOD 4
DETERMINATION OF MOISTURE CONTENT IN STACK GASES

Volume of Water Vapor Condensed
Eq. 4-1

$$V_{wc\,(std)} = \frac{(V_f - V_i)\rho_w \; RT_{std}}{P_{std} \; M_w} = K_1 (V_f - V_i)$$

Where: $K_1 = 0.04646 \; \frac{ft^3}{ml} \; @ \; 520^\circ R$

Volume of Water Vapor Collected in Silica Gel
Eq. 4-2

$$V_{wsg\,(std)} = \frac{(W_f - W_i) \; RT_{std}}{P_{std} \; M_w \; (453.6 \; g/lb)}$$

$$= K_2 (W_f - W_i)$$

Where: $K_2 = 0.04651 \; \frac{ft^3}{g} \; @ \; 520^\circ R$

Sample Gas Volume
Eq. 4-3

$$V_m\,(std) = V_m \; Y \left(\frac{(P_m)(T_{std})}{(P_{std})(T_m)} \right)$$

$$= K_3 \; Y \; \frac{V_m \; P_m}{T_m}$$

Where: $K_3 = 17.38 \; \frac{^\circ R}{in. \; Hg} \; @ \; 520^\circ R$

Moisture Content
Eq. 4-4

$$B_{ws} = \frac{V_{wc}\,(std) + V_{wsg}\,(std)}{V_{wc}\,(std) + V_{wsg}\,(std) + V_m\,(std)}$$

$B_{ws} \times 100 = \%\; H_2O$ *in gas stream*

$MF = 1 - B_{ws}$

EPA METHOD 5
DETERMINATION OF PARTICULATE EMISSIONS FROM STATIONARY SOURCES
Use in Method 5 and 8 combinations runs

Dry Gas Volume
Eq. 5-1

$$V_m(std) = V_m Y \left(\frac{T_{std}}{T_m}\right)\left[P_{bar} + \frac{\Delta H}{13.6}\right]$$

$$= K_1 V_m Y \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m}\right]$$

$$= K_1 = 17.38 \frac{^\circ R}{in.Hg} @ 520^\circ R$$

*In case of leak rate beyond allowable limits, correct Eq. 5-1 as follows:
Case 1 - No component changes made during run.

$$V_m = V_m - (L_p - L_a)\theta$$

Case 2 - One or more component changes made during run.

$$V_m = \left[V_m - (L_1 - L_a)\theta_1 - \sum_{i=2}^{n} (L_i - L_a)\theta_i - (L_p - L_a)\theta_p\right]$$

Volume of Water Vapor
Eq. 5-2

$$V_{wc}(std) = V_1 c \left(\frac{\rho_w}{M_w}\right)\left(\frac{RT_{std}}{P_{std}}\right)$$

$$= K_2 V_1 c$$

$$Where: K_2 = 0.04646 \frac{ft^3}{ml} @ 60^\circ F$$

Moisture Contnet
Eq. 5-3

$$B_{ws} = \frac{V_{wc}(std)}{V_m(std) + V_{wc}(std)}$$

EPA METHOD 5
(con't)

Acetone Blank Concentration
Eq. 5-4

$$C_a = \frac{M_a}{V_a \rho_a}$$

Acetone Wash Blank
Eq. 5-5

$$W_a = C_a V_{aw} \rho_a$$

Particulate Concentration
Eq. 5-6

$$C_s = \frac{gr}{dscf} = \left(0.001 \frac{g}{mg}\right)\left(\frac{M_n}{V_m(std)}\right)(15.432)$$

$$gr/dscf\,(MF) = \frac{gr}{scf}$$

Corrected to 12 % CO_2

$$\frac{gr}{dscf} @ 12\%\ CO_2 = \frac{\frac{gr}{dscf} \times 12\ \%\ CO_2}{\%\ CO_2\ (dry)}$$

Isokinetic Variation
Eq. 5-7 and 5-8

$$\%\ I = 100 \times \frac{T_s\left[V_{1c} K_3 + \frac{V_m}{T_m}\left(P_b + \frac{\Delta H}{13.6}\right)\right]}{60\ \theta\ A_n\ V_s\ P_s}$$

Where: $K_3 = 0.002669$

Mass Emission Rate

$$\frac{lbs}{hr} = \frac{gr}{dscf} \times dscfm \times 60\ \frac{m}{hr} \times \frac{1\ lb}{7000\ gr}$$

NOMENCLATURE

(1 of 3)

A = Cross-sectional area of stack (ft^2)

A_n = Cross-sectional area of nozzle, (ft^2)

B_{ws} = Proportion of water vapor, by volume, in the gas stream

C_a = Acetone blank residue concentration, (mg/g)

C_p = Pitot tube coefficient, dimensionless

C_s = Concentration of particulate matter in stack gas, dry basis corrected to standard conditions, (gr/dscf)

C_{SO2} = Concentration of sulfur dioxide dry basis corrected to standard conditions, (lb/dscf)

C_{H2SO4} = Sulfuric acid (including SO3) concentration, corrected to standard conditions, (lb/dscf)

ΔH = Average pressure differential across the orifice meter, (in H_2O)

K_p = Pitot tube constant, 85.49 $\frac{ft\ [(lb/lb\text{-}mole)(in\ Hg)]^{\frac{1}{2}}}{sec[\ (^{\circ}R)\ (in\ H_2O)\ ]}$

L_p = Leakage rate observed during the post-test leak check, (cfm)

L_a = Maximum acceptable leakage rate, (0.02 cfm or 4% of average sampling rate, whichever is less)

L_i = Individual leakage rate observed during the leak check conducted prior to the "i^{th}" component change, (cfm)

M_a = Mass of residue of acetone after evaporation, mg

M_d = Molecular weight of stack gas, dry basis, (lb/lb-mole)

M_n = Total weight of particulate matter collected, mg

M_s = Molecular weight of stack gas, wet basis, (lb/lb-mole)

M_w = Molecular weight of water, 18 lb/lb-mole

N = Normality of barium perchlorate titrant, (milliequivalents/ml)

ΔP = Velocity head of stack gas, (in H_2O)

P_{bar} = Barometric pressure at measurement site (in Hg)

P_g = Stack static pressure, (in Hg)

P_m = Absolute pressure at the dry gas meter, ($P_{bar} + \Delta H/13.6$)

NOMENCLATURE

(2 of 3)

P_s = Absolute stack gas pressure, (inches Hg)

$P_{(std)}$ = Standard absolute pressure, 29.92 in Hg

$Q_{(std)}$ = Dry volumetric stack gas flow rate, standard conditions, (dscfm)

R = Ideal gas constant, 21.85 (in Hg) (ft^3)/(lb-mole)(°R)

t_s = Stack temperature, (°F)

T_m = Absolute temperature at meter, (°R)

$T_{(std)}$ = Standard absolute temperature, (520°R)

T_s = Absolute stack temperature, (460°+ t_s)

V_a = Volume of sample aliquot titrated, (ml)

V_{ab} = Volume of acetone blank, ml

V_m = Dry gas volume measured by dry gas meter, (dcf)

$V_{m(std)}$ = Dry gas volume measured by dry gas meter, corrected to standard conditions, (dscf)

$V_{wc(std)}$ = Volume of water vapor condensed corrected to standard conditions,(scf)

$V_{wsg(std)}$ = Volume of water vapor collected in silica gel corrected to standard conditions (scf)

V_{ic} = Volume of water vapor condensed in impingers and silica gel, (ml)

V_f = Final volume of condensed water, ml

V_i = Initial volume of condensed water, ml

v_s = Average stack gas velocity, (ft/sec)

V_{soln} = Total volume of solution in which the sulfur dioxide sample is contained (ml)

V_t = Volume of barium perchlorate titrant used for the sample, (ml)

V_{tb} = Volume of barium perchlorate titrant used for the blank, (ml)

W_f = Final weight of silica gel or silica gel plus impinger, (g)

W_i = Initial weight of silica gel or silica gel plus impinger, (g)

Y = Dry gas meter calibration factor

ρ_w = Density of water, (0.002202 lb/ml @ 60°F)

NOMENCLATURE

(3 of 3)

ρa	=	Density of acetone, (g/ml)(see bottle label)
MF	=	Moisture factor
$\%CO_2$	=	Percent CO_2 by volume (dry basis)
$\%O_2$	=	Percent O_2 by volume (dry basis)
%CO	=	Percent CO by volume (dry basis)
$\%N_2$	=	Percent N_2 by volume (dry basis)
0.264	=	Ratio of O_2 to N_2 in air v/v
0.280	=	Molecular weight of N_2 or CO, divided by 100
0.320	=	Molecular weight of O_2, divided by 100
0.440	=	Molecular weight of CO_2, divided by 100
60	=	Conversion factor, (sec/min)
18.0	=	Molecular weight of water, (lb/lb-mole)
32.03	=	Equivalent weight of sulfur dioxide
θ	=	Total sampling time (min)
θ_i	=	Sampling time interval, between two successive component changes, beginning with the interval between the first and second changes, (min)
θ_1	=	Sampling time interval, from the run beginning until first component change, (min)
θ_p	=	Sampling time interval, from the final (n^{th}) component change until the end of the sampling run, (min)

COMPANY : GOLDEN STATE METALS
UNIT : AUTO SHREDDER
DATE : 1-23&24-92
REPORT : 42-888

METHOD 501
FIELD DATA @ 60°F

DATE :	1/23	1/24
RUN #:	1	2
TIME:	1050	828
Vm (dry gas sampled)	30.975	155.33
Y (meter calib. factor)	1.002821	1.002821
P bar (Barometric pressure)	30.06	29.97
P static (stack pressure, " H2O)	-0.7	-0.7
Delta H (differential meter press, " H2O)	0.7	0.7
Tm (meter temperature, R°)	502	508
Vol H2O mls	38.2	34.4
Vm(std),dscf	32.38	159.99
Bws-H2O vapor	0.0520	0.0099
MF-moisture factor	0.9480	0.9901
% CO2	0	0
% O2	20.9	20.9
% N2	79.1	79.1
Md-MW stk gas,dry	28.84	28.84
Ms-MW stk gas,wet	28.28	28.73
Cp-pitot tube	0.84	0.84
Avg sq rt ^p	0.854	0.877
T stack, R°	515	512
Stack area,ft2	4.34	4.34
Area noz,ft2	1.87E-04	1.87E-04
Sample time	60	270
% Isokinetic	105.1	108.2

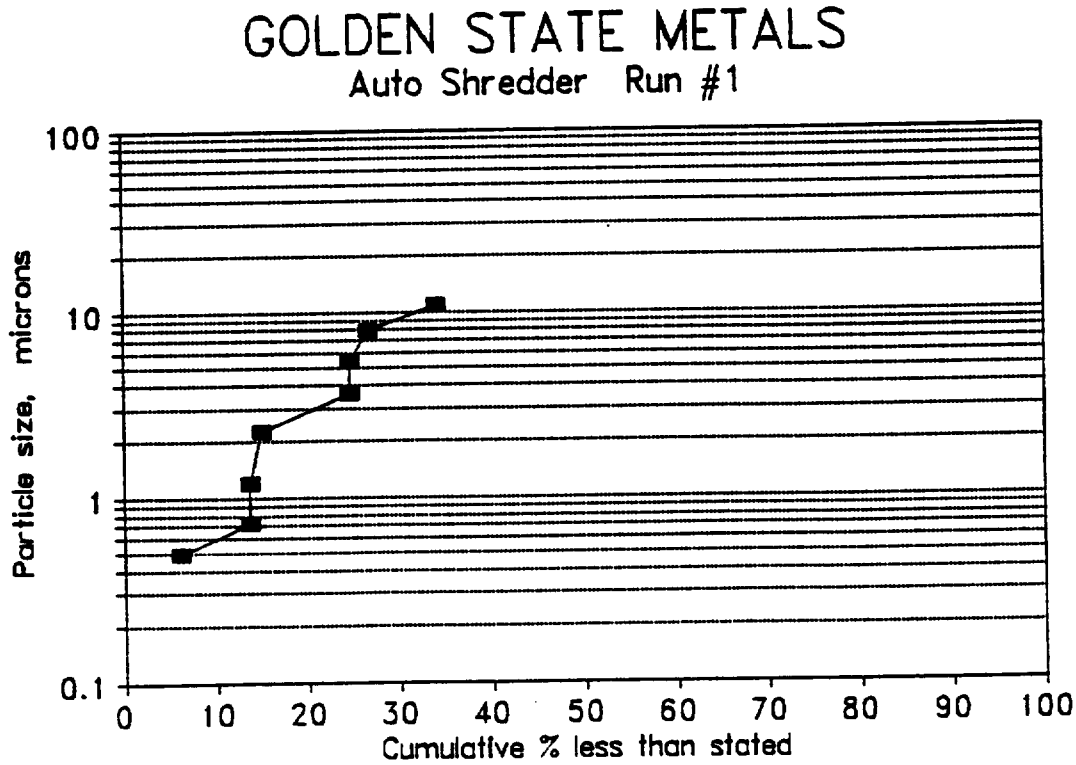
COMPANY : GOLDEN STATE METALS
UNIT : AUTO SHREDDER
DATE : 1-23&24-92
REPORT : 42-888

RUN #1

Method 501

Particulate Size Distribution

STAGE	FINAL WEIGHT	TARE WEIGHT	NET MG	% IN SIZE RANGE	CUMULATIVE LESS THAN SIZE	EFFECTIVE CUT DIAMETER
NOZZLE WASH	79.5950	79.5866	8.40	—	—	—
0	0.15571	0.15541	0.30	—	—	—
		TOTAL	8.70	65.86	34.14	> 11
1	0.13959	0.13860	0.99	7.49	26.65	7.9
2	0.15493	0.15466	0.27	2.04	24.60	5.4
3	0.13658	0.13658	0.00	0.00	24.60	3.6
4	0.15623	0.15497	1.26	9.54	15.06	2.3
5	0.13843	0.13826	0.17	1.29	13.78	1.2
6	0.15639	0.15639	0.00	0.00	13.78	0.72
7	0.13873	0.13773	1.00	7.57	6.21	<.49
BACK-UP	0.26190	0.26188	0.020	6.21	0.00	—
IMP (INORG)	81.6369	81.6365	0.80	—	—	
aliquot	250	500				
		Total	13.21	100.0		



Petro Chem Environmental Services, Inc.

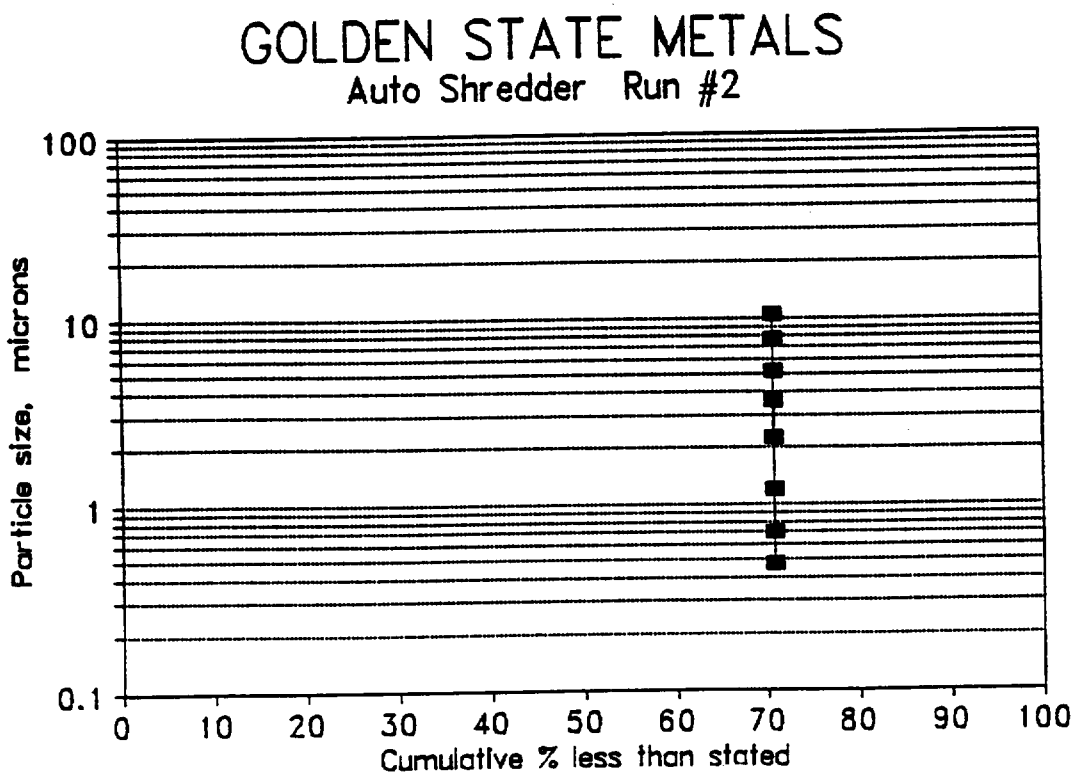
COMPANY : GOLDEN STATE METALS
UNIT : AUTO SHREDDER
DATE : 1-23&24-92
REPORT : 42-888

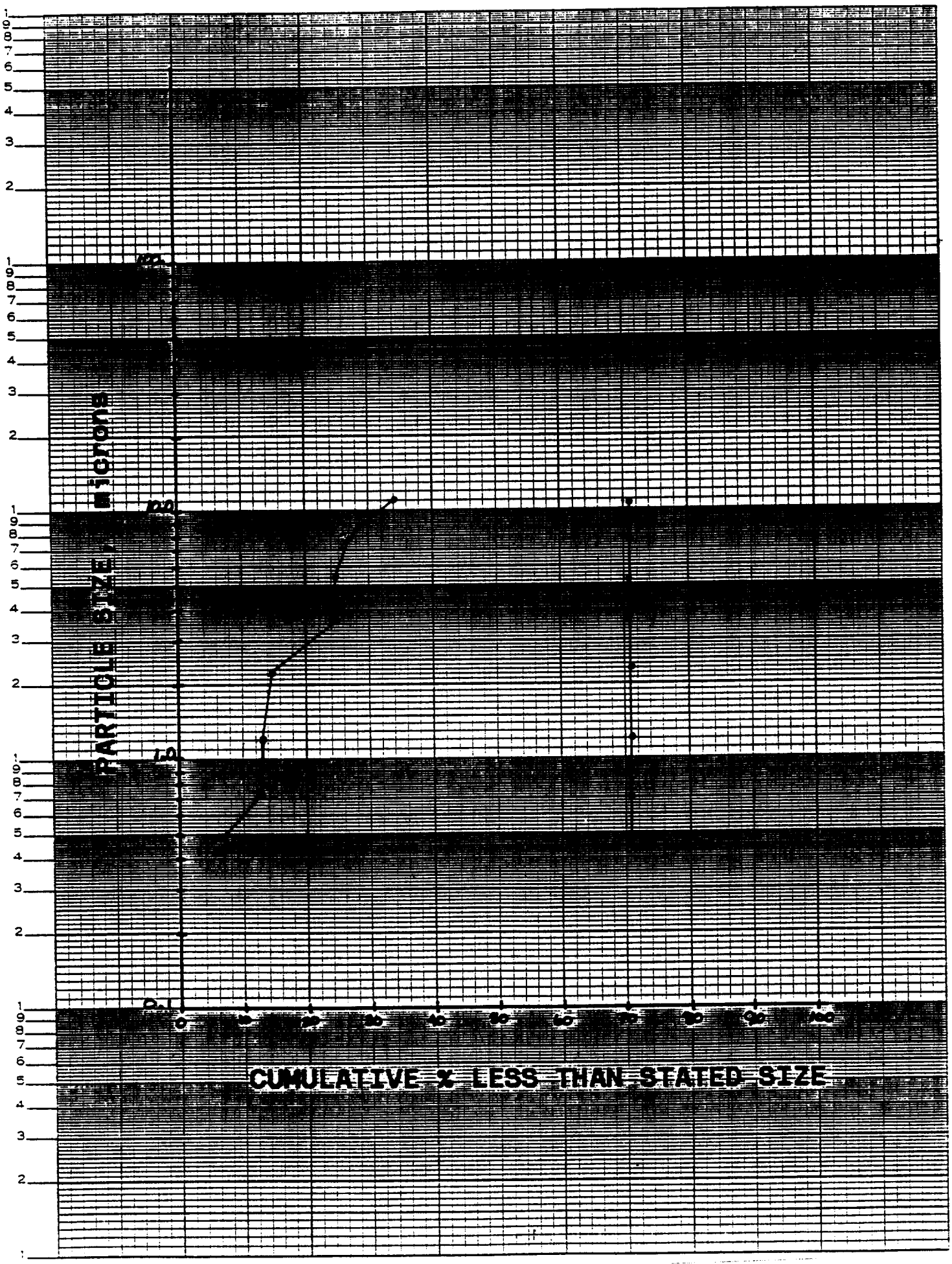
RUN #2

Method 501

Particulate Size Distribution

STAGE	FINAL WEIGHT	TARE WEIGHT	NET MG	% IN SIZE RANGE	CUMULATIVE LESS THAN SIZE	EFFECTIVE CUT DIAMETER
NOZZLE WASH	78.4448	78.4348	10.0	—	—	—
0	0.15309	0.15309	0.00	—	—	—
		total	10.0	29.23	70.77	>10.5
1	0.13455	0.13455	0.00	0.00	70.77	7.8
2	0.15373	0.15373	0.00	0.00	70.77	5.2
3	0.13744	0.13744	0.00	0.00	70.77	3.6
4	0.15392	0.15392	0.00	0.00	70.77	2.3
5	0.13911	0.13911	0.00	0.00	70.77	1.2
6	0.15454	0.15454	0.00	0.00	70.77	0.70
7	0.13665	0.13665	0.00	0.00	70.77	< .48
BACK-UP	0.25573	0.23172	24.01	70.77	0.00	—
IMP (INORG)	76.5811	76.5810	0.20	—	—	
aliquot	250	500				
		Total	34.2	100.0		





SEMI LOGARITHMIC 5 CYCLES X 10 TO THE INCH
5TH LINES ACCENTED

Petro Chem Environmental Services, Inc.

AERODYNAMIC PARTICLE SIZE DISTRIBUTION

Ref: Operating instruction for Andersen Stack Sampling Equipment, Andersen 2000, Inc., P.O. Box 20769 AMF, Atlanta, Ga. 30320

Method Application

The "In-stack Sampler" consists of a series of jet plates, each with precision drilled orifices arranged in concentric circles. At a given plate, each orifice is off-set from the preceding plate and of decreasing diameter, resulting in the fractionation of the aerosol dust according to its aerodynamic properties. For calibration of the sampler, the manufacturer gathered data for dust of spherical shape, unit density and an inlet nozzle velocity for dry air at 70 °F. Particle diameter at these standard conditions is defined as "aerodynamic diameter". The equations given in the "Calculations" section of this report relate aerodynamic diameter to approximate physical diameter. The results given are approximate to the extent that indeterminate effects, e.g. particle shape and duct pressure, influence the aerodynamic behavior of the particle. Included in the calculation are corrections for gas temperature, molecular weight, viscosity, and particle density, if known.

Sampling Procedure

Traverse points of nearly identical duct velocity were chosen for sampling. A nozzle was selected for which isokinetic sampling rate could be maintained. The Sampler was inserted into the duct and allowed to reach duct temperature (10-15 minutes). Connected in series were a Greenburg-Smith impinger, a liquid trap, a silica gel drying tube, a vacuum pump, a dry test meter, and a calibrated restriction orifice. The impinger was charged with distilled water and immersed in an ice bath. The nozzle was positioned directly into the duct gas stream and the pump immediately started. Isokinetic sampling rate was maintained over the period of the test by monitoring the orifice meter differential pressure. The Sampler was withdrawn from the duct, sealed for possible contamination and transported to the laboratory for analysis.

Analytical Procedure

The jet plates were dried to a constant weight. The nozzle was washed into a tared beaker, evaporated to dryness and desiccated to constant weight. When used, the back-up filter was dried to constant weight. The weight increase for each fraction was recorded from a tare weight determination.

AERODYNAMIC PARTICLE SIZE DISTRIBUTION
(con't)

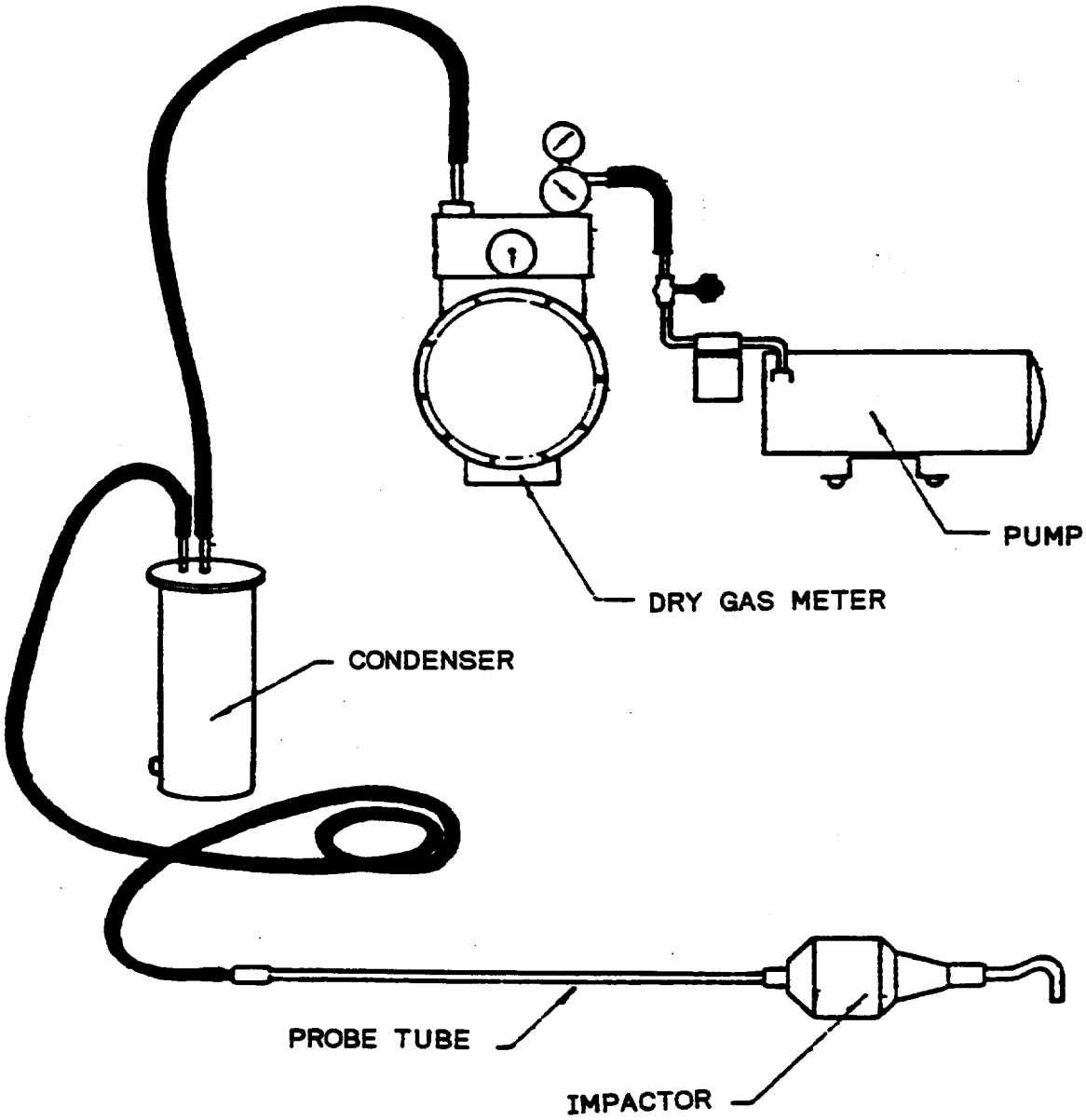
Impactors separate particles by differences in inertia. The size of particles collected on each stage is given by the following equation describing the particle size with 50 percent collection efficiency.

$$D_p = \frac{18u\, D_c\, \psi}{C_0\, P_p\, V_0}$$

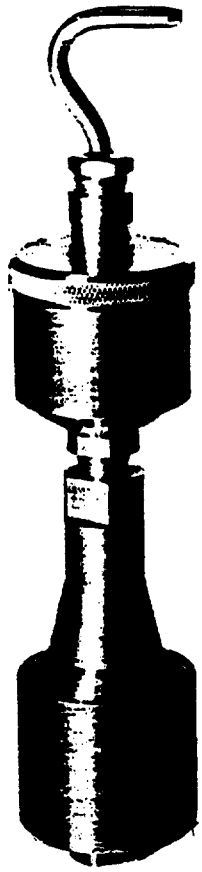
Where:

D_p = 50% effective cutoff diameter of particle, cm
u = Viscosity of air, poise
D_c = Diameter of the round jet, cm
ψ = Dimensionless inertial impaction parameter
C_0 = Cunningham slip correction factor
= $C_0 = 1 + 2L/D_p\ (1.23 + 0.41^{-0.44Dp/L})$
C_0 = $1 + 0.16 \times 10^{-4}/D_p$, for normal temperatures and pressures
P_p = Density of particle, gm/cm^3
V_0 = Velocity of aerosol jet, cm/sec
L = Mean free path for gas molecules

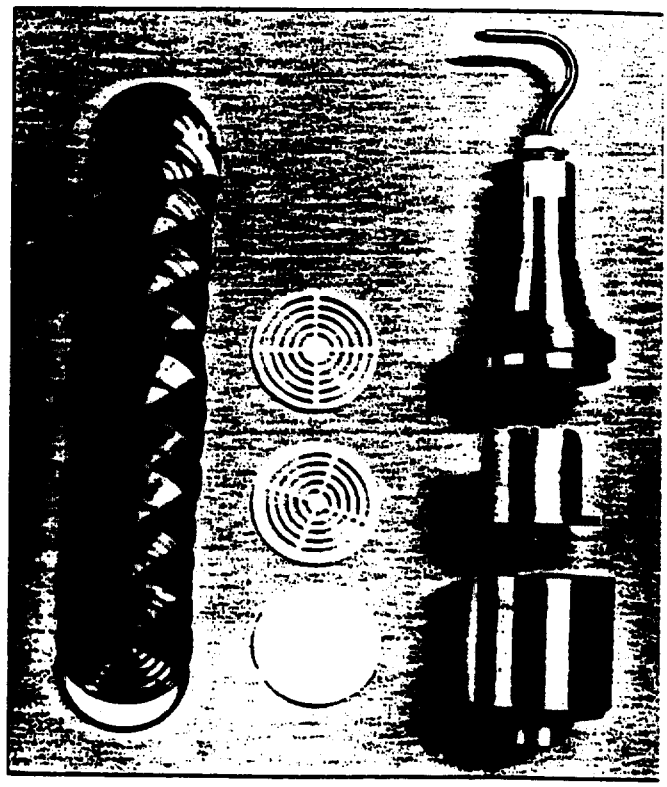
This equation shows that the orifice diameters determine the particle separation characteristics assuming constant stack and sampler conditions. By reducing the jet diameters, small particles can be collected on a given set of impactor conditions, the inlet flow rate at stack conditions (acfm) is what determines the fractionation characteristics.



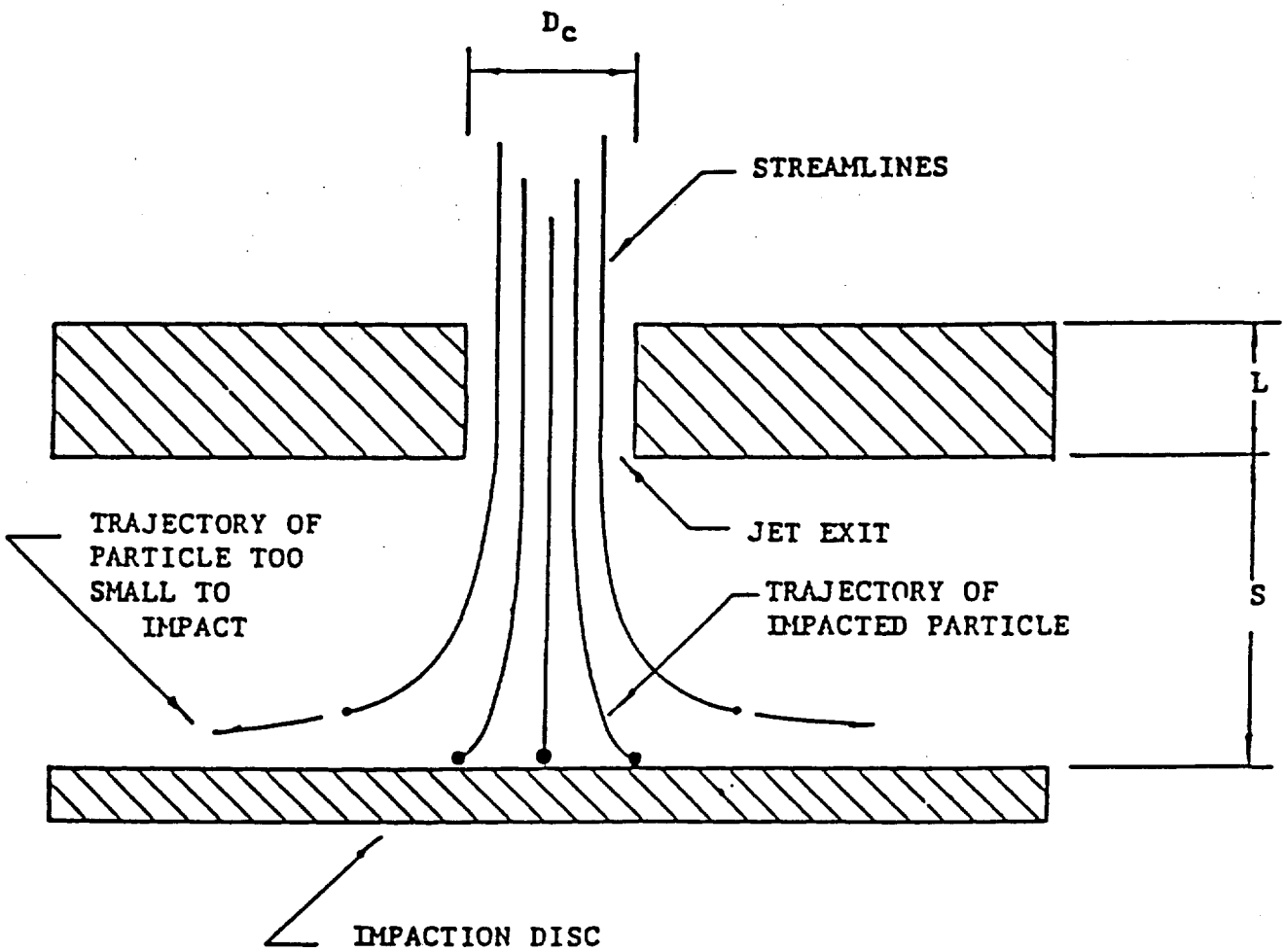
STACK SAMPLER
(NON "EPA TYPE")



ANDERSEN MARK III
STACK SAMPLER WITH PRESEPARATOR



ANDERSEN MARK III
HIGH TEMPERATURE STACK SAMPLER



SCHEMATIC OF IMPACTOR STAGE

COMPANY : GOLDEN STATE METALS
UNIT : AUTO SHREDDER
DATE : 1-23&24-92
REPORT : 42-888

METHOD 425
FIELD DATA @ 60°F

RUN #:	1	2	3
TIME:	833	1004	1136
Vm (dry gas sampled)	47.08	47.17	47.4
Y (meter calib. factor)	1.004973	1.004973	1.004973
P bar (Barometric pressure)	29.97	29.97	29.97
P static (stack pressure, " H2O)	-0.7	-0.7	-0.7
Delta H (differential meter press, " H2O)	1.07	1.07	1.08
Tm (meter temperature, R°)	509	514	515
Vol H2O mls	10.5	11	11.6
Vm(std),dscf	48.54	48.16	48.31
Bws-H2O vapor	0.0100	0.0105	0.011
MF-moisture factor	0.9900	0.9895	0.989
% CO2	0	0	0
% O2	20.9	20.9	20.9
% N2	79.1	79.1	79.1
Md-MW stk gas,dry	28.84	28.84	28.84
Ms-MW stk gas,wet	28.73	28.73	28.72
Cp-pitot tube	0.84	0.84	0.84
Avg sq rt ^p	0.852	0.847	0.853
T stack, R°	514	516	519
Stack area,ft2	4.34	4.34	4.34
Vs-fps	47.31	47.13	47.61
Qstd-dscfm	12338	12237	12284
Area noz,ft2	2.89E-04	2.89E-04	2.89E-04
Sample time	60	60	60
% Isokinetic	98.6	98.7	98.6

COMPANY : GOLDEN STATE METALS
UNIT : AUTO SHREDDER
DATE : 1-23&24-92
REPORT : 42-888

Method 425
CHROMIUM, TOTAL

RUN 1

SAMPLE ID	Total ug	ug/dscf	ug/DSCM	lb/hr
P/N	* 2.0	0.04	1.46	6.72E-05
IMPINGER/FILTER	* 4.5	0.09	3.27	1.51E-04
TOTAL	6.5	0.13	4.73	2.18E-04

Vm (std) = 48.54 dscf DSCFM= 12338
= 1.37 dscm

RUN 2

SAMPLE ID	Total ug	ug/dscf	ug/DSCM	lb/hr
P/N	3.3	0.07	2.42	1.11E-04
IMPINGER/FILTER	* 4.0	0.08	2.93	1.34E-04
TOTAL	7.3	0.15	5.35	2.45E-04

Vm (std) = 48.16 dscf DSCFM= 12237
= 1.36 dscm

RUN 3

SAMPLE ID	Total ug	ug/dscf	ug/DSCM	lb/hr
P/N	6.7	0.14	4.90	2.25E-04
IMPINGER/FILTER	* 4.0	0.08	2.92	1.34E-04
TOTAL	10.7	0.22	7.82	3.59E-04

Vm (std) = 48.31 dscf DSCFM= 12284
= 1.37 dscm

* Not detected, used 1/2 detection limit (per CARB)

lb/hr=ug/dscf * .0000154 gr/ug * .00858 * dscfm

EPA METHOD 425
HEXAVALENT CHROMIUM (Cr+6) AND TOTAL CHROMIUM (Cr)

EPA METHOD 425 SAMPLING

The sampling apparatus is the same as that which is described for EPA Method #5 and consisted of a quartz nozzle, heat traced quartz probe, borosilicate filter holder with a teflon-coated screen filter support, a teflon filter to impinger line and four modified Greenburg Smith impingers containing 100 ml DI distilled H_2O, 100 ml DI distilled H_2O, dry, and silica gel.

Prior to the testing all sampling equipment was cleaned with successive rinses of soapy water, tap water, 6N HNO_3 soak, and distilled H_2O. All sample containers were pre-cleaned by rinsing with 6N HNO_3 rinse and distilled H_2O.

The sample train was charged, a teflon coated glass fiber filter was placed into the filter holder and the probe/nozzle/filter was put together and all sampling equipment was sealed and transported to the stack for assembly.

The sampling equipment was assembled and leak tested at 10 inches Hg vacuum. The probe and filter components were heated to 250 (± 25 ° F). The probe was inserted into the stack and isokinetic sampling was initiated as per EPA Method #5.

Upon completion of a test the probe was withdrawn from the stack and leak tested at a vacuum equal to or greater than the maximum vacuum observed during the test. The equipment was then disassembled the filter to impinger line was rinsed with a known amount of DI distilled H_2O into the first impinger, and the components were then sealed with aluminum foil and transported to the mobile laboratory for sample recovery.

A field blank was similarly treated: charged, transported to the stack, leak tested, disassembled, and transported to the mobile laboratory for sample recovery. No additional gases were pulled through the field blank train.

SAMPLE RECOVERY

The filter and nozzle were separated from the probe. The probe was tilted and brushed three successive times while rinsing and rotating with DI distilled H_2O. Sterile surgical gloves were used during this process. All rinses were caught in an amber glass sample bottle.

The nozzle and filter top half were then similarly cleaned and the rinsings were combined with the probe wash. The filter was removed from the filter holder with teflon coated forceps, folded and placed into a petri dish.

The first, second and third impingers were disassembled, weighed, and their contents transferred to an amber sample bottle. The impinger, cross overs, and filter bottom half were rinsed three times with DI distilled H_2O, and the rinses were combined with the impingate sample.

Aliquots of the reagent grade chemicals and filters were recovered for analysis as reagent blanks. All samples were sealed, fluid levels marked, labeled and logged on a chain of custody form. Upon completion of the test they were transported to the laboratory for analysis.

SAMPLE ANALYSIS

The probe/nozzle rinse was analyzed separately. The filter was digested and combined with the probe wash and impingate contents. A portion of the sample was analyzed for hexavalent chromium by the diphenylcarbazide colorimetric method. The remainder of the sample was analyzed for total chromium by atomic absorption.

The reagent blanks were similarly analyzed and an in-house spike was performed with a similar sample matrix, percent recoveries are reported.

COMPANY : GOLDEN STATE METALS
UNIT : AUTO SHREDDER
DATE : 1-23&24-92
REPORT : 42-888

Metals, Asbestos, PCB
LBS/HR

gr/DSCF

POLLUTANT	TEST #	Vm(std)	DSCFM	TOTAL ug	ug/DSCF	LBS/HR
Cd	* 1	35.05	12386	25	1.10E-05	1.17E-03
	* 2	36.18	12720	25	1.06E-05	1.16E-03
			12569	AVERAGE	1.08E-05	1.16E-03
Cr	* 1	35.05	12386	25	1.10E-05	1.17E-03
	* 2	36.18	12720	25	1.06E-05	1.16E-03
				AVERAGE	1.08E-05	1.16E-03
Pb	** 1	35.05	12386	40.9	1.80E-05	1.91E-03
	** 2	36.18	12720	20.1	8.56E-06	9.34E-04
				AVERAGE	1.33E-05	1.42E-03
Zn	** 1	35.05	12386	218.3	9.59E-05	1.02E-02
	** 2	36.18	12720	129	5.49E-05	5.99E-03
				AVERAGE	7.54E-05	8.09E-03
Asbestos	** 1	35.05	12386	0.086	3.78E-08	4.02E-06
	** 2	36.18	12720	0.1154	4.91E-08	5.36E-06
				AVERAGE	4.35E-08	4.69E-06
PCB	* 1	35.05	12386	3.5	1.54E-06	1.63E-04
	* 2	36.18	12720	3.5	1.49E-06	1.63E-04
				AVERAGE	1.51E-06	1.63E-04

* Not detected, used 1/2 detection limit.
** Partially detected, used 1/2 detection limit on the ND fractions.

COMPANY : GOLDEN STATE METALS
UNIT : AUTO SHREDDER
DATE : 2-7-92
REPORT : 42-888

TOTAL MICROGRAMS

POLLUTANT	RUN	PROBE WASH, µg	FILTER, µg	IMPINGATE, µg	TOTAL µg
Cd *	1	5 *	5 *	15 *	25
	2	5 *	5 *	15 *	25
				AVERAGE	25
Cr *	1	5 *	5 *	15 *	25
	2	5 *	5 *	15 *	25
				AVERAGE	25
Pb	1	24	15.4	1.5 *	40.9
	2	13.8	4.8	1.5 *	20.1
				AVERAGE	30.5
Zn	1	134	69.3	15 *	218.3
	2	94	20	15 *	129
				AVERAGE	173.7
Asbestos	1	0.006	0.05	0.03 *	0.086
	2	0.0054	0.08	0.03 *	0.1154
				AVERAGE	0.101
PCB *	1	1 *	1 *	1.5 *	3.5
	2	1 *	1 *	1.5 *	3.5
				AVERAGE	3.5

* Results were listed on analytical data as 'ND', used 1/2 DL.

HEAVY METALS, PCB, ASBESTOS

The "particulate catch" was analyzed for total particulate as per EPA Method 5. Upon completion of analysis the samples were analyzed for heavy metals (Cd, Pb, Zn, Cr), PCBs, and asbestos.

The particulate catch consists of three fractions per run: probe wash, filter, and impingate.

A. Upon completion of the probe wash gravimetric analysis the sample was reconstituted to a 200 ml volume. 100 ml was sent to Coast to Coast Analytical for metals and PCB analysis. 100 ml was sent to EMS Labs for asbestos analysis.

B. Upon completion of the filter gravimetric analysis the sample was cut in half and each half weighed. One half of the filter was sent to Coast to Coast Analytical for metals and PCB analysis. One half of the filter was sent to EMS Labs for asbestos analysis.

C. The impingate catch was diluted to 750 mls. One third wa analyzed for particulate. One third was sent to Coast to Coast Analytical for metals and PCB analysis. One third was sent to EMS Labs for asbestos analysis.

All PCB analysis was performed by GC/ECD as per EPA 8080.

All metals analysis was performed by ICP or GFAA as per EPA 6010 (Cd, Zn, Cr) and EPA 7421 (Pb).

All asbestos analysis was performed transmission electron microcopy (TEM) as per EPA 600/4-83-043.

COMPANY : Golden State Metals
UNIT : Auto Shredder
DATE : 1-22-92
REPORT : 42-888

Method 5

ON-SITE DATA

		RUN	#1	#2	#3
		TIME	1033-1133	1228-1328	
Vm	Dry sampled gas volume, dcf		33.52	34.94	
Y	Meter calibration factor (met# 1004, 1004,)		1.004973	1.004973	
Pbar	Barometric Pressure, "Hg		30.06	30.06	
Pstatic	Stack static pressure, "Hg		-.7	-.7	
ΔH	Differential meter pressure, "H2O		0.74	0.78	
Tm	Meter temperature, °F		43	48	

CONTENTS	RUN 1 FINAL	RUN 1 TARE	RUN 1 NET	RUN 2 FINAL	RUN 2 TARE	RUN 2 NET	RUN 3 FINAL	RUN 3 TARE	RUN 3 NET
100ml DiH2O	652.2	596.0	56.2	666.3	598.3	68.0			
100ml DiH2O	592.5	591.5	1.0	603.1	602.2	0.9			
Dry	459.9	459.9	0.0	504.0	504.8	-.8			
Silicabel	762.1	757.2	4.9	827.9	822.5	5.4			
Linde			-55.1			65.8			
V lc volume of H2O, gms			7.0			7.7			

		RUN	#1	#2	#3
CO2	% Dry Volume		0.0	0.0	
O2	% Dry Volume		20.9	20.9	
N2	% Dry Volume		79.1	79.1	
Cp	Pitot tube coefficient (Pit# , ,)		.84	.84	
ΔP	Avg P, "H2O		0.732	0.776	
Ts	Stack temperature, °F		57	59	
As	Stack area, sq. ft.	4.34	~~3.54~~	~~3.54~~	
Ds	Stack diameter, inches	28.2 ~~(25)~~	29.75 x 21	29.75 x 21	
Dn	Nozzle diameter, inches		.195	.195	
Dur	Sampling time, min		60	60	
% Iso	Mini iso		100.4	100.97	

	#1	#2	#3
Filter #	#1 QT	#2 QT	
Filter tare weights, gms	.80936	.81063	

INITIALS
CONTROL BOX#:
Hi P_____ Lo P_____ Avg P_____ Duct Temp _____
Diameters before disturb_____ After_____
# of points, total _____
Overall (inches)_____ Coupling _____

Petro Chem Environmental Services, Inc.

METHOD 5 **RUN #** 1

COMPANY: Golden State Metals
UNIT: Auto Shredder
DATE: 1/23/92
REPORT: 42-888
TECH: SAO
PUMP #: PD-08
METER BOX#: 1004
METER coeff:
PITOT TUBE#: 3' Q #2

PRE/ POST TEST LEAK CHECK

	PRE	POST	
LEAK RATE:	0.007	< .005	cfm
VACUUM:	10	5	"Hg

ISO = 100.4
VELFPS = 47.51

AMBIENT TEMP, °F: 42
Pbar: 30.06
STATIC PRESSURE("Hg): -.7
ASSUMED MOISTURE,%: 3
MW wet 28.8
AVG. CALIB. NOZZLE DIAM("): .195
PROBE LINER MATERIAL: Q
FILTER #: #1
DUCT DIAM ("): 29.75 * 21 ☐ stack

TRAVERSE PT. NUMBER	TIME (s) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (ΔPs) "H2O	PRESSURE DIFFERENTIAL ΔH rate "H2O	ΔH	GAS SAMPLE VOLUME (cu. ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	OUTLET, °F	FILTER HOLDER TEMP °F Probe	Box	TEMP OF GAS EXIT CONDENSER OR LAST IMPNGR °F
12	1033		56	.80	.582	0.80	870750	42	42	252	253	
5 11	38	2	57	.80	.582	0.80		44	41			
10 10	43		56	.80	.584	0.80		46	41			
15 9	48		58	.83	.593	0.82	879.5	46	41	250	254	
5 8	53	2	58	.79	.568	0.78		46	41			
10 7	58		58	.76	.568	0.76		47	41			
15 6	11 03		58	.72	.554	0.73	888.2	48	42	251	253	
5 5	08	2	56	.70	.547	0.71		48	42			
10 4	13		58	.68	.539	0.69		48	42			
15 3	18		57	.65	.528	0.67	896.4	48	43	251	250	
5 2	23	2	57	.65	.528	0.67		48	43			
10 1	28		56	.62	.516	0.64		48	43			
15 EOT	11:33						904.270					
AVERAGE			57	0.732		0.74	33.52	43				

METHOD 5 RUN # 2

COMPANY: Golden State Metals
UNIT: Auto Shredder
DATE: 1/23/92
REPORT: 42-888
TECH: SAP
PUMP #: 90-06
METER BOX#: 1004
METER coeff: 1.004973
PITOT TUBE#: 3 R #2

PRE/ POST TEST LEAK CHECK	PRE	POST	
LEAK RATE:	0.005	<0.005	cfm
VACUUM:	10	5	"Hg

TSO 100.97
VEL FPS: 49.01

AMBIENT TEMP, °F: ~45
Pbar: 30.06
STATIC PRESSURE("Hg): -.7
ASSUMED MOISTURE,%: 3
MW wet 28.8
AVG. CALIB. NOZZLE DIAM("): .195
PROBE LINER MATERIAL: Q
FILTER #: a
DUCT DIAM ("):

TRAVERSE PT. NUMBER		TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (ΔPs) "H2O	PRESSURE DIFFERENTIAL ΔH rate "H2O	ΔH	GAS SAMPLE VOLUME (cu. ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	OUTLET, °F	FILTER HOLDER TEMP °F Probe	Box	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER °F
0	12	12.6		58	.83	.592	0.82	904.870	42	43			
5	11	33		58	.85	.600	0.84		45	42	258	241	
10	10	38	2	58	.84	.599	0.83		48	42			
15	9	43		58	.81	.570	0.81	913.8	50	43			
5	8	48		59	.81	.592	0.81		53	45	255	251	
10	7	53	2	59	.80	.568	0.80		53	44			
15	6	58		58	.79	.565	0.79	922.6	53	44			
5	5	13 03		59	.78	.580	0.78		53	44	257	253	
10	4	08	2	59	.78	.561	0.79		53	45			
15	3	13		60	.76	.574	0.77	931.4	54	46			
5	2	18		60	.65	.531	0.67		55	46	256	255	
10	1	23		60	.63	.523	0.65		53	46			
15	END	13:28						939.813					
AVERAGE				59	.776		0.78	34.94	48				

COMPANY : Golden State Metals
UNIT : Auto Shredder
DATE : 1/23 & 24 92
REPORT : 42-XXX

Method 501

ON-SITE DATA

		RUN	1/23 #1	1/24 #2	#3
		TIME	1050-1150	828-1258	
Vm	Dry sampled gas volume, dcf		30.975	155.33	
Y	Meter calibration factor (met# 1002)		1.002821	1.002821	
Pbar	Barometric Pressure, "Hg		30.06	29.97	
Pstatic	Stack static pressure, "Hg		-.7	-.7	
ΔH	Differential meter pressure, "H2O		.7	.7	
Tm	Meter temperature, °F		42	48	

CONTENTS	RUN 1 FINAL	RUN 1 TARE	RUN 1 NET	RUN 2 FINAL	RUN 2 TARE	RUN 2 NET	RUN 3 FINAL	RUN 3 TARE	RUN 3 NET
100ml H_2O	654.5	581.7	72.8	676.3	600.4	75.9			
100ml H_2O	581.7	562.7	19.0	605.8	604.6	1.2			
DRY	476.2	478.3	-2.1	448.2	447.0	1.2			
Silica	728.0	723.8	4.2	801.5	779.3	22.2			
Linewash			-55.7			-66.1			
V lc volume of H2O, gms			38.2			34.4			

		RUN	#1	#2	#3
CO_2	% Dry Volume		0.0	0	
O_2	% Dry Volume		20.9	20.9	
N_2	% Dry Volume				
Cp	Pitot tube coefficient (Pit#)		.84	.84	
ΔP	Avg ΔP, "H2O		.73	.77	
Ts	Stack temperature, °F		55	52	
As	Stack area, sq. ft.	4.34	~~3.57~~	~~3.51~~	
Ds	Stack diameter, inches	28.21 (25)	~~29.75~~ *21	~~29.75~~ *21	
Dn	Nozzle diameter, inches		.185	.185	
Dur	Sampling time, min		60	270	
% Iso	Mini iso				

Filter # _____ _____ _____
Filter tare weights, gms _____ _____ _____

INITIALS
CONTROL BOX#:
HI ΔP_____ Lo ΔP_____ Avg ΔP_____ Duct Temp _____
Diameters before disturb_____ After_____
# of points, total _____
Overall (inches)_____ Coupling _____

Petro Chem Environmental Services, Inc.

METHOD 501 RUN # 1

COMPANY: Golden State Metals
UNIT: Auto Shredder
DATE: 1/23/92
REPORT: 42-888
TECH: SAD
PUMP #: PO-05
METER BOX#: 1002
METER coeff:
PITOT TUBE#:

PRE / POST TEST LEAK CHECK	PRE	POST	
LEAK RATE:	0.001	0.008	cfm
VACUUM:	7	5	"Hg

AMBIENT TEMP, °F: 42
Pbar: 30.06
STATIC PRESSURE("Hg): -.7
ASSUMED MOISTURE,%: 3
Mwd 28.8
AVG. CALIB. NOZZLE DIAM("): .185
PROBE LINER MATERIAL: SS
FILTER #: —
DUCT DIAM ("):

ACFM = .525 ΔP = .73 Ts = 55

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (ΔPs) "H2O	PRESSURE DIFFERENTIAL ΔH rate "H2O	ΔH	GAS SAMPLE VOLUME (cu. ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	OUTLET, °F	FILTER HOLDER TEMP °F Probe	Box	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER °F
CP 4	1050	2		.73	.512	.61	025.110	40	41			
9	55	2		.73	.512	.61		41	45			
14	1100	2		.73	.512	.61		41	47			
4	05	2		.73	.512	.61	32.7	41	46			
9	10	2.2		.73	.512	.6		41	47			
14	15	2.5		.73	.512	.75		41	48			
4	20	2.7		.73	.512	.79	40.5	41	48			
9	25	2.7		.73	.512	.79		41	49			
14	30	2.7		.73	.512	.79		42	50			
4	35	2.7		.73	.512	.79	46	43	50			
9	40	—		.73	.512	—		—	—			
14	45	2.7		.73	.512	.77		43	50			
4	1150						56.085					
						.702	30.975	42				
AVERAGE												

METHOD ANDY 501 RUN # 2

COMPANY: GOLDEN STATE METAL
UNIT: AUTO S
DATE: 1-24-92
REPORT: 42-888
TECH: BOM
PUMP #: GAST
METER BOX#: 1002
METER coeff: 1.002821
PITOT TUBE#: 184

PRE/ POST TEST LEAK CHECK
LEAK RATE: 0.01 cfm
VACUUM: 6 "Hg

CENTER POINT

AMBIENT TEMP, °F: 40
Pbar: 29.97
STATIC PRESSURE("Hg): -0.70
ASSUMED MOISTURE,%: 5% - 28.8 WET

AVG. CALIB. NOZZLE DIAM("): .185
PROBE LINER MATERIAL: SS
FILTER #:
DUCT DIAM ("): 29.75 X 21

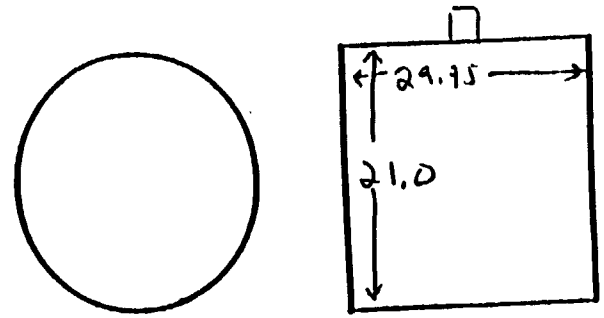
ACFM = .543 ΔP = .77 Ts = 52

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (ΔPs) "H2O	PRESSURE DIFFERENTIAL ΔH rate	PRESSURE DIFFERENTIAL ΔH "H2O ΔH	GAS SAMPLE VOLUME (cu. ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	GAS SAMPLE TEMP. AT DRY GAS METER OUTLET, °F	FILTER HOLDER TEMP °F Probe	FILTER HOLDER TEMP °F Box	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER °F
C/P												
	0828	1.0			.57	.7	058.30	35	36			34
		4.0			.57	.7	075.1	38	47			35
1	58				.57	.7	092.2	45	52			37
	0928	4.0			.57	.7	109.3	45	53			37
2	58	4.0			.57	.7	126.4	45	52			40
	1028	4.0			.57	.7	143.5	50	55			41
3	58	4.0			.57	.7	160.6	50	55			41
	1128	4.0			.57	.7	177.7	50	56			41
4	1158	4.0			.57	.7	194.8	50	56			42
	28	4.0					213.63					
	1258											
						.7	155.33	48				
AVERAGE												

VELOCITY TRAVERSE

COMPANY : Golden State Metals
UNIT : Auto Shredder
DATE : 1/23/92
REPORT : 42-888
RUN # : Initial
PUMP # : PD-08
METER BOX# : 1004
METER coeff. : 1.004973
PITOT TUBE# : 3' Q #2

TOTAL : 38.25
COUPLING : 8.5 W
DIAMETER : 29.75 X 21
AREA : 4.34
Cp :



TRAVERSE POINTS w/o	w/coup	no.	Ts (°F)	ΔP	Ts (°F)	ΔP
1.2	9.7	1	55	.72		
3.7	12.2	2				
6.2	14.7	3	55	.72		
8.7	17.2	4				
11.2	19.7	5	55	.73		
13.6	22.1	6				
16.1	24.6	7	55	.74		
18.6	27.1	8				
21.1	29.6	9	55	.78		
23.6	32.1	10				
26	34.5	11	55	.79		
28.5	37.0	12				
	CP	23.3%				

VELOCITY DATA

Rated Total MMBTU/hr

$\overline{\Delta P}$
$\overline{Ts}$
Static -0.70
Pbar 30.06
MW(wet) 28.8
%H2O 3
%O2
F_{60}

Vel=
DSCFM=
MMBTU/hr=
%Thr=

Additional Data: 501 centerpoint @ 21.6

ΔP	NOZZLE	ACFM	RATE	Δ H
.73	.185	0.525	0.512	0.770

VELOCITY TRAVERSE

COMPANY : Golden State Metals
UNIT : Auto Shredder
DATE : 1/24/92
REPORT : 92-88Y
RUN # : Initial
PUMP # : PD-08
METER BOX# : 1004
METER coeff. :
PITOT TUBE# : 3' Q#2

TOTAL :
COUPLING :
DIAMETER :
AREA :
Cp :

TRAVERSE POINTS wb	w/coup	no.	Ts (°F)	ΔP	Ts (°F)	ΔP
		1				
		2	51	.63		
		3				
		4	52	.68		
		5				
		6	52	.77		
		7				
		8	52	.78		
		9				
		10	52	.83		
		11				
		12				

VELOCITY DATA

Rated Total MMBTU/hr

$\overline{\Delta P}$
$\overline{Ts}$
Static -0.70
Pbar
MW(wet) 28.8
%H2O .3
%O2
F_{60}

Vel=
DSCFM=
MMBTU/hr=
%Thr=

Additional Data:

ΔP	NOZ	ACFM	RATE
.77	.185	0.543	0.526

COMPANY : Golden State Metals
UNIT : Dust Shredder
DATE : 1/24/92
REPORT : 42-868

Meth 425

ON-SITE DATA

		RUN	#1	#2	#3
		TIME	833-933	1004-1104	1136-1236
Vm	Dry sampled gas volume, dcf		47.08	47.17	47.40
Y	Meter calibration factor (met# 1004 , 1004 , 1004)		1.004033	1.004973	1.004973
Pbar	Barometric Pressure, "Hg		29.97	29.97	29.97
Pstatic	Stack static pressure, "Hg		-.7	-.7	-.7
ΔH	Differential meter pressure, "H2O		1.07	1.07	1.08
Tm	Meter temperature, °F		49	54	55

CONTENTS	RUN 1 FINAL	RUN 1 TARE	RUN 1 NET	RUN 2 FINAL	RUN 2 TARE	RUN 2 NET	RUN 3 FINAL	RUN 3 TARE	RUN 3 NET
100ml NaOH	642.0	593.1	48.9	638.5	586.3	52.2	631.5	578.1	53.4
100ml NaOH	604.0	603.0	1.0	596.2	594.5	1.7	592.3	590.5	1.8
DRY	506.1	505.3	-0.8	460.2	459.3	0.9	506.4	506.3	0.1
Silica	696.8	692.0	4.8	769.8	761.8	8.0	703.7	696.4	7.3
LW	215.4	170.4	-45.0	82.2	30.4	-51.8	82.1	31.1	-51
						11.0			11.6
Vlc volume of H2O, gms			10.5						

		RUN	#1	#2	#3
Na			0	0	0
CO2	% Dry Volume		20.9	20.9	20.9
O2	% Dry Volume				
N2	% Dry Volume		.84	.84	.84
Cp	Pitot tube coefficient (Pit# . .)		0.726	0.717	0.728
ΔP	Avg ΔP, "H2O		54	56	54
Ts	Stack temperature, °F		~~3.51~~ 4.34	~~3.51~~	~~3.51~~
As	Stack area, sq. ft.		~~25~~ 28.21	~~25~~	~~25~~
Ds	Stack diameter, inches		.23	.23	.23
Dn	Nozzle diameter, inches		60	60	60
Dur	Sampling time, min		100.22	100.25	100.25
% Iso	Mini iso				

Filter #
Filter tare weights, gms

INITIALS
CONTROL BOX#:
Hi ΔP_____ Lo ΔP_____ Avg ΔP_____ Duct Temp _____
Diameters before disturb_____ After_____
# of points, total _____
Overall (inches)_____ Coupling _____

Petro Chem Environmental Services, Inc.

METHOD 425 RUN # 1

COMPANY: GOLDEN STATE METAL
UNIT: AUTO S
DATE: 1-24-92
REPORT: 42-888
TECH: BOM
PUMP #: GOST
METER BOX#: 1004
METER coeff: 1.004973
PITOT TUBE#: .84

PREV POST TEST LEAK CHECK
LEAK RATE: 0.001 cfm
VACUUM: 7 "Hg

5min PER POINT FOR 12 POINTS.

AMBIENT TEMP, °F: 40
Pbm: 29.97
STATIC PRESSURE("Hg): -0.7
ASSUMED MOISTURE,%: 3% 28.8 WET
AVG. CALIB. NOZZLE DIAM("): .23
PROBE LINER MATERIAL: QUARTZ.
FILTER #:
DUCT DIAM ("): 29.75 x 21

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (ΔPs) "H2O	PRESSURE DIFFERENTIAL ΔH rate "H2O	ΔH	GAS SAMPLE VOLUME (cu. ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	OUTLET, °F	FILTER HOLDER TEMP °F Probe	Box	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER °F
							940.30	39	39	268		34
12	0833	5	50	.86	.840	1.24	944.5	46	40			
11	38	5	54	.84	.834	1.21	948.7	49	39			
10	43	4	53	.80	.816	1.16	952.8	52	39	253		35
9	48	4	53	.80	.819	1.17	956.9	55	40			
8	53	3	54	.79	.816	1.15	960.9	59	41			
7	58	3	55	.74	.793	1.09	964.9	61	41	255		40
6	0903	3	54	.74	.795	1.09	968.9	63	42			
5	08	3	54	.70	.776	1.04	972.8	63	43			
4	13	3	54	.68	.765	1.01	976.6	64	43	256		41
3	18	3	54	.64	.743	.96	980.3	65	44			
2	23	3	54	.58	.709	.88	983.8	66	44			
1	28	3	54	.58	.709	.88	987.38					
FOT	0933						47.08					
AVERAGE			54	0.726		1.07	Tso 100.22		49	VER. 17.25		

METHOD 425 RUN # 2

COMPANY: GOLDEN STATE METAL
UNIT: AUTO S.
DATE: 1-24-92
REPORT: 42.888
TECH: BDM
PUMP #: GOST
METER BOX#: 1004
METER coeff: 1.004973
PITOT TUBE#: .84

PRE/ POST TEST LEAK CHECK

LEAK RATE:	0.001	<0.001	cfm
VACUUM:	5	5	"Hg

AMBIENT TEMP, °F: 45
Pbar: 29.97
STATIC PRESSURE("Hg): -.70
ASSUMED MOISTURE,%: 3 28.8 WET

AVG. CALIB. NOZZLE DIAM("): .23
PROBE LINER MATERIAL: QUARTZ
FILTER #:
DUCT DIAM ("): 29.76 X 21

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (ΔPs) "H2O	PRESSURE DIFFERENTIAL ΔH rate "H2O	ΔH	GAS SAMPLE VOLUME (cu. ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	OUTLET, °F	FILTER HOLDER TEMP °F Probe	Box	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER °F
12	1004	4	55	.84	0.841	1.22	989.30	49	47	250		37
11	09	4	56	.86	0.852	1.25	993.5	52	46			
10	14	4	56	.82	0.844	1.21	997.8	65	47			
9	19	4	56	.80	0.836	1.18	001.9	68	47	251		40
8	24	4	56	.80	0.832	1.18	006.2	63	48			
7	29	4	56	.80	0.832	1.18	010.3	62	48			
6	34	4	57	.72	0.794	1.07	014.5	61	57	253		43
5	39	4	57	.68	0.765	1.01	018.5	60	49			
4	44	4	57	.64	0.742	0.96	022.3	59	49			
3	49	4	57	.56	0.694	0.85	025.9	59	49	254		43
2	54	3	57	.56	0.695	0.85	029.5	59	49			
1	59	3	57	.58	0.707	0.88	032.9	59	49			
EOT	1104						036.47					
							47.17					
			56	0.717		1.07	150 100.25		54	1GL.47	09	
AVERAGE												

METHOD 425 RUN # 3

COMPANY: GOLDEN STATE METOL
UNIT: AUTO 5
DATE: 1-24-92
REPORT: 42-888
TECH: BDM
PUMP #: GOST
METER BOX#: 1004
METER coeff: 1.004973
PITOT TUBE#: .84

PRE / POST TEST LEAK CHECK
LEAK RATE: L 0.001 cfm
VACUUM: 6 "Hg

AMBIENT TEMP, °F: 45
Pbar: 29.97
STATIC PRESSURE("Hg): -.70
ASSUMED MOISTURE,%: 3 28.8 WET
AVG. CALIB. NOZZLE DIAM("): .23
PROBE LINER MATERIAL: QUARTZ
FILTER #:
DUCT DIAM ("): 29.75 x 21

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (ΔPs) "H2O	PRESSURE DIFFERENTIAL ΔH rate "H2O	ΔH	GAS SAMPLE VOLUME (cu. ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	OUTLET, °F	FILTER HOLDER TEMP °F Probe	Box	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER °F
							037.30	52	50	251		40
12	1136	4	60	.82	.832	1.19	41.5	56	50			
11	41	4	60	.81	.830	1.18	45.6	58	49			
10	46	4	59	.82	.837	1.20	49.8	61	51	253		41
9	51	4	61	.80	.829	1.17	53.9	61	50			
8	56	4	59	.80	.830	1.17	58.1	61	51			
7	1201	4	60	.80	.828	1.17	62.2	59	51	256		41
6	06	4	59	.76	.808	1.12	66.3	59	52			
5	11	3	59	.70	.776	1.04	70.2	59	52			
4	16	3	59	.66	.754	0.98	73.9	58	52	256		42
3	21	3	59	.64	.742	0.96	77.6	58	52			
2	26	3	59	.58	.707	0.88	81.2	58	52			
1	31	3	59	.58	.706	0.87	84.70					
EOT	1236						47.40					
							Σ 100.25		55	Vlc 47.57		
AVERAGE			59	0.728		1.08						

LABORATORY ANALYSIS
EPA METHOD 5 - PARTICULATE ANALYSIS

Company: Golden State Metals

Location/Unit: Shredding Cyclone

Report: 42-888

Date Tested: 1-23-92

Analyst: BCP

RUN # 1

METHOD 5

Probe/Nozzle/Filter Top

Dish # 7			
#1	#2	#3	Average
final (g) 65.0643	65.0644		65.0644
tare (g) 65.0539	65.0539		65.0539
NET (g)			0.0105

Filter # OT-#1

#1	#2	#3	Average
final (g) 0.81665	0.81673		0.81669
tare (g) 0.80936	0.80936		0.80936
NET (g)			~~0.0733~~

0.00733

Condensable (aliquot 250 / 750)

Dish #			
#1	#2	#3	Average
final (g) 71.8535	71.8540		71.8538
tare (g) 71.8537	71.8537		71.8537
NET (g)			0.0001

LABORATORY ANALYSIS
EPA METHOD 5 - PARTICULATE ANALYSIS

Company: Golden State Metals

Report: 42-885

Location/Unit: Shredding Cyclone

Date Tested: 1-23-92

Analyst: BCP

RUN # 2

METHOD 5

Probe/Nozzle/Filter Top

Dish #18			
#1	#2	#3	Average
final (g) 65.8879	65.8880		65.8880
tare (g) 65.8830	65.8830		65.8830
NET (g)			0.0050

Filter # OT #2

#1	#2	#3	Average
final (g) 0.81154	0.81159		0.81157
tare (g) 0.81063	0.81063		0.81063
NET (g)			0.00094

Condensable (aliquot 250 / 750)

Dish #24			
#1	#2	#3	Average
final (g) 74.5883	74.5888		74.5886
tare (g) 74.5883	74.5883		74.5883
NET (g)			0.0003

Petro Chem Environmental Services, Inc.

LABORATORY ANALYSIS
EPA METHOD 5 - PARTICULATE ANALYSIS

Company: Golden State Metals

Location/Unit: Auto Shredder

Report: 42-888

Date Tested: 1-23-92

Analyst: BCP

RUN # 1

METHOD 501

Probe/Nozzle/Filter Top

Dish # 23			
#1	#2	#3	Average
final (g) 79.5949	79.5950		79.5950
tare (g) 79.5866	79.5866		79.5866
NET (g)			0.0084

Filter # Andys

#1	#2	#3	Average
final (g)			
tare (g)			
NET (g)			

Condensable (aliquot 250 / 500)

Dish # 41			
#1	#2	#3	Average
final (g) 81.6368	81.6370		81.6369
tare (g) 81.6365	81.6365		81.6365
NET (g)			0.0004

Petro Chem Environmental Services, Inc.

501

ANDERSON PARTICULATE TEST

Client: Golden State Metals
Date: 1-23-92
Report: 42-888

Location: Auto Shredder
Analyst: BCP

Run-1

BACK-UP EE8U

	Weight #1	Weight #2	Weight #3	Average
Final (gr)	0.26189	0.26190		0.26190
Tare (gr)	0.26188			0.26188
NET (mg)				0.00002

Filter #1 EE8

	Weight #1	Weight #2	Weight #3	Average
Final (gr)	0.13871	0.13875		0.13873
Tare (gr)	0.13773			0.13773
NET (mg)				0.00100

Filter #2 EE7

	Weight #1	Weight #2	Weight #3	Average
Final (gr)	0.15638	0.15640		0.15639
Tare (gr)	0.15687			0.15687
NET (mg)				Ø

Filter #3 EE6

	Weight #1	Weight #2	Weight #3	Average
Final (gr)	0.13845	0.13840		0.13843
Tare (gr)	0.13826			0.13826
NET (mg)				0.00017

Petro Chem Environmental Services, Inc.

Run 1
METHOD 501

Filter ~~#4~~ EE5

	Weight #1	Weight #2	Weight #3	Average
Final (gr)	0.15625	0.15621		0.15623
Tare (gr)	0.15497			0.15497
NET (mg)				0.00126

Filter ~~#5~~ EE4

	Weight #1	Weight #2	Weight #3	Average
Final (gr)	0.13958	0.13958		0.13958
Tare (gr)	0.14024			0.14024
NET (mg)				Ø

Filter ~~#6~~ EE3

	Weight #1	Weight #2	Weight #3	Average
Final (gr)	0.15495	0.15490		0.15493
Tare (gr)	0.15466			0.15466
NET (mg)				0.00027

Filter ~~#7~~ EE2

	Weight #1	Weight #2	Weight #3	Average
Final (gr)	0.13960	0.13957		0.13959
Tare (gr)	0.13860			0.13860
NET (mg)				0.00099

Filter ~~#8~~ EE1

	Weight #1	Weight #2	Weight #3	Average
Final (gr)	0.15571	0.15571		0.15571
Tare (gr)	0.15541			0.15541
NET (mg)				0.00030

LABORATORY ANALYSIS
EPA METHOD 5 - PARTICULATE ANALYSIS

Company: Golden State Metals

Location/Unit: Auto Shredder

Report: 42-888

Date Tested: 1-23-92

Analyst: BG

RUN # 2

METHOD 501

Probe/Nozzle/Filter Top

Dish # 38			
#1	#2	#3	Average
final (g) 78.4447	78.4449		78.4448
tare (g) 78.4348	78.4348		78.4348
NET (g)			0.0100

Filter # Andys

#1	#2	#3	Average
final (g)			
tare (g)			
NET (g)			

Condensable (aliquot 250 / 500)

Dish # 5			
#1	#2	#3	Average
final (g) 76.5810	76.5812		76.5811
tare (g) 76.5810	76.5809		76.5810
NET (g)			0.0001

Petro Chem Environmental Services, Inc.

ANDERSON PARTICULATE TEST

Client: Golden state metals
Date: 1-23-92
Report: 42-8888

Location: Auto Shredder
Analyst: BCP

RUN-2

METHOD 501

BACK-UP DD 84

	Weight #1	Weight #2	Weight #3	Average
Final (gr)	0.25575	0.25570		0.25573
Tare (gr)	0.23172			0.23172
NET (mg)				0.02401

Filter #1 DD8

	Weight #1	Weight #2	Weight #3	Average
Final (gr)	0.13963	0.13967		0.13965
Tare (gr)	0.13991			0.13991
NET (mg)				Ø

Filter #2 DD7

	Weight #1	Weight #2	Weight #3	Average
Final (gr)	0.15454	0.15453		0.15454
Tare (gr)	0.15511			0.15511
NET (mg)				Ø

Filter #3 DD6

	Weight #1	Weight #2	Weight #3	Average
Final (gr)	0.13912	0.13910		0.13911
Tare (gr)	0.13921			0.13921
NET (mg)				Ø

RUN 2
METHOD 501

Filter ~~#4~~ DD5

	Weight #1	Weight #2	Weight #3	Average
Final (gr)	0.15492	0.15492		0.15492
Tare (gr)	0.15519			0.15519
NET (mg)				Ø

Filter ~~#5~~ DD4

	Weight #1	Weight #2	Weight #3	Average
Final (gr)	0.13844	0.13844		0.13844
Tare (gr)	0.13915			0.13915
NET (mg)				Ø

Filter ~~#6~~ DD3

	Weight #1	Weight #2	Weight #3	Average
Final (gr)	0.15475	0.15470		0.15473
Tare (gr)	0.15507			0.15507
NET (mg)				Ø

Filter ~~#7~~ DD2

	Weight #1	Weight #2	Weight #3	Average
Final (gr)	0.13756	0.13754		0.13755
Tare (gr)	0.13840			0.13840
NET (mg)				Ø

Filter ~~#8~~ DD1

	Weight #1	Weight #2	Weight #3	Average
Final (gr)	0.15408	0.15409		0.15409
Tare (gr)	0.15489			0.15489
NET (mg)				Ø

COMPANY: GOLDEN STATE METALS
UNIT : SHREDDING CYCLONE
DATE : 1/23-24/92
REPORT : 42-888 CHROMIUM, PM-10
PARTICULATE, METALS, PCB, ASBESTOS

RUN #1 / PM-10 / Meth 501

FILTER TARE SHEET

DATE: 12-11-91

ANALYST: BCP

FILTER TYPE: Ardy

Filter Plate

Filter #	Weight - 1	Weight - 2	Weight - 3	Average
EE_1	0.15541	0.15541	1	0.15541
EE_2	0.13860	0.13860	2	0.13860
EE_3	0.15465	0.15466	3	0.15466
EE_4	0.14023	0.14025	4	0.14024
EE_5	0.15497	0.15497	5	0.15497
EE_6	0.13826	0.13826	6 lt dirty	0.13826
EE_7	0.15687	0.15687	7	0.15687
EE_8	0.13772	0.13773	8	0.13773
EE_{BL1}	0.26188	0.26188	BU clean	0.26188
NOZ WASH			moderate amt	

Petro Chem Environmental Services, Inc.

COMPANY: GOLDEN STATE METALS
UNIT : SHREDDING CYCLONE
DATE : 1/23-24/92
REPORT : 42-888 CHROMIUM, PM-10
PARTICULATE, METALS, PCB, ASBESTOS

RUN #2 / PM-10 / Meth 501

FILTER TARE SHEET

DATE: 12-11-91

ANALYST: BCO

FILTER TYPE: Andy

Plate #

Filter #	Weight - 1	Weight - 2	Weight - 3	Average
DD_1	0.15491	0.15487	1	0.15489
DD_2	0.13840	0.13839	2	0.13840
DD_3	0.15507	0.15507	3	0.15507
DD_4	0.13915	0.13914	4	0.13915
DD_5	0.15520	0.15518	5	0.15519
DD_6	0.13921	0.13920	6	0.13921
DD_7	0.15510	0.15511	7	0.15511
DD_8	0.13991	0.13991	8	0.13991
DD_{BL1}	0.23171	0.23173	F	0.23172

Petro Chem Environmental Services, Inc.

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Enseco - CRL
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FAX: (714) 891-5917

February 12, 1992

PETRO CHEM ENVIRONMENTAL SERVICES
3207 ANTONINO AVENUE
BAKERSFIELD, CA 93308
ATTN: MR. TERRY ROWLES

Analysis No: G-9202701-001/008
Date Sampled: 24-JAN-1992
Date Sample Rec'd: 25-JAN-1992
Project: (42-888) GOLDEN STATE METALS - AUTO SHREDDER

Enclosed with this letter is the report on the chemical and physical analyses on the samples from ANALYSIS NO: G-9202701-001/008 shown above.

The samples were received by CRL in a chilled state, intact and with the chain-of-custody record attached.

Note that ND means not detected at the reporting limit expressed. The reporting limit is raised to reflect the dilution factor of the sample.

Solid samples are reported on "as received" basis.

Preliminary data for Hexavalent Chromium and Impinger Volume were provided on January 27,1992 at 4:43 P.M.

Joan DeLaRosa
Reviewed

Approved

The Report Cover Letter is an integral part of this report.

This report pertains only to the samples investigated and does not necessarily apply to other apparently identical or similar materials. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purposes without authorization is prohibited.

Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93308
ATTN: MR. TERRY ROWLES

Analysis No.: G-9202701-001/008
Date Sampled: 24-JAN-1992
Date Sample Rec'd: 25-JAN-1992
Date Analyzed: 27-JAN-1992
Sample Type: TRAIN

Project: (42-888) GOLDEN STATE METALS - AUTO SHREDDER

Sample ID	Chromium, Hexavalent-7196/Back ug/sample CARB 425	Chromium, Hexavalent-7196/Front ug/sample CARB 425	Total Impinger Volume ml ML	
P/N TRAIN #1 IMP & FILTER TRAIN #1	ND(9.0)	ND(4.0)	202 450	
P/N TRAIN #2 IMP & FILTER TRAIN #2	ND(8.0)	3.3	116 400	
P/N TRAIN #3 IMP & FILTER TRAIN #3	ND(8.0)	6.7	197 400	
P/N TRAIN #Q, F.B. IMP CONTENTS & FILTER	ND(9.0)	ND(2.5)	124 450	
Blank	ND(5)	ND(5)	NA	

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Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93308
ATTN: MR. TERRY ROWLES

Analysis No.: G-9202701-001/008
Date Sampled: 24-JAN-1992
Date Sample Rec'd: 25-JAN-1992
Sample Type: TRAIN

Project: (42-888) GOLDEN STATE METALS - AUTO SHREDDER

Matrix Spike/Matrix Spike Duplicate Report

Sample Number	Parameter (Method)	Units	Sample	Observed Concentration MS	MSD	Amt. Spiked	% Recovery MS	MSD	Avg.	% RPD
9202701-002B	CHROMIUM,HEXAVALENT-7196 (CARB 425)	ug	ND	18.9	18.4	22.5	84.0	81.8	83	3

Matrix Spike/Matrix Spike Duplicate Report Cross-Reference

QC Batch	Date	Parameter (Method)	Sample Nos.
9202701-002B	27-JAN-1992	CARB 425	G-9202701-001
	27-JAN-1992		G-9202701-002
	27-JAN-1992		G-9202701-003
	27-JAN-1992		G-9202701-004
	27-JAN-1992		G-9202701-005
	27-JAN-1992		G-9202701-006
	27-JAN-1992		G-9202701-007
	27-JAN-1992		G-9202701-008

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Laboratory Report

PETRO CHEM ENVIRONMENTAL SERVICES
3207 Antonino Avenue
Bakersfield, CA 93308
ATTN: MR. TERRY ROWLES

Analysis No.: G-9202701-001/008
Date Sampled: 24-JAN-1992
Date Sample Rec'd: 25-JAN-1992
Sample Type: TRAIN

Project: (42-888) GOLDEN STATE METALS - AUTO SHREDDER

Laboratory Control Sample Report

QC Batch	Parameter (Method)	Amt. Spiked	Units	Pct. Recovery Sp 1	Pct. Recovery Sp 2	Avg. Recv	Acc. Range	Rel. Pct. Diff	Acc. Range
L92028001	CHROMIUM,HEXAVALENT-7196 (CARB 425)	1.25	ug	104.0	110.4	107	67-129	6	17

Laboratory Control Sample Report Cross-Reference

QC Batch	Date	Parameter (Method)	Sample Nos.
L92028001	27-JAN-1992	CARB 425	G-9202701-001
	27-JAN-1992		G-9202701-002
	27-JAN-1992		G-9202701-003
	27-JAN-1992		G-9202701-004
	27-JAN-1992		G-9202701-005
	27-JAN-1992		G-9202701-006
	27-JAN-1992		G-9202701-007
	27-JAN-1992		G-9202701-008

COAST TO COAST ANALYTICAL SERVICES

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Lab Number : I-0459-1
Project : 42-888 Golden State Metals Auto Shredder

CLIENT: Terry Rowles
Petro Chem Environmental
3207 Antonino Ave
Bakersfield, CA 93308

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
Impingate #1, ~~250~~ 750 ml = 3	Impinger	Tim Brennan	01/23/92	02/04/92

CONSTITUENT	*PQL	RESULT	UNITS	METHOD	ANALYZED	BY	NOTES
Cadmium, Total	10.	ND	Total µg	EPA 6010	02/22/92	RJ	1
Chromium, Total	10.	ND	Total µg	EPA 6010	02/22/92	RJ	1
Lead, Total	1.	ND	Total µg	EPA 7421	02/23/92	RJ	1
Zinc, Total	10.	ND	Total µg	EPA 6010	02/22/92	RJ	1

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/19/92 by JPB using EPA 3020

02/24/92

MH/rwj/jpb
IB197

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek

Mary Havlicek, Ph.D.
President

Petro Chem Environmental Services, Inc.

COAST TO COAST ANALYTICAL SERVICES

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Lab Number : I-0459-2
Project : 42-888 Golden State Metals Auto Shredder

CLIENT: Terry Rowles
Petro Chem Environmental
3207 Antonino Ave
Bakersfield, CA 93308

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
Impingate #2, 250 ml	Impinger	Tim Brennan	01/23/92	02/04/92

CONSTITUENT	*PQL	RESULT	UNITS	METHOD	ANALYZED	BY	NOTES
Cadmium, Total	10.	ND	Total µg	EPA 6010	02/22/92	RJ	1
Chromium, Total	10.	ND	Total µg	EPA 6010	02/22/92	RJ	1
Lead, Total	1.	ND	Total µg	EPA 7421	02/23/92	RJ	1
Zinc, Total	10.	ND	Total µg	EPA 6010	02/22/92	RJ	1

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/19/92 by JPB using EPA 3020

02/24/92

MH/rwj

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek, Ph.D.
President

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Lab Number : I-0459-3
Project : 42-888 Golden State Metals Auto Shredder

CLIENT: Terry Rowles
Petro Chem Environmental
3207 Antonino Ave
Bakersfield, CA 93308

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
Probe Wash #1, 200/100 ml	Probe Wash	Tim Brennan	01/23/92	02/04/92

CONSTITUENT	*PQL	RESULT	UNITS	METHOD	ANALYZED	BY	NOTES
Cadmium, Total	5.	ND	Total µg	EPA 6010	02/22/92	RJ	1
Chromium, Total	5.	ND	Total µg	EPA 6010	02/22/92	RJ	1
Lead, Total	0.5	12.	Total µg	EPA 7421	02/23/92	RJ	1
Zinc, Total	5.	67.	Total µg	EPA 6010	02/22/92	RJ	1

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/19/92 by JPB using EPA 3020

02/24/92

MH/rwj

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek, Ph.D.
President

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Lab Number : I-0459-4
Project : 42-888 Golden State Metals Auto Shredder

CLIENT: Terry Rowles
Petro Chem Enviromental
3207 Antonino Ave
Bakersfield, CA 93308

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
Probe Wash #2, ~~100~~ 200 ml	Probe Wash	Tim Brennan	01/23/92	02/04/92

CONSTITUENT	*PQL	RESULT	UNITS	METHOD	ANALYZED	BY	NOTES
Cadmium, Total	5.	ND	Total µg	EPA 6010	02/22/92	RJ	1
Chromium, Total	5.	ND	Total µg	EPA 6010	02/22/92	RJ	1
Lead, Total	0.5	6.9	Total µg	EPA 7421	02/23/92	RJ	1
Zinc, Total	5.	47.	Total µg	EPA 6010	02/22/92	RJ	1

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/19/92 by JPB using EPA 3020

02/24/92

MH/rwj

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek

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President

Petro Chem Environmental Services, Inc.

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Lab Number : I-0459-6
Project : 42-888 Golden State Metals Auto Shredder

CLIENT: Terry Rowles
Petro Chem Environmental
3207 Antonino Ave
Bakersfield, CA 93308

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
Filter #1, ~~.40791~~ .80936 gram	Filter	Tim Brennan	01/23/92	02/04/92

CONSTITUENT	*PQL	RESULT	UNITS	METHOD	ANALYZED	BY	NOTES
Cadmium, Total	5.	ND	Total µg	EPA 6010	02/22/92	RJ	1
Chromium, Total	5.	ND	Total µg	EPA 6010	02/22/92	RJ	1
Lead, Total	0.5	7.8	Total µg	EPA 7421	02/24/92	RJ	1
Zinc, Total	5.	35.	Total µg	EPA 6010	02/22/92	RJ	1

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/18/92 by JPB using EPA 3050

02/24/92

MH/rwj

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek, Ph.D.
President

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Lab Number : I-0459-7
Project : 42-888 Golden State Metals Auto Shredder

CLIENT: Terry Rowles
Petro Chem Environmental
3207 Antonino Ave
Bakersfield, CA 93308

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
Filter #2, .21063 .39574 gram	Filter	Tim Brennan	01/23/92	02/04/92

CONSTITUENT	*PQL	RESULT	UNITS	METHOD	ANALYZED	BY	NOTES
Cadmium, Total	5.	ND	Total µg	EPA 6010	02/22/92	RJ	1
Chromium, Total	5.	ND	Total µg	EPA 6010	02/22/92	RJ	1
Lead, Total	0.5	2.4	Total µg	EPA 7421	02/24/92	RJ	1
Zinc, Total	5.	10.	Total µg	EPA 6010	02/22/92	RJ	1

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/18/92 by JPB using EPA 3050

02/24/92

MH/rwj

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek, Ph.D.
President

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Lab Number : I-0459-1
Project : 42-888 Golden State Metals Auto Shredder
Analyzed : 02/19/92
Analyzed by: NZ
Method : EPA 8080

CLIENT: Terry Rowles
Petro Chem Environmental
3207 Antonino Ave
Bakersfield, CA 93308

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
Impingate #1, 250 ml = 3	Impinger	Tim Brennan	01/23/92	02/04/92

CONSTITUENT	(CAS RN)	*PQL Total µg	RESULT Total µg	NOTE
POLYCHLORINATED BIPHENYLS				1,2
PCB 1016	(12674112)	1.	ND	
PCB 1221	(11104282)	1.	ND	
PCB 1232	(11141165)	1.	ND	
PCB 1242	(53469219)	1.	ND	
PCB 1248	(12672296)	1.	ND	
PCB 1254	(11097691)	1.	ND	
PCB 1260	(11096825)	1.	ND	

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/13/92 by CAE using EPA 608.
(2) Results were confirmed on second column on 02/19/92.

02/20/92
ECD/0219A13
MH/gtb/cae/nz
IB13PCB

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek

Mary Havlicek, Ph.D.
President

Petro Chem Environmental Services, Inc.

COAST-TO-COAST ANALYTICAL SERVICES

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CLIENT: Terry Rowles
Petro Chem Enviromental
3207 Antonino Ave
Bakersfield, CA 93308

Lab Number : I-0459-2
Project : 42-888 Golden State Metals Auto Shredder
Analyzed : 02/19/92
Analyzed by: NZ
Method : EPA 8080

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
Impingate #2, 250 ml = 3 (730)	Impinger	Tim Brennan	01/23/92	02/04/92

CONSTITUENT	(CAS RN)	*PQL Total µg	RESULT Total µg	NOTE
POLYCHLORINATED BIPHENYLS				1,2
PCB 1016	(12674112)	1.	ND	
PCB 1221	(11104282)	1.	ND	
PCB 1232	(11141165)	1.	ND	
PCB 1242	(53469219)	1.	ND	
PCB 1248	(12672296)	1.	ND	
PCB 1254	(11097691)	1.	ND	
PCB 1260	(11096825)	1.	ND	

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/13/92 by CAE using EPA 608.
(2) Results were confirmed on second column on 02/19/92.

02/20/92
ECD/0219A14
MH/gtb/cae/nz
IB13PCB

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek

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President

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Lab Number : I-0459-3
Project : 42-888 Golden State Metals Auto Shredder
Analyzed : 02/19/92
Analyzed by: NZ
Method : EPA 8080

CLIENT: Terry Rowles
Petro Chem Environmental
3207 Antonino Ave
Bakersfield, CA 93308

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
Probe Wash #1, 200/100 ml = 2	Probe Wash	Tim Brennan	01/23/92	02/04/92

CONSTITUENT	(CAS RN)	*PQL Total µg	RESULT Total µg	NOTE
POLYCHLORINATED BIPHENYLS				1,2
PCB 1016	(12674112)	1.	ND	
PCB 1221	(11104282)	1.	ND	
PCB 1232	(11141165)	1.	ND	
PCB 1242	(53469219)	1.	ND	
PCB 1248	(12672296)	1.	ND	
PCB 1254	(11097691)	1.	ND	
PCB 1260	(11096825)	1.	ND	

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/13/92 by CAE using EPA 608.
(2) Results were confirmed on second column on 02/19/92.

02/20/92
ECD/0219A15
MH/gtb/cae/nz
IB13PCB

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek

Mary Havlicek, Ph.D.
President

COAST TO COAST ANALYTICAL SERVICES

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CLIENT: Terry Rowles
Petro Chem Enviromental
3207 Antonino Ave
Bakersfield, CA 93308

Lab Number : I-0459-4
Project : 42-888 Golden State Metals Auto Shredder
Analyzed : 02/19/92
Analyzed by: NZ
Method : EPA 8080

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
Probe Wash #2, 100 ml = 2	Probe Wash	Tim Brennan	01/23/92	02/04/92

CONSTITUENT	(CAS RN)	*PQL Total µg	RESULT Total µg	NOTE
POLYCHLORINATED BIPHENYLS				1,2
PCB 1016	(12674112)	1.	ND	
PCB 1221	(11104282)	1.	ND	
PCB 1232	(11141165)	1.	ND	
PCB 1242	(53469219)	1.	ND	
PCB 1248	(12672296)	1.	ND	
PCB 1254	(11097691)	1.	ND	
PCB 1260	(11096825)	1.	ND	

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/13/92 by CAE using EPA 608.
(2) Results were confirmed on second column on 02/19/92.

02/20/92
ECD/0219A16
MH/gtb/cae/nz
IB13PCB

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek, Ph.D.
President

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San Luis Obispo Division
141 Suburban Road, San Luis Obispo, California 93401

(805) 543-2553
FAX (805) 543-2685

Lab Number : I-0459-6
Project : 42-888 Golden State Metals Auto Shredder
Analyzed : 02/19/92
Analyzed by: NZ
Method : EPA 8080

CLIENT: Terry Rowles
Petro Chem Enviromental
3207 Antonino Ave
Bakersfield, CA 93308

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
Filter #1, .40791 gram .80936	Filter	Tim Brennan	01/23/92	02/04/92

CONSTITUENT	(CAS RN)	*PQL Total µg	RESULT Total µg	NOTE
				1,2
POLYCHLORINATED BIPHENYLS				
PCB 1016	(12674112)	1.	ND	
PCB 1221	(11104282)	1.	ND	
PCB 1232	(11141165)	1.	ND	
PCB 1242	(53469219)	1.	ND	
PCB 1248	(12672296)	1.	ND	
PCB 1254	(11097691)	1.	ND	
PCB 1260	(11096825)	1.	ND	

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/14/92 by CAE using EPA 8080.
(2) Results were confirmed on second column on 02/19/92.

02/20/92
ECD/0219A10
MH/gtb/cae/nz
IB14PCB

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek

Mary Havlicek, Ph.D.
President

COAST-TO-COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

San Luis Obispo, CA • Goleta, CA • Benicia, CA • Camarillo, CA • Newport Beach, CA • Valparaiso, IN

San Luis Obispo Division
141 Suburban Road, San Luis Obispo, California 93401

(805) 543-2553
FAX (805) 543-2685

Lab Number : I-0459-7
Project : 42-888 Golden State Metals Auto Shredder
Analyzed : 02/19/92
Analyzed by: NZ
Method : EPA 8080

CLIENT: Terry Rowles
Petro Chem Enviromental
3207 Antonino Ave
Bakersfield, CA 93308

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
Filter ~~#2~~ .82904, .39574 gram	Filter	Tim Brennan	01/23/92	02/04/92

CONSTITUENT	(CAS RN)	*PQL Total µg	RESULT Total µg	NOTE
POLYCHLORINATED BIPHENYLS				1,2
PCB 1016	(12674112)	1.	ND	
PCB 1221	(11104282)	1.	ND	
PCB 1232	(11141165)	1.	ND	
PCB 1242	(53469219)	1.	ND	
PCB 1248	(12672296)	1.	ND	
PCB 1254	(11097691)	1.	ND	
PCB 1260	(11096825)	1.	ND	

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/14/92 by CAE using EPA 8080.
(2) Results were confirmed on second column on 02/19/92.

02/20/92
ECD/0219A11
MH/gtb/cae/nz
IB14PCB

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek

Mary Havlicek, Ph.D.
President

Petro Chem Environmental Services, Inc.

DATE:	February 12, 1992
CLIENT:	PETRO CHEM ENVIRONMENTAL SERVICES, INC. 3207 Antonino Avenue Bakersfield, CA 93308
ATTENTION:	Tim Brennan Terry Rowles
REFERENCE:	Report 42-888
REPORT NO:	23604
SUBJECT:	ANALYSIS OF LIQUID AND FILTER SAMPLES BY TRANSMISSION ELECTRON MICROSCOPY
ACCREDITED:	National Institute of Standards and Technology through NVLAP (Laboratory No. 1218) California Department of Health Services for Asbestos by TEM (ELAP E719)

Five liquid samples and three quartz filters were submitted for TEM analysis of asbestos structures. The liquid sample was analyzed according to the U.S. EPA method EPA-600/4-83-043.

The filters were ultrasonicated in fiber free water, allowed to settle for a few minutes in order to remove the largest quartz fibers and filtered onto 0.22 µm, 47 mm diameter mixed cellulose filters. The preparation and analysis followed the U. S. EPA protocol for dust samples.

The results are as follows:

LIQUID	Chrysotile (MFL)	Chrysotile >5µm (MFL)	Analytical Sensitivity (MFL)	
2 Impingate #1	N. D.	N. D.	0.08	250/750
4 Impingate #2	N. D.	N. D.	0.2	250/750
6 Probe Wash #1	160	13	2.5	100/200
8 Probe Wash #2	30	3.8	0.8	100/200
16 Water Blank	N.D.	N.D.	0.08	195 ml

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FILTER	Chrysotile S/F	Chrysotile S/F	Analytical Sensitivity S/F
10 Filter	N.D.	N.D.	4.8×10^6
12 Filter	3.0×10^6	3.0×10^6	3.0×10^6
14 Filter Blank	N.D.	N.D.	6.0×10^6

MFL = Millions of fibers per liter
BDL = Below detection limit
S/F = Structures per filter
N.D. = None detected

The test reports are enclosed.

Respectfully submitted,

EMS LABORATORIES, INC.

B M Kolk

B. M. Kolk
Laboratory Director

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ANALYSIS OF LIQUID BY TEM

LAB NO: 23604
CLIENT: PETRO-CHEM ENVIRONMENTAL

Laboratory I.D.	Client I.D.	FILTER MEDIA DATA Type	Diameter mm	Effective Area mm^2	No. of G.O.	Analyzed Area, mm^2	Sample Volume (ml)
23604-2	2	MCE	47	1017	20	0.134	100
23604-4	4	MCE	47	1017	20	0.134	50
23604-6	6	MCE	47	1017	20	0.134	3
23604-8	8	MCE	47	1017	20	0.134	10
23604-16	16	MCE	47	1017	20	0.134	100

INDIVIDUAL ANALYTICAL RESULTS

Laboratory I.D.	Client I.D.	No. of Asbestos Str	>5	>10	Detection Limit (MFL)	CONCENTRATION (MFL) Str	Str >5um	Str >10um
23604-2	2	-	-	-	0.08	-	-	-
23604-4	4	-	-	-	0.2	-	-	-
23604-6	6	59	4	1	2.5	160	13	2.5
23604-8	8	34	4	1	0.8	30	3.8	0.8
23604-16	16	-	-	-	0.08	-	-	

The analysis was carried out to the approved TEM method. This laboratory is in compliance with the quality specified by the method.

B M Koll
Authorized Signature

Analysis of Water by Transmission Electron Microscopy
(EPA-600/4-83-043)

Client: PETRO-CHEM ENVIRONMENTAL

EMS No. 23604

Sample No. 2

Date Analyzed 2/6/92

Fibers (chrysotile)	BDL*	MFL
Fibers > 5 µm in length (chrysotile)	BDL*	MFL
Fibers > 10 µm in length (chrysotile)	BDL*	MFL
Mass (chrysotile)	0	ug/L
More/Less than 5 Fibers in Sample (chrysotile)	LESS	
Poisson 95% Confidence Interval	0 to 0.3	MFL
Detection Limit	0.08	MFL

* BDL : Below Detection Limit; MFL: Million Fibers per Liter = .02µg 7 mg

Particle Size Distribution (Chrysotile)

Particle Length - Microns

O -0.49	0.50 - 0.99	1.00 - 1.49	1.50 - 1.99	2.00 - 2.49	2.5 - 4.99	5.00 - 9.99	10 & UP
0	0	0	0	0	0	0	0

Particle Width - Microns

O - .04	.05 - .09	.1 - .14	.15 - .19	.2 - .24	.25 - .49	.50 - .99	1 & UP
0	0	0	0	0	0	0	0

Aspect Ratio L/W

0 - 9.9	10 - 19.9	20 - 29.9	30 - 39.9	40 - 49.9	50 - 99	100 - 199	200 & UP
0	0	0	0	0	0	0	0

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TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client PetRo - Chem
Sample No. #2

Page ___ of ___

RECEIVING

METHOD OF ANALYSIS
- EPA Yamate Level I ☐
- Level II ☐
- Level III ☐
- AHERA ☐

LENGTHS
- All Sizes (EPA) ☐
- (µm):≥0.5 ☐
- ≥1.0 ☐
- ≥5.0 ☐
- ≥10.0 ☐
- PCM Range* ☐ *(≥0.25 µm width, ≥5.0 µm length)

ASPECT RATIO 3:1 ☐ 5:1 ☐

Approved By _____ Date _____

FILTER TYPE/AREA (mm²)
- MCE/385 ☐
- MCE/314 ☐
- MCE/1017 ☑
- Other ☐

TYPE OF SAMPLE
- Air ☐
- Soil ☐
- Bulk ☐
- Water ☑
- Wipe ☐
- Other ☐
- Dust/Microvac ☐

PORE SIZE
- 0.45 µm ☐
- 0.8 µm ☐
- .1 µm ☐
- .22 µm ☑
- Other ☐

G.O. Area (mm²) 0.0 067
No. of G.O. to Analyze 20
Filter Lot No. _____

PREP

- DIRECT PREP ☑
- INDIRECT PREP ☐

Volume _____ liters
Working Volume 100 ml
Weight _____ grams
Ashed Area _____ %
Date 2-5-92
Prepared By FG

ANALYSIS

GRID
- 1 ☑
- 2 ☐
- 3 ☐
- 4 ☐

Grid Address A
Screen Magnification 19,300 x
Camera Constant 28.4
Accelerating Voltage 100 KV
Beam Current 10 µa

MICROSCOPE
- 600A ☐
- 600B ☑
- HU11E ☐
- HU125E ☐

A

Analyst Kyeong Date 2/6/92

Grid Opening	Structure	Structure	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	NSD																
2	NSD																
3	NSD																
4	NSD																
5	NSD																

OBSERVATIONS:
- Clean ☐
- Debris: ☒ Very Light ☐ Light ☒ Moderate ☒ Heavy ☐ Very Heavy ☐
- Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
- Other ☐

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Petro Chem Environmental Services, Inc.

TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client Petro-chem
Sample No. #2

RECEIVING

ANALYSIS

GRID
1 ☐ 3 ☐
2 ☒ 4 ☐

Grid Address 1-B
Screen Magnification 17,300
Camera Constant 30.2
Accelerating Voltage 100 KV
Beam Current 10 µa

MICROSCOPE
600A ☒
600B ☐
HU11E ☐
HU125E ☐

B

Analyst Radha Sith Date 2/6/92

Grid Opening	Stop Number	Stop	Depth Of Sample Width	Depth Of Sample Sum		SAED Observations					EDS Observations						
1		F	1	20					✓	✓							EDS
2		F	1	50					✓	✓							
3	NSD																
4	NSD																
5																	

OBSERVATIONS:

Clean ☐					
Debris: ☐	Very Light ☐	Light ☒	Moderate ☒	Heavy ☐	Very Heavy ☐
Gypsum: ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Other ☐					

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Petro Chem Environmental Services, Inc.

6-Feb-1992 11:46:45
Execution time = 5 seconds
23604,2,B,#01,RS
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 38 secs

Energy	Counts	X-Ray Lines
1.74	209.	Si K , Si K

Quantex>
0.320 Range= 10.230 keV

Integral 0 = 10.230
1916

TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client Petro-Chem
Sample No. #2

RECEIVING

Page ___ of ___

MICROSCOPE
600A ☐
600B ☑
HU11E ☐
HU125E ☐

ANALYSIS

GRID
1 ☑ 3 ☐
2 ☐ 4 ☐

Grid Address C
Screen Magnification 19,300 x
Camera Constant 28.4
Accelerating Voltage 100 KV
Beam Current 10 μa

C

Analyst Kyeong Date 2/6/92

Grid Opening	Structure Number	Structure	Dimensions Width	Length		SAED Observations					EDS Analysis						
1	NS	D															
2	NS	D															
3	NS	D															
4	NS	D															
5	NS	D															

OBSERVATIONS:

Clean ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Debris: ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Gypsum: ☐					
Other ☐					

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Petro Chem Environmental Services, Inc.

TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client Petro-Chem.
Sample No. #2

Page ___ of ___

MICROSCOPE
600A ☑
600B ☐
HU11E ☐
HU125E ☐

D

GRID
1 ☐ 3 ☑
2 ☐ 4 ☑

Grid Address 1D
Screen Magnification 19300 x
Camera Constant 30.2
Accelerating Voltage 100 KV
Beam Current 10 µa

Analyst S. Ahmed Date 2/6/92

Grid Opening	Structure	Structure	Dimensions Width	Dimensions Length	Dimensions	SAED Observation					EDS Analysis						
1	NSD																
2	NSD																
3	NSD																
4	NSD																
5	NSD																

15 Line

OBSERVATIONS:

Clean ☐ Debris: ☑ Gypsum: ☐ Other ☐
Very Light ☐ Very Light ☐
Light ☑ Light ☐
Moderate ☐ Moderate ☐
Heavy ☐ Heavy ☐
Very Heavy ☐ Very Heavy ☐

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Petro Chem Environmental Services, Inc.

Analysis of Water by Transmission Electron Microscopy
(EPA-600/4-83-043)

EMS No. 23604

Client: PETRO-CHEM ENVIRONMENTAL

Sample No. 4

Date Analyzed 2/6/92

Fibers (chrysotile)	BDL*	MFL
Fibers > 5 µm in length (chrysotile)	BDL*	MFL
Fibers > 10 µm in length (chrysotile)	BDL*	MFL
Mass (chrysotile)	0	ug/L
More/Less than 5 Fibers in Sample (chrysotile)	LESS	
Poisson 95% Confidence Interval	0 to 0.6	MFL
Detection Limit	0.2	MFL

* BDL : Below Detection Limit; MFL: Million Fibers per Liter = 0.02 µg/L

Particle Size Distribution (Chrysotile)

Particle Length - Microns

O -0.49	0.50 - 0.99	1.00 - 1.49	1.50 - 1.99	2.00 - 2.49	2.5 - 4.99	5.00 - 9.99	10 & UP
0	0	0	0	0	0	0	0

Particle Width - Microns

O - .04	.05 - .09	.1 - .14	.15 - .19	.2 - .24	.25 - .49	.50 - .99	1 & UP
0	0	0	0	0	0	0	0

Aspect Ratio L/W

0 - 9.9	10 - 19.9	20 - 29.9	30 - 39.9	40 - 49.9	50 - 99	100 - 199	200 & UP
0	0	0	0	0	0	0	0

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TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client Petro-Chem
Sample No. #4

FILTER TYPE/AREA (mm^2)
- MCE/385 ☐
- MCE/314 ☐
- MCE/1017 ☑
- Other ☐

MICROSCOPE
- 600A ☐
- 600B ☒
- HU11E ☐
- HU125E ☐

METHOD OF ANALYSIS
- EPA Yamate Level I ☐
- Level II ☐
- Level III ☐
- AHERA ☐

LENGTHS
- All Sizes (EPA) ☐
- (µm): ≥0.5 ☐
- ≥1.0 ☐
- ≥5.0 ☐
- ≥10.0 ☐
- PCM Range* ☐

*(≥0.25 µm width, ≥5.0 µm length)

ASPECT RATIO 3:1 ☐ 5:1 ☐

Approved By ________ Date ________

TYPE OF SAMPLE
- Air ☐
- Soil ☐
- Bulk ☐
- Water ☑
- Wipe ☐
- Other ☐
- Dust/Microvac ☐

PORE SIZE
- 0.45 µm ☐
- 0.8 µm ☐
- .1 µm ☐
- .22 µm ☑
- Other ☐

G.O. Area (mm^2) 0.0067
No. of G.O. to Analyze 20
Filter Lot No. ________

PREP

DIRECT PREP ☑
INDIRECT PREP ☐

Volume ________ liters
Working Volume 50 ml
Weight ________ grams
Ashed Area ________ %
Date 2-5-92
Prepared By FG

ANALYSIS

GRID 1 ☒ 2 ☐ 3 ☐ 4 ☐

Grid Address 1A
Screen Magnification 101300x
Camera Constant 28.4
Accelerating Voltage 100 KV
Beam Current 10 µa

Analyst S. Ahmed Date 2/6/92

A

1	NSD
2	NSD
3	NSD
4	NSD
5	NSD

OBSERVATIONS:

Clean ☐						
Debris: ☒	Very Light ☐	Light ☒	Moderate ☐	Heavy ☐	Very Heavy ☐
Gypsum: ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Other ☐						

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TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client Petro-Chem
Sample No. #4

RECEIVING

ANALYSIS

GRID
1 ☐ 3 ☐
2 ☒ 4 ☐

MICROSCOPE
600A ☒
600B ☐
HU11E ☐
HU125E ☐

Grid Address 1B
Screen Magnification 19300x
Camera Constant 30.2
Accelerating Voltage 100 KV
Beam Current 10 µa

B

Analyst S. Ahmed Date 2/6/92

Grid Opening																		
1	NSD																	
2	NSD																	
3	NSD																	
4	NSD																	
5	NSD																	

OBSERVATIONS:

Clean ☐					
Debris: ☒	Very Light ☐	Light ☒	Moderate ☐	Heavy ☐	Very Heavy ☐
Gypsum: ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Other ☐					

Petro Chem Environmental Services, Inc.

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TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client Petro Chem
Sample No. 4

RECEIVING

ANALYSIS

MICROSCOPE
600A [X]
600B [ ]
HU11E [ ]
HU125E [ ]

GRID
1 [ ] 3 [X]
2 [ ] 4 [ ]

Grid Address C-C
Screen Magnification 1930
Camera Constant 38.2
Accelerating Voltage 100 KV
Beam Current 10 µa

C

Analyst Radha Sill Date 2/6/92

Grid Opening	Structure Number	Structure	Dimension Length Width	Length	5 µm	SAED Observation					EDS Analysis						
											Na	Mg	Si	Ca	Fe	Ni	
1	NSD																
2	NSD																
3	NSD																
4	NSD																
5	NSD																

15 lines

OBSERVATIONS:

Clean [ ] Debris: [ ] Gypsum: [ ] Other [ ]
Very Light [ ] Very Light [ ]
Light [ ] Light [ ]
Moderate [ ] Moderate [ ]
Heavy [ ] Heavy [ ]
Very Heavy [ ] Very Heavy [ ]

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Petro Chem Environmental Services, Inc.

TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client Petro Chem.
Sample No. #4

RECEIVING

ANALYSIS

GRID
1 ☐ 3 ☐
2 ☐ 4 ☒

Grid Address 1-D
Screen Magnification 1930x
Camera Constant 302
Accelerating Voltage 100 KV
Beam Current 10 µa

Analyst Radha Date 2/6/92

MICROSCOPE
600A ☒
600B ☐
HU11E ☐
HU125E ☐

Grid Opening	Sample Number	Sample	Dimensions			SAED Diagram					EDS Analysis						Comments
			Width	Length													
1	NSD																
2	NSD																
3		F	1	14					✓								
4	NSD																
5	NSD																

Samples

OBSERVATIONS:

Clean ☐					
Debris: ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Gypsum: ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Other ☐					

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-568-4065

Petro Chem Environmental Services, Inc.

6-Feb-1992 13:47:13
Execution time = 6 seconds
23604,4,D,#01,RS
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 36 secs

Energy	Counts	X-Ray Lines
0.72	539.	Fe L , Fe L , Fe L , Fe L
6.40	164.	Fe K , Fe K

Quantex>
0.160 Range= 10.230 keV

10.230
Integral 0 = 3368

Analysis of Water by Transmission Electron Microscopy
(EPA-600/4-83-043)

Client: PETRO-CHEM ENVIRONMENTA

EMS No. 23604

Sample No. 6

Date Analyzed 2/7/92

Fibers (chrysotile)	160	MFL
Fibers > 5 µm in length (chrysotile)	13	MFL
Fibers > 10 µm in length (chrysotile)	2.5	MFL
Mass (chrysotile)	3	ug/L
More/Less than 5 Fibers in Sample (chrysotile)	MORE	
Poisson 95% Confidence Interval	120 to 210	MFL
Detection Limit	2.5	MFL

* BDL : Below Detection Limit; MFL: Million Fibers per Liter

Particle Size Distribution (Chrysotile)

Particle Length - Microns

O -0.49	0.50 - 0.99	1.00 - 1.49	1.50 - 1.99	2.00 - 2.49	2.5 - 4.99	5.00 - 9.99	10 & UP
2	26	16	6	6	3	4	1

Particle Width - Microns

O - .04	.05 - .09	.1 - .14	.15 - .19	.2 - .24	.25 - .49	.50 - .99	1 & UP
0	62	1	0	0	1	0	0

Aspect Ratio L/W

0 - 9.9	10 - 19.9	20 - 29.9	30 - 39.9	40 - 49.9	50 - 99	100 - 199	200 & UI
4	27	14	5	6	3	4	1

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TEM ASBESTOS ANALYSIS

Page 1 of

EMS Lab No. 23604
Client Petro-Chem
Sample No. #6

PREPARATION

METHOD OF ANALYSIS
EPA Yamate Level I ☐
Level II ☐
Level III ☐
AHERA ☐

ASPECT RATIO 3:1 ☐ 5:1 ☐

Approved By _____ Date _____

LENGTHS
All Sizes (EPA) ☐
(µm): ≥0.5 ☐
≥1.0 ☐
≥5.0 ☐
≥10.0 ☐
PCM Range* ☐
*(≥0.25 µm width, ≥5.0 µm length)

TYPE OF SAMPLE
Air ☐ Water ☑
Soil ☐ Wipe ☐
Bulk ☐ Other ☐
Dust/Microvac ☐

FILTER TYPE/AREA (mm²)
MCE/385 ☐
MCE/314 ☐
MCE/1017 ☑
Other ☐

PORE SIZE
0.45 µm ☐
0.8 µm ☐
.1 µm ☐
.22 µm ☑
Other ☐

G.O. Area (mm²) 0.0067
No. of G.O. to Analyze 20
Filter Lot No. _____

PREP

DIRECT PREP ☑
INDIRECT PREP ☐

Volume _____ liters
Working Volume 3 ml
Weight _____ grams
Ashed Area _____ %

Date 2-5-92
Prepared By FG

ANALYSIS

GRID
1 ☑ 3 ☐
2 ☐ 4 ☐

Grid Address 6-A
Screen Magnification 19,300 x
Camera Constant 28.4
Accelerating Voltage 100 KV
Beam Current 10 µa

MICROSCOPE
600A ☐
600B ☑
HU11E ☐
HU125E ☐

A

Analyst F.M. Date 2/6/92

Grid	Field	Area	Area (mm²)	Area (µm)	1	2	3	4	5							
1	01	F	1	20	✓						8	10				EDS
	02	F	1.5	30	✓						7	10				EDS
2	03	F	1	20	✓						6	10				EDS
	04	F/D	1	25	✓						10	10				EDS
	05	F	1	90	✓						6	10				EDS
3	06	F	1	43	✓											
	07	F	1	60	✓											
	08	F/D	1.5	20	✓											
	09	F	1	30	✓											
	10	F	1	12	✓											
4	11	F	1	65	✓											
	12	F	1	15	✓											
	13	F	1	175	✓											
	14	F	1	13	✓											
5	15	F/D	1	35	✓						7	10				EDS

OBSERVATIONS:

Clean ☐					
Debris: ☑	Very Light ☐	Light ☑	Moderate ☑	Heavy ☐	Very Heavy ☐
Gypsum: ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Other ☐					

Petro Chem Environmental Services, Inc.

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-568-4065

TEM ASBESTOS ANALYSIS

Page 2 of

EMS Lab No. 23604
Client
Sample No. 6

RECEIVING

METHOD OF ANALYSIS
- EPA Yamate Level I ☐
- Level II ☐
- Level III ☐
- AHERA ☐

ASPECT RATIO 3:1 ☐ 5:1 ☐

LENGTHS
- All Sizes (EPA) ☐
- (µm): ≥0.5 ☐
- ≥1.0 ☐
- ≥5.0 ☐
- ≥10.0 ☐
- PCM Range* ☐ *(≥0.25 µm width, ≥5.0 µm length)

Approved By _____ Date _____

FILTER TYPE/AREA (mm²)
- MCE/385 ☐
- MCN/960 ☐
- MCE/960 ☐
- Other ☐

TYPE OF SAMPLE
- Air ☐ Water ☐
- Soil ☐ Wipe ☐
- Bulk ☐ Other ☐
- Dust/Microvac ☐

PORE SIZE
- 0.45 µm ☐
- 0.8 µm ☐
- .1 µm ☐
- .22 µm ☐
- Other ☐

G.O. Area (mm²) 0.0
No. of G.O. to Analyze
Filter Lot No.

PREP

DIRECT PREP ☐
INDIRECT PREP ☐

Volume _____ liters
Working Volume _____ ml
Weight _____ grams
Ashed Area _____ %

Prepared By _____

ANALYSIS

GRID
1 ☐ 3 ☐
2 ☐ 4 ☐

Grid Address
Screen Magnification _____ x
Camera Constant
Accelerating Voltage 100 KV
Beam Current _____ µa

MICROSCOPE
- 600A ☐
- 600B ☐
- HU11E ☐
- HU125E ☐

A

Analyst _____ Date _____

Grid Opening	Grid Area	Fibers	Area Scanned	Time		Structures												
5	16	F	1	13		✓												
	17	F/D	1	24		✓												
	18	F	1	12		✓												
	19	FX	1.5	150		✓												
	20	F/D	1	15		✓												
	21	FX	1	140		✓												

15 lines

OBSERVATIONS:

Clean ☐					
Debris: ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Gypsum: ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Other ☐					

Petro Chem Environmental Services, Inc.

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-441-2393

6-Feb-1992 16:16:11
Execution time = 5 seconds
23604,6,A,#05,FM
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 53 secs

Energy	Counts	X-Ray Lines
0.52	198.	O K , O K , V L , V L , V L , O K V L
1.26	217.	Mg K , Mg K , Mg K
1.74	269.	Si K , Si K

Quantex>
0.160 Range= 10.230 keV Integral 0 = 10.230 3715

6-Feb-1992 16:38:12
Execution time = 6 seconds
23604,6,A,#15,FM
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 55 secs

Energy	Counts	X-Ray Lines
0.52	185.	O K , O K , V L , V L , V L , O K V L
1.25	172.	Mg K , Mg K , Mg K
1.73	259.	Si K , Si K

Quantex>
0.000 Range= 10.230 keV Integral 0 = 10.110 4000

6-Feb-1992 16:07:18
Execution time = 5 seconds
23604,6,A,#03,FM
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 53 secs

Energy	Counts	X-Ray Lines
0.52	145.	O K , O K , V L , V L , V L , V L
1.25	167.	Mg K , Mg K , Mg K
1.74	290.	Si K , Si K

Quantex>
0.160 Range= 10.230 keV

10.230
Integral O = 4050

6-Feb-1992 16:14:49
Execution time = 5 seconds
23604,6,A,#04,FM
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 43 secs

Energy	Counts	X-Ray Lines
0.52	196.	O K , O K , V L , V L , V L , V L
1.25	179.	Mg K , Mg K , Mg K
1.73	186.	Si K , Si K

Quantex>
0.160 Range= 10.230 keV

10.230
Integral O = 3174

6-Feb-1992 15:58:38
Execution time = 6 seconds
23604,6,A,#01,FM
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 55 secs

Energy	Counts	X-Ray Lines
0.51	145.	O K , O K , V L , V L , V L , V L
1.24	147.	Mg K , Mg K
1.74	227.	Si K , Si K

Quantex>
0.160 Range= 10.230 keV

Integral 0 = 10.230 3915

6-Feb-1992 16:02:40
Execution time = 8 seconds
23604,6,A,#02,FM
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 56 secs

Energy	Counts	X-Ray Lines
0.53	183.	O K , O K , V L , Cr L , V L , Cr L , V L , V L , Cr L1 , Cr L
1.25	197.	Mg K , Mg K , Mg K
1.74	302.	Si K , Si K

Quantex>
0.160 Range= 10.230 keV

Integral 0 = 10.230 3963

TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client Petro-Chem
Sample No. # 6

MICROSCOPE
600A ☒
600B ☐
HU11E ☐
HU125E ☐

GRID
1 ☐ 3 ☐
2 ☒ 4 ☐

Grid Address 1B
Screen Magnification 4300
Camera Constant 35.2
Accelerating Voltage 100 KV
Beam Current 10 μa

B

Analyst Radler Date 2/7/92

(1)	1	MD	1	50		✓			✓								
	2		1	18		✓				✓							#3688
	3		1	20					✓	✓							
	4		1	28		✓						7	10				~~#~~EDS
	5		1	11		✓						7	10				EDS
	6		1	14		✓				✓							
	7		1	22		✓						6	10				EDS
	8		1	40		✓				✓							
	9		1	12						✓							
(2)	10		1	20		✓				✓							
	11		1	10					✓								
	12		1	5		✓				✓							
(3)	13		3	45					✓			8	10				
	14		1	48		✓											
	15		1	11					✓								

OBSERVATIONS:

Clean ☐					
Debris: ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Gypsum: ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Other ☐					

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-568-4065

Petro Chem Environmental Services, Inc.

TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client Petro-Chem.
Sample No. #6

RECEIVING

METHOD OF ANALYSIS
- EPA Yamate Level I ☐
- Level II ☐
- Level III ☐
- AHERA ☐

ASPECT RATIO 3:1 ☐ 5:1 ☐

LENGTHS
- All Sizes (EPA) ☐
- (µm): ≥0.5 ☐
- ≥1.0 ☐
- ≥5.0 ☐
- ≥10.0 ☐
- PCM Range* ☐ *(≥0.25 µm width, ≥5.0 µm length)

Approved By _____ Date _____

FILTER TYPE/AREA (mm²)
- MCE/385 ☐
- MCN/960 ☐
- MCE/960 ☐
- Other ☐

TYPE OF SAMPLE
- Air ☐ Water ☐
- Soil ☐ Wipe ☐
- Bulk ☐ Other ☐
- Dust/Microvac ☐

PORE SIZE
- 0.45 µm ☐
- 0.8 µm ☐
- .1 µm ☐
- .22 µm ☐
- Other ☐

G.O. Area (mm²) 0.0
No. of G.O. to Analyze _____
Filter Lot No. _____

PREP

DIRECT PREP ☐
INDIRECT PREP ☐

Volume _____ liters
Working Volume _____ ml
Weight _____ grams
Ashed Area _____ %

Prepared By _____

ANALYSIS

GRID
- 1 ☐ 3 ☐
- 2 ☒ 4 ☐

Grid Address 1-B
Screen Magnification 19,350
Camera Constant 38.2
Accelerating Voltage 100 KV
Beam Current 10 µa

Analyst Radha Sitn Date 2-22-92

MICROSCOPE
- 600A ☒
- 600B ☐
- HU11E ☐
- HU125E ☐

Grid Opening			Width	Length													
	22	7		5.0		C	2	2	2	2							
4	16		1	38						✓							
	17		1	20		✓											
	18		1	54		✓											
	19		1	18		✓											
5	20		1.5	18		✓											
	21		1.5	11		✓											
	22	C	5	12	1	✓											
	23		1	11						✓							
	24		1	7						✓							
	25		1	15						✓							

15 lines

OBSERVATIONS:

Clean ☐					
Debris: ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Gypsum: ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Other ☐					

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-441-2393

7-Feb-1992 08:47:38
Execution time = 6 seconds
23604,6,B,#4,RS
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 38 secs

Energy	Counts	X-Ray Lines
1.25	634.	Mg K , Mg K , Mg K
1.73	930.	Si K , Si K

Quantex>
0.320 Range= 10.230 keV

Integral 0 = 10.230 5855

7-Feb-1992 08:48:55
Execution time = 5 seconds
23604,6,B,#5,RS
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 39 secs

Energy	Counts	X-Ray Lines
1.25	431.	Mg K , Mg K , Mg K
1.74	633.	Si K , Si K
6.39	156.	Fe K , Fe K

Quantex>
0.320 Range= 10.230 keV

Integral 0 = 10.230 5976

7-Feb-1992 08:50:31
Execution time = 6 seconds
23604,6,B,#7,RS
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 47 secs

Energy	Counts	X-Ray Lines
1.25	496.	Mg K , Mg K , Mg K
1.74	782.	Si K , Si K

Quantex>
0.320 Range= 10.230 keV Integral O = 10.230
5103

7-Feb-1992 08:52:23
Execution time = 6 seconds
23604,6,B,#14,RS
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 19 secs

Energy	Counts	X-Ray Lines
1.25	665.	Mg K , Mg K , Mg K
1.74	786.	Si K , Si K

Quantex>
0.320 Range= 10.230 keV Integral O = 10.230
4365

TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client Petro Chemical.
Sample No. 6

MICROSCOPE
600A ☐
600B ☒
HU11E ☐
HU125E ☐

GRID
1 ☐ 3 ☒
2 ☐ 4 ☐

Grid Address 1c
Screen Magnification 14300
Camera Constant 28.4
Accelerating Voltage 100 KV
Beam Current 10 µa

C

Analyst S. Ahmed Date 2/7/92

1	1	F	1.5	24	✓						6	10					EDS #1
	2	F	1	22	✓						7	10					EDS #2
2	3	F	1	15	✓						6	10					EDS #3
	4	F	1	15				✓									
3	5	F	1	35				✓									
	6	F	1	40				✓									
	7	F	1	50 X					✓								
	8	F	1	100	✓												
4	9	F	1	18	✓												
	10	F	1	42	✓												
	11	F	2	22	✓												
5	12	MD	1	30	✓												
	13	F	1	40	✓												
	14	F	1	35	✓												
	15	F	1	14						✓							

OBSERVATIONS:

Clean ☐ Debris: ☒ Gypsum: ☐ Other ☐

Very Light ☐ Very Light ☐

Light ☐ Light ☐

Moderate ☒ Moderate ☐

Heavy ☐ Heavy ☐

Very Heavy ☐ Very Heavy ☐

Petro Chem Environmental Services, Inc.

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-568-4065

7-Feb-1992 08:54:16
Execution time = 6 seconds
23604,6,C,#01,SA
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 49 secs

Energy	Counts	X-Ray Lines
0.52	165.	O K , O K , V L , V L , V L , V L
1.24	181.	Mg K , Mg K
1.72	317.	Si K , Si K

Quantex>
0.320 Range= 10.230 keV

Integral O = 10.230 8418

7-Feb-1992 08:55:24
Execution time = 6 seconds
23604,6,C,#02,SA
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 42 secs

Energy	Counts	X-Ray Lines
0.52	262.	O K , O K , V L , V L , V L , V L
1.25	191.	Mg K , Mg K , Mg K
1.74	297.	Si K , Si K

Quantex>
0.320 Range= 10.230 keV

Integral O = 10.230 7670

7-Feb-1992 08:56:30
Execution time = 7 seconds
23604,6,C,#03,SA
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 40 secs

Energy	Counts	X-Ray Lines
0.52	204.	O K , O K , V L , V L , V L , V L
1.25	179.	Mg K , Mg K , Mg K
1.74	302.	Si K , Si K

Quantex)
0.320 Range= 10.230 keV

Integral O = 10.230 7517

7-Feb-1992 09:10:03
Execution time = 6 seconds
23604,6,D,#02,RS
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 28 secs

Energy	Counts	X-Ray Lines
1.26	425.	Mg K , Mg K , Mg K
1.74	675.	Si K , Si K

Quantex)
0.320 Range= 10.230 keV

Integral O = 10.230 4076

TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client Petro chem.
Sample No. #6

RECEIVING

ANALYSIS

Page [ ] of [ ]

MICROSCOPE
600A [X]
600B [ ]
HU11E [ ]
HU125E [ ]

GRID
1 [ ] 3 [ ]
2 [ ] 4 [X]

Grid Address 1-D
Screen Magnification 19,300 x
Camera Constant 36.2
Accelerating Voltage 100 KV
Beam Current 10 µa

Analyst Radha Date 2/7/92

Grid Opening	Sample Number	Sample	Dimensions Width	Length	SAED Observation					EDS Analysis						
1	1		1	80				✓								
	2		1	10	✓						6	10				EDS
	3		1.5	700	✓						8	10				EDS
	4		4	18				✓								
	5		6	300 x				✓								
2	6		3	14				✓								
	7		1	18	✓											# 3689
	8		1	22	✓											
	9		1	19	✓											
	10		1	12	✓											
3	11		1	12	✓											
	12		1	11				✓								
	13		1	20	✓											
	14		1	22				✓								
	15		1	25				✓								

OBSERVATIONS:

Clean [ ]					
Debris: [ ]	Very Light [ ]	Light [ ]	Moderate [ ]	Heavy [ ]	Very Heavy [ ]
Gypsum: [ ]	Very Light [ ]	Light [ ]	Moderate [ ]	Heavy [ ]	Very Heavy [ ]
Other [ ]					

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-568-4065

Petro Chem Environmental Services, Inc.

TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client Petro Chem.
Sample No. #6

Page ___ of ___

MICROSCOPE
600A ☐
600B ☐
HU11E ☐
HU125E ☐

GRID
1 ☐ 3 ☐
2 ☐ 4 ☐

Grid Address ___
Screen Magnification ___ x
Camera Constant ___
Accelerating Voltage 100 KV
Beam Current ___ µa

Analyst Radha Date 2/7/92

C D

Grid Opening	Structure Number	Structure	Length Width	Length	Chr	Amp	Tre	Act	Tot							
4		1	1	25					✓							
			1	18	✓											
			1	14	✓											
			1	16					✓							
			1	14	✓											
(h)			1	43	✓											
			1	13	✓											
			1	14					✓							
			1	22	✓											
			1	20	✓											
			1	15					✓							
			1.5	16	✓											
			1	15	✓											
			1	38	✓											
			1	7	✓											

OBSERVATIONS:

Clean ☐					
Debris: ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Gypsum: ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Other ☐					

Petro Chem Environmental Services, Inc.

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-568-4065

7-Feb-1992 09:10:15
Execution time = 6 seconds
23604,6,D,#02,RS
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 28 secs

Energy	Counts	X-Ray Lines
1.26	425.	Mg K , Mg K , Mg K
1.74	675.	Si K , Si K

Quantex>
0.320 Range= 10.230 keV

Integral 0 = 10.230 4076

7-Feb-1992 09:11:21
Execution time = 5 seconds
23604,6,D,#03,RS
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 31 secs

Energy	Counts	X-Ray Lines
1.24	591.	Mg K , Mg K
1.74	778.	Si K , Si K
3.70	101.	Ca K , Ca K

Quantex>
0.320 Range= 10.230 keV

Integral 0 = 10.230 4713

Analysis of Water by Transmission Electron Microscopy
(EPA-600/4-83-043)

EMS No. 23604

Client: PETRO-CHEM ENVIRONMENTA

Sample No. 8

Date Analyzed 2/6/92

Fibers (chrysotile)	30	MFL
Fibers > 5 µm in length (chrysotile)	3.8	MFL
Fibers > 10 µm in length (chrysotile)	0.8	MFL
Mass (chrysotile)	270	ug/L
More/Less than 5 Fibers in Sample (chrysotile)	MORE	
Poisson 95% Confidence Interval	21 to 40	MFL
Detection Limit	0.8	MFL

* BDL : Below Detection Limit; MFL: Million Fibers per Liter

Particle Size Distribution (Chrysotile)

Particle Length - Microns

O -0.49	0.50 - 0.99	1.00 - 1.49	1.50 - 1.99	2.00 - 2.49	2.5 - 4.99	5.00 - 9.99	10 & UP
1	10	12	3	3	5	4	1

Particle Width - Microns

O - .04	.05 - .09	.1 - .14	.15 - .19	.2 - .24	.25 - .49	.50 - .99	1 & UP
0	33	3	0	1	1	0	0

Aspect Ratio L/W

0 - 9.9	10 - 19.9	20 - 29.9	30 - 39.9	40 - 49.9	50 - 99	100 - 199	200 & UI
4	11	11	3	2	6	2	0

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-568-4065

TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client Petro - Chem
Sample No. #8

RECEIVING

METHOD OF ANALYSIS
- EPA Yamate Level I ☐
- Level II ☐
- Level III ☐
- AHERA ☐

LENGTHS
- All Sizes (EPA) ☐
- (µm):≥0.5 ☐
- ≥1.0 ☐
- ≥5.0 ☐
- ≥10.0 ☐
- PCM Range* ☐ *(≥0.25 µm width, ≥5.0 µm length)

ASPECT RATIO 3:1 ☐ 5:1 ☐

Approved By _____ Date _____

FILTER TYPE/AREA (mm²)
- MCE/385 ☐
- MCE/314 ☐
- MCE/1017 ☑
- Other ☐

TYPE OF SAMPLE
- Air ☐ Water ☑
- Soil ☐ Wipe ☐
- Bulk ☐ Other ☐
- Dust/Microvac ☐

PORE SIZE
- 0.45 µm ☐
- 0.8 µm ☐
- .1 µm ☐
- .22 µm ☑
- Other ☐

G.O. Area (mm²) 0.0067
No. of G.O. to Analyze 20
Filter Lot No. _____

PREP

DIRECT PREP ☑
INDIRECT PREP ☐

Volume _____ liters
Working Volume 10 ml
Weight _____ grams
Ashed Area _____ %

Date 2-5-92
Prepared By FG

ANALYSIS

GRID
- 1 ☒ 3 ☐
- 2 ☐ 4 ☐

Grid Address 1-A
Screen Magnification 19,300x
Camera Constant 30.2
Accelerating Voltage 100 KV
Beam Current 10 µa

MICROSCOPE
- 600A ☒
- 600B ☐
- HU11E ☐
- HU125E ☐

A

Analyst Radha Sith Date 2/6/92

1	1	F	15	12					✓								
	2	F	1	21					✓								
	3	F	1	22		✓											
	4	F	1	38		✓											
2	5	F	1	9					✓								
3	NSD																
4	6	F	1	18					✓								
	7	MD	1	20		✓											# 3686
	8	F	1	85		✓											
5	9	MD	1	10					✓								
	10	F	1	20		✓											
	11	F	1	11		✓											
	12	F	1	14					✓								
6	16	SMD	8	30	1	✓											
	17	F	1	15					✓								

OBSERVATIONS:
- Clean ☐
- Debris: ☐ Very Light ☐ Light ☐ Moderate ☒ Heavy ☐ Very Heavy ☐
- Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☒ Heavy ☐ Very Heavy ☐
- Other ☐

Petro Chem Environmental Services, Inc.

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-568-4065

TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client Petro Chemical
Sample No. #8

RECEIVING

METHOD OF ANALYSIS
- EPA Yamate Level I ☐
- Level II ☐
- Level III ☐
- AHERA ☐

ASPECT RATIO 3:1 ☐ 5:1 ☐

Approved By _____ Date _____

LENGTHS
- All Sizes (EPA) ☐
- (µm): ≥0.5 ☐
- ≥1.0 ☐
- ≥5.0 ☐
- ≥10.0 ☐
- PCM Range* ☐

*(≥0.25 µm width, ≥5.0 µm length)

FILTER TYPE/AREA (mm²)
- MCE/385 ☐
- MCE/314 ☐
- MCE/1017 ☐
- Other _____ ☐

TYPE OF SAMPLE
- Air ☐ Water ☐
- Soil ☐ Wipe ☐
- Bulk ☐ Other ☐
- Dust/Microvac ☐

PORE SIZE
- 0.45 µm ☐
- 0.8 µm ☐
- .1 µm ☐
- .22 µm ☐
- Other ☐

G.O. Area (mm²) 0.0
No. of G.O. to Analyze _____
Filter Lot No. _____

PREP

DIRECT PREP ☐
INDIRECT PREP ☐

Volume _____ liters
Working Volume _____ ml
Weight _____ grams
Ashed Area _____ %

Date _____
Prepared By _____

ANALYSIS

GRID
1 ☐ 3 ☐
2 ☐ 4 ☐

Grid Address _____
Screen Magnification _____ x
Camera Constant _____
Accelerating Voltage 100 KV
Beam Current _____ µa

MICROSCOPE
- 600A ☐
- 600B ☐
- HU11E ☐
- HU125E ☐

A

Analyst RP Date 2/6/92

GO	FF	F															
6	16	MD	1	14				✓									
	17	MD	1	65				✓									
7	18	F	1	30	✓												
	19	F	1	155													
	20	MD	1	25	✓												
8	21	MD	1	55	✓												
	22	B	2	24	✓												
9	23	MD	1	22	✓												
	24	MD	1	20				✓									
	25	F	2.5	135	✓												#3687
	26	F	3	320				✓									
	27	F	1	15	✓												
10	28	MD	1	20	✓												
	29	F	1	25	✓												
	30	MD	1	9	✓												

OBSERVATIONS:
- Clean ☐
- Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
- Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
- Other ☐

Petro Chem Environmental Services, Inc.

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-568-4065

TEM ASBESTOS ANALYSIS

Page 3 of

EMS Lab No. 23 604
Client Petro Chem.
Sample No. #8

RECEIVING

METHOD OF ANALYSIS
- EPA Yamate Level I ☐
- Level II ☐
- Level III ☐
- AHERA ☐

LENGTHS
- All Sizes (EPA) ☐
- (µm): ≥0.5 ☐
- ≥1.0 ☐
- ≥5.0 ☐
- ≥10.0 ☐
- PCM Range* ☐ *(≥0.25 µm width, ≥5.0 µm length)

ASPECT RATIO 3:1 ☐ 5:1 ☐

Approved By _____ Date _____

FILTER TYPE/AREA (mm²)
- MCE/385 ☐
- MCN/960 ☐
- MCE/960 ☐
- Other ☐

TYPE OF SAMPLE
- Air ☐ Water ☐
- Soil ☐ Wipe ☐
- Bulk ☐ Other ☐
- Dust/Microvac ☐

PORE SIZE
- 0.45 µm ☐
- 0.8 µm ☐
- .1 µm ☐
- .22 µm ☐
- Other ☐

G.O. Area (mm²) 0.0
No. of G.O. to Analyze _____
Filter Lot No. _____

PREP

- DIRECT PREP ☐
- INDIRECT PREP ☐

Volume _____ liters
Working Volume _____ ml
Weight _____ grams
Ashed Area _____ %

Prepared By _____

ANALYSIS

GRID
- 1 ☐ 3 ☐
- 2 ☐ 4 ☐

MICROSCOPE
- 600A ☐
- 600B ☐
- HU11E ☐
- HU125E ☐

Grid Address _____
Screen Magnification _____ x
Camera Constant _____
Accelerating Voltage 100 KV
Beam Current _____ µa

A

Analyst Radha Date 2/6/92

[redacted]			[redacted]		[redacted]					[redacted]						
10	3	F	15	16		✓										

15 lines

OBSERVATIONS:
- Clean ☐
- Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
- Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
- Other ☐

Petro Chem Environmental Services, Inc.

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-441-2393

6-Feb-1992 09:09:46
Execution time = 6 seconds
23604,8,B,#03,SA
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 44 secs

Energy	Counts	X-Ray Lines
0.51	151.	O K , O K , V L , V L , V L , V L
1.25	209.	Mg K , Mg K , Mg K
1.74	245.	Si K , Si K

Quantex>
0.320 Range= 10.230 keV

Integral 0 = 10.230 5919

6-Feb-1992 09:11:01
Execution time = 6 seconds
23604,8,B,#04,SA
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 41 secs

Energy	Counts	X-Ray Lines
0.52	133.	O K , O K , V L , V L , V L , V L
1.24	173.	Mg K , Mg K
1.73	196.	Si K , Si K

Quantex>
0.320 Range= 10.230 keV

Integral 0 = 10.230 4826

6-Feb-1992 09:05:29
Execution time = 6 seconds
23604,8,B#01,SA
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 57 secs

Energy	Counts	X-Ray Lines
1.25	169.	Mg K , Mg K , Mg K
1.74	211.	Si K , Si K

Quantex>
0.320 Range= 10.230 keV

Integral O = 10.230 2836

6-Feb-1992 09:06:09
Execution time = 6 seconds
23604,8,B,#02,SA
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 78 secs

Energy	Counts	X-Ray Lines
1.25	227.	Mg K , Mg K , Mg K
1.74	283.	Si K , Si K

Quantex>
0.320 Range= 10.230 keV

Integral O = 10.230 3806

TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client Petro-Chem.
Sample No. #8

RECEIVING

Page 2 of

MICROSCOPE
600A ☐
600B ☑
HU11E ☐
HU125E ☐

ANALYSIS

GRID
1 ☐ 3 ☐
2 ☑ 4 ☐

Grid Address 1B
Screen Magnification 19300 x
Camera Constant 28.4
Accelerating Voltage 100 KV
Beam Current 10 µa

B

Analyst S. Ahmed Date 2/6/92

Grid Opening	Sample No.	Z	Dispersion Width	Dispersion Length	SAED Quadrant					EDS Analysis						
7	15	F	1	14	✓											
	16	F	1	15	✓											
8	17	F	1	15	✓											
9	18	F	1	40	✓											
	19	F	1	10					✓							
	20	F	1	14	✓											
10	21	F	1	20	✓											
	22	F	1	12	✓											

15 lines

OBSERVATIONS:

Clean ☐					
Debris: ☒	Very Light ☐	Light ☑	Moderate ☒	Heavy ☐	Very Heavy ☐
Gypsum: ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Other ☐					

Petro Chem Environmental Services, Inc.

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-568-4065

TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client Petro-Chem
Sample No. #8

Page 1 of

MICROSCOPE
600A ☐
600B ☑
HU11E ☐
HU125E ☐

GRID
1 ☐ 3 ☐
2 ☑ 4 ☐

Grid Address 1B
Screen Magnification 19300 x
Camera Constant 28.4
Accelerating Voltage 100 KV
Beam Current 10 µa

Analyst S. Ahmed Date 7/6/92

B

	1	F	1.5	42		✓						8	10				EDS #1
1	2	E	2.5	20	1	✓						8	10				EDS #2
2	3	F	1	67		✓						8	10				EDS #3
	4	F	1	65		✓						9	10				EDS #4
3	5	F	4	130		✓						8	10				EDS #5
	6	F	1	115		✓											
	7	C/MD	75	220		✓											
	8	F	1	125		✓											
	9	F	1	10		✓											
	10	F	1	19		✓											
	11	F	1	22		✓											
4	NSD																
5	12	F	1	22		✓											
6	13	MD	1	40		✓											
7	14	F	1	65		✓						9	10				EDS #15

OBSERVATIONS:

Clean ☐					
Debris: ☒	Very Light ☐	Light ☒	Moderate ☒	Heavy ☐	Very Heavy ☐
Gypsum: ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Other ☐					

Petro Chem Environmental Services, Inc.

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-568-4065

6-Feb-1992 09:18:55
Execution time = 6 seconds
23604,8,A,#10,RS
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 37 secs

Energy	Counts	X-Ray Lines
1.25	347.	Mg K , Mg K , Mg K
1.74	527.	Si K , Si K

Quantex>
0.320 Range= 10.230 keV

Integral 0 = 10.230
4259

6-Feb-1992 09:42:22
Execution time = 6 seconds
23604,8,A,#22,RS
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 28 secs

Energy	Counts	X-Ray Lines
1.24	597.	Mg K , Mg K
1.74	1002.	Si K , Si K
6.41	187.	Fe K , Fe K

Quantex>
0.320 Range= 10.230 keV

Integral 0 = 10.230 5482

6-Feb-1992 09:54:17
Execution time = 6 seconds
23604,8,A,#25,RS
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 27 secs

Energy	Counts	X-Ray Lines
1.25	408.	Mg K , Mg K , Mg K
1.74	561.	Si K , Si K

Quantex>
0.320 Range= 10.230 keV

Integral 0 = 10.230 3644

6-Feb-1992 08:47:33
Execution time = 6 seconds
23604,8,A#03,RS
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 32 secs

Energy	Counts	X-Ray Lines
1.25	253.	Mg K , Mg K , Mg K
1.73	393.	Si K , Si K

Quantex)
0.000 Range= 10.230 keV

Integral 0 = 10.110
4493

6-Feb-1992 08:50:30
Execution time = 6 seconds
23604,8,A#04,RS
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 39 secs

Energy	Counts	X-Ray Lines
1.25	228.	Mg K , Mg K , Mg K
1.73	369.	Si K , Si K

Quantex)
0.000 Range= 10.230 keV

Integral 0 = 10.110
4762

6-Feb-1992 08:52:16
Execution time = 6 seconds
23604,8,A#01,RS
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 26 secs

Energy	Counts	X-Ray Lines
1.47	355.	Al K , Al K
1.75	632.	Si K , Si K

Quantex>
0.000 Range= 10.230 keV

Integral 0 = 10.110
5459

6-Feb-1992 09:16:42
Execution time = 6 seconds
23604,8,B,#05,SA
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 16 secs

Energy	Counts	X-Ray Lines
0.52	314.	O K , O K , V L , V L , V L , V L
1.25	340.	Mg K , Mg K , Mg K
1.73	423.	Si K , Si K

Quantex>
0.320 Range= 10.230 keV

Integral 0 = 10.230
3609

6-Feb-1992 09:17:28
Execution time = 7 seconds
23604,8,B,#15,SA
Vert= 200 counts Disp= 1

Preset= Off
Elapsed= 20 secs

Energy	Counts	X-Ray Lines
0.52	332.	O K , O K , V L , V L , V L , V L
1.25	403.	Mg K , Mg K , Mg K
1.48	43.	Al K , Al K
1.74	422.	Si K , Si K
6.38	51.	Fe K , Fe K

Quantex>
0.320 Range= 10.230 keV

Integral 0 = 10.230
5178

ANALYSIS OF FILTERS BY TEM

LAB NO: 23604
CLIENT: PETRO-CHEM ENVIRONMENTAL

Laboratory I.D.	Client I.D.	FILTER MEDIA DATA Type	Diameter mm	Effective Area mm^2	Area Sampled ft^2	Analyzed Area, mm^2	Dilution Factor
23604-10	10	MCE	47	1017	-	0.17	0.005
23604-12	12	MCE	47	1017	-	0.136	0.01
23604-14	14	MCE	47	1017	-	0.136	0.005

INDIVIDUAL ANALYTICAL RESULTS

Laboratory I.D.	Client I.D.	No. of Asbestos Str	>5	Analytical Sensitivity, s/fil	CONCENTRATION Str/fil	Str/fil >5um
23604-10	10	N.D.	N.D.	4800000	N.D.	N.D.
23604-12	12	1	N.D.	3000000	3000000	N.D.
23604-14	14	N.D.	N.D.	6000000	N.D.	N.D.
						N.D.

The analysis was carried out to the approved TEM method. This laboratory is in compliance with the quality specified by the method.

BM Kolb
Authorized Signature

Petro Chem Environmental Services, Inc.

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-568-4065

SUMMARY OF TEM CHRYSOTILE ANALYSIS

EMS No. 23604 Date 2/10/92

Sample ID. 10

Client PETRO-CHEM ENVIRONMENTAL

Number of Chrysotile Structures N.D. Str./Filter

Chrysotile >5um in Length N.D. Str./Filter

Mass of Chrysotile N.D. ug of chrysotile/Filter

Poisson 95% Confidence Interval 0 to 1.8E+07 Str./Filter

Sensitivity Level 4800000 Str./Filter

Size Distribution of Chrysotile Structures

Length of Structures (um)

	0 - 0.49	0.50-0.99	1.00-1.49	1.50-1.99	2.00-4.99	5.0 & up
No. Structures	0	0	0	0	0	0

Width of Structures (um)

	0 - 0.04	0.05-0.09	0.10-0.14	0.15-0.19	0.20-0.49	0.5 & up
No. Structures	0	0	0	0	0	0

Aspect Ratio (L/W)

	0 - 9.9	10 - 19.9	20 - 29.9	30 - 39.9	40 - 99.9	100 & up
No. Structures	0	0	0	0	0	0

Petro Chem Environmental Services, Inc.

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-568-4065

TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client Petro-Chem.
Sample No. 10

1 ml

1/4 of the filter

FILTER TYPE/AREA (mm²)
- MCE/385 ☐
- MCE/314 ☐
- MCE/1017 ☒
- Other ☐

MICROSCOPE
- 600A ☐
- 600B ☐
- HU11E ☐
- HU125E ☐

RECEIVING

METHOD OF ANALYSIS
- EPA Yamate Level I ☐
- Level II ☒
- Level III ☐
- AHERA ☐

LENGTHS
- All Sizes (EPA) ☒
- (µm): ≥0.5 ☐
- ≥1.0 ☐
- ≥5.0 ☐
- ≥10.0 ☐
- PCM Range* ☐
- *(≥0.25 µm width, ≥5.0 µm length)

ASPECT RATIO 3:1 ☒ 5:1 ☐

Approved By B Kolle Date 2-8

TYPE OF SAMPLE
- Air ☐ Water ☐
- Soil ☐ Wipe ☐
- Bulk ☐ Other ☐
- Dust/Microvac ☐

PORE SIZE
- 0.45 µm ☐
- 0.8 µm ☐
- .1 µm ☐
- .22 µm ☐
- Other ☐

G.O. Area (mm²) 0.0068
No. of G.O. to Analyze 20
Filter Lot No.

PREP

DIRECT PREP ☑
INDIRECT PREP ☐

Volume .2 liters
Working Volume 1 ml
Weight ____ grams
Ashed Area ____ %

Date ____
Prepared By F.M.

ANALYSIS

GRID
- 1 ☐ 3 ☐
- 2 ☐ 4 ☐

Grid Address 1-A
Screen Magnification 19,300 x
Camera Constant 30.4
Accelerating Voltage 100 KV
Beam Current 10 µa

Analyst [signature] Date 2-8-92

A

GO																		
1	NB																	
2	NB																	
3	NB																	
4	NB																	
5	NB																	
6	NB																	
7	NB																	
8	NB																	
9	NB																	
10	NB																	

OBSERVATIONS:
- Clean ☐
- Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
- Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
- Other ☐

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-568-4065

Petro Chem Environmental Services, Inc.

TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client Petro-Chem.
Sample No. 10

1 ml

RECEIVING

ANALYSIS

GRID
1 ☐ 3 ☐
2 ☑ 4 ☐

Grid Address 19,300
Screen Magnification 28.4 x
Camera Constant 10
Accelerating Voltage 100 KV
Beam Current [illegible] µa

MICROSCOPE
600A ☐
600B ☑
HU11E ☐
HU125E ☐

B

Analyst F.M. Date 2/8/92

Grid Opening	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	NSD																
2	NSD																
3	NSD																
4	NSD																
5	NSD																
6	NSD																
7	NSD																
8	NSD																
9	NSD																
10	NSD																

OBSERVATIONS:

Clean ☐	Very Light ☐	Light ☑	Moderate ☐	Heavy ☐	Very Heavy ☐
Debris: ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Gypsum: ☐					
Other ☐					

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-568-4065

Petro-Chem Environmental Services,

TEM ASBESTOS ANALYSIS

EMS Lab No. 23604 /m/

Client Petro Chem.

Sample No. 10

RECEIVING

ANALYSIS

GRID
1 ☐ 3 ☒
2 ☐ 4 ☐

MICROSCOPE
600A ☒
600B ☐
HU11E ☐
HU125E ☐

Grid Address 1-C

Screen Magnification 19,300 x

Camera Constant 30.1

Accelerating Voltage 100 KV

Beam Current 10 µa

C

Analyst Radha Singh Date 2/10/92

Grid Opening	Structure Number	Structure	Diameter Analysis Width	Length	Diameter Analysis	SAED Diffraction Analysis					EDS Analysis						
				5 µm													
1	NSD																
2	NSD																
3	NSD																
4	NSD																
5	NSD																

OBSERVATIONS:

Clean ☐					
Debris: ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Gypsum: ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Other ☐					

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-568-4065

Petro Chem Environmental Services, Inc.

SUMMARY OF TEM CHRYSOTILE ANALYSIS

Date 2/10/92

EMS No. 23604

Sample ID. 12

Client PETRO-CHEM ENVIRONMENTAL

Number of Chrysotile Structures	3000000	Str./Filter
Chrysotile >5um in Length	N.D.	Str./Filter
Mass of Chrysotile	0.05	ug of chrysotile/Filter
Poisson 95% Confidence Interval	300000 to 1.7E+07	Str./Filter
Sensitivity Level	3000000	Str./Filter

Size Distribution of Chrysotile Structures

Length of Structures (um)

	0 - 0.49	0.50-0.99	1.00-1.49	1.50-1.99	2.00-4.99	5.0 & up
No. Structures	0	0	0	0	1	0

Width of Structures (um)

	0 - 0.04	0.05-0.09	0.10-0.14	0.15-0.19	0.20-0.49	0.5 & up
No. Structures	0	1	0	0	0	0

Aspect Ratio (L/W)

	0 - 9.9	10 - 19.9	20 - 29.9	30 - 39.9	40 - 99.9	100 & up
No. Structures	0	0	0	0	1	0

Petro Chem Environmental Services, Inc.

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-568-406

TEM ASBESTOS ANALYSIS

1/4 of the filter

EMS Lab No. 23604
Client Petro-Chem.
Sample No. 12

2 ml

FILTER TYPE/AREA (mm²)
MCE/385 ☐
MCE/314 ☐
MCE/1017 ☒
Other ☐

MICROSCOPE
600A ☐
600B ☐
HU11E ☐
HU125E ☐

PREPARATION

METHOD OF ANALYSIS
EPA Yamate Level I ☐
Level II ☒
Level III ☐
AHERA ☐

LENGTHS
All Sizes (EPA) ☒
(µm):≥0.5 ☐
≥1.0 ☐
≥5.0 ☐
≥10.0 ☐
PCM Range* ☐
*(≥0.25 µm width, ≥5.0 µm length)

ASPECT RATIO 3:1 ☒ 5:1 ☐

Approved By Q Kell Date 2-8

TYPE OF SAMPLE
Air ☐ Water ☐
Soil ☐ Wipe ☐
Bulk ☐ Other ☐
Dust/Microvac ☐

PORE SIZE
0.45 µm ☐
0.8 µm ☐
.1 µm ☐
.22 µm ☐
Other ☐

G.O. Area (mm²) 0.0068
No. of G.O. to Analyze 20
Filter Lot No.

DIRECT PREP ☑
INDIRECT PREP ☐
Volume .2 liters
Working Volume 2 ml
Weight grams
Ashed Area %
Date
Prepared By F.M.

ANALYSIS

GRID
1 ☐ 3 ☐
2 ☐ 4 ☐

Grid Address 1-A
Screen Magnification 19,300 x
Camera Constant 30.4
Accelerating Voltage 100 KV
Beam Current 10 µa

A

Analyst Date 2-8-92

Grid Opening			Width	Length		Number	Structure	Composition	Comments
1	NAD								
2	NAD								
3	NAD								
4	NAD								
5	NAD								
6	NAD								
7	NAD								
8	NAD								
9	NAD								
10	NAD								

OBSERVATIONS:

Clean ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Debris: ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Gypsum: ☐					
Other ☐					

AD Sample contains many non-asbestos fibers

Petro Chem Environmental Services, Inc.

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-568-4065

TEM ASBESTOS ANALYSIS

EMS Lab No. 23604

Client Petro-Chem.

Sample No. 12

2 ml

MICROSCOPE
600A ☐
600B ☒
HU11E ☐
HU125E ☐

GRID
1 ☐ 3 ☐
2 ☒ 4 ☐

Grid Address 1B

Screen Magnification 19300

Camera Constant 28.4

Accelerating Voltage 100 KV

Beam Current 10 µa

B

Analyst S. Ahmed Date 2/10/92

Grid Opening	Sample Number	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	NSD																
2	NSD																
3	NSD																
4	NSD																
5	NSD																

OBSERVATIONS:

Clean ☐ Debris: ☒ Gypsum: ☐ Other ☐

Very Light ☐ Very Light ☐

Light ☒ Light ☐

Moderate ☐ Moderate ☐

Heavy ☐ Heavy ☐

Very Heavy ☐ Very Heavy ☐

lot of non-asbestos fibers.

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-568-4065

Petro Chem Environmental Services, Inc.

TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client Petro Chem
Sample No. 12

RECEIVING

ANALYSIS

GRID
1 ☐ 3 ☒
2 ☐ 4 ☐

Grid Address 1C
Screen Magnification 19300 x
Camera Constant 28.4
Accelerating Voltage 100 KV
Beam Current 10 µa

MICROSCOPE
600A ☐
600B ☒
HU11E ☐
HU125E ☐

C

Analyst S. Ahmed Date 2/10/92

Grid Opening	Structure	Structure	Width	Length		Chrysotile											
1	1	MD	1	60		✓											
2	NSD																
3	NSD																
4	NSD																
5	NSD																

OBSERVATIONS:

Clean ☐	Very Light ☐	Light ☒	Moderate ☒	Heavy ☐	Very Heavy ☐
Debris: ☒	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Gypsum: ☐					
Other ☐					

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-568-4065

Petro Chem Environmental Services, Inc.

SUMMARY OF TEM CHRYSOTILE ANALYSIS

EMS No. 23604 Date 2/10/92

Sample ID. 14

Client PETRO-CHEM ENVIRONMENTAL

Number of Chrysotile Structures N.D. Str./Filter

Chrysotile >5um in Length N.D. Str./Filter

Mass of Chrysotile N.D. ug of chrysotile/Filter

Poisson 95% Confidence Interval 0 to 2.2E+07 Str./Filter

Sensitivity Level 6000000 Str./Filter

Size Distribution of Chrysotile Structures

Length of Structures (um)

	0 - 0.49	0.50-0.99	1.00-1.49	1.50-1.99	2.00-4.99	5.0 & up
No. Structures	0	0	0	0	0	0

Width of Structures (um)

	0 - 0.04	0.05-0.09	0.10-0.14	0.15-0.19	0.20-0.49	0.5 & up
No. Structures	0	0	0	0	0	0

Aspect Ratio (L/W)

	0 - 9.9	10 - 19.9	20 - 29.9	30 - 39.9	40 - 99.9	100 & up
No. Structures	0	0	0	0	0	0

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TEM ASBESTOS ANALYSIS

1/4 of the filter ✓

Page ___ of ___

EMS Lab No. 23604
Client Petro-Chem.
Sample No. 14

1 ml

METHOD OF ANALYSIS
- EPA Yamate Level I ☐
- Level II ☒
- Level III ☐
- AHERA ☐

ASPECT RATIO 3:1 ☒ 5:1 ☐

Approved By B Kolb Date 2-9

LENGTHS
- All Sizes (EPA) ☒
- (µm): ≥0.5 ☐
- ≥1.0 ☐
- ≥5.0 ☐
- ≥10.0 ☐
- PCM Range* ☐

*(≥0.25 µm width, ≥5.0 µm length)

FILTER TYPE/AREA (mm²)
- MCE/385 ☐
- MCE/314 ☐
- MCE/1017 ☒
- Other ☐

TYPE OF SAMPLE
- Air ☐
- Water ☐
- Soil ☐
- Wipe ☐
- Bulk ☐
- Other ☐
- Dust/Microvac ☐

PORE SIZE
- 0.45 µm ☐
- 0.8 µm ☐
- .1 µm ☐
- .22 µm ☐
- Other ☐

G.O. Area (mm²) 0.0068
No. of G.O. to Analyze 20
Filter Lot No. ___

PREP
- DIRECT PREP ☑
- INDIRECT PREP ☐

Volume .2 liters
Working Volume 1 ml
Weight ___ grams
Ashed Area ___ %
Date ___
Prepared By F.M.

ANALYSIS

GRID
- 1 ☒
- 2 ☐
- 3 ☐
- 4 ☐

Grid Address 1-A
Screen Magnification 19300 x
Camera Constant 30.1
Accelerating Voltage 100 KV
Beam Current 10 µa

MICROSCOPE
- 600A ☒
- 600B ☐
- HU11E ☐
- HU125E ☐

A

Analyst Radha Singh Date 2/10/92

1	NSD															
2	NSD															
3	NSD															
4	NSD															
5	NSD															

OBSERVATIONS:

Clean ☐					
Debris: ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Gypsum: ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Other ☐ lots of fiberglass.					

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Petro Chem Environmental Services, Inc.

TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client Petro-Chem.
Sample No. 14

1 ml

Page ___ of ___

MICROSCOPE
600A [X]
600B [ ]
HU11E [ ]
HU125E [ ]

GRID
1 [ ] 3 [ ]
2 [X] 4 [ ]

Grid Address 1-B
Screen Magnification 19 BCD
Camera Constant 30
Accelerating Voltage 100 KV
Beam Current 10 µa

B

Analyst Radler Sign Date 2/19/92

Grid Opening	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	NSD																
2	NSD																
3	NSD																
4	NSD																
5	NSD																

OBSERVATIONS:

Clean [ ]					
Debris: [ ]	Very Light [ ]	Light [ ]	Moderate [ ]	Heavy [ ]	Very Heavy [ ]
Gypsum: [ ]	Very Light [ ]	Light [ ]	Moderate [ ]	Heavy [ ]	Very Heavy [ ]
Other [ ]					

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Petro Chem Environmental Services, Inc.

TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client Petro Chem.
Sample No. 14

/m/

RECEIVING

ANALYSIS

GRID
1 ☐ 3 ☒
2 ☐ 4 ☐

Grid Address 1C
Screen Magnification 19300 x
Camera Constant 28 y
Accelerating Voltage 100 KV
Beam Current 10 µa

MICROSCOPE
600A ☐
600B ☒
HU11E ☐
HU125E ☐

C

Analyst S. Ahmed Date 2/10/92

Grid Opening	Structure		Dimensions			SAED Diagram					EDS Analysis						
			Width	Length													
1	NSD																
2	NSD																
3	NSD																
4	NSD																
5	NSD																

OBSERVATIONS:

Clean ☐ Debris: ☒ Gypsum: ☐ Other ☐
Very Light ☐ Very Light ☐
Light ☒ Light ☐
Moderate ☒ Moderate ☐
Heavy ☐ Heavy ☐
Very Heavy ☐ Very Heavy ☐

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Petro Chem Environmental Services, Inc.

TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client Petro Chem
Sample No. 14

RECEIVING

ANALYSIS

Page ___ of ___

MICROSCOPE
600A ☐
600B ☒
HU11E ☐
HU125E ☐

GRID
1 ☐ 3 ☐
2 ☐ 4 ☒

Grid Address 18
Screen Magnification 19300 x
Camera Constant 28.4
Accelerating Voltage 100 KV
Beam Current 10 µa

Analyst S. Ahmed Date

Grid Opening	Structure Number	Structure	Dimensions µm Width	Length		SAED Observation					EDS Analysis						
1	NSD																
2	NSD																
3	NSD																
4	NSD																
5	NSD																

OBSERVATIONS:

Clean ☐ Debris: ☒ Gypsum: ☐ Other ☐
Very Light ☐ Very Light ☐
Light ☒ Light ☐
Moderate ☐ Moderate ☐
Heavy ☐ Heavy ☐
Very Heavy ☐ Very Heavy ☐

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-568-4065

Petro Chem Environmental Services, Inc.

PETRO CHEM ENVIRONMENTAL SERVICES, INC.

DRY GAS METER CALIBRATION

DATE:	1-21-92	AMBIENT TEMP (°F):	44
TECH:	BDM	BAROMETRIC Pbar:	30.3
		TEST METER ID#:	S5M104564
METER I.D.#	1004	TEST METER Mcf:	1.015

APPROXIMATE CFM		1.00	0.75	0.50	0.30
STD TEST METER VOLUME CF	INITIAL	0.00	0.00	0.00	0.00
	FINAL	10.03	7.38	10.01	10.03
	TOTAL	10.03	7.38	10.01	10.03
FIELD GAS METER VOLUME CF	INITIAL	824.60	841.10	849.10	860.00
	FINAL	834.62	848.60	859.50	870.50
	TOTAL	10.02	7.50	10.40	10.50
STD TEST METER TEMP (°F)		44.0	45.0	45.0	45.0
FIELD GAS METER TEMP (°F)	IN	52.0	61.5	60.5	60.5
	OUT	43.5	46.5	49.0	51.0
	AVERAGE	47.8	54.0	54.8	55.8
STD TEST METER PRESSURE ("H2O)		-1.30	-0.60	-0.30	-0.15
FIELD GAS METER PRESSURE ("H2O)		1.28	0.77	0.36	0.13
FIELD GAS METER, Mcf		1.020403	1.014664	0.994930	0.989894

FIELD AVERAGE Mcf:	1.004973	H@:	0.7339

PETRO CHEM ENVIRONMENTAL SERVICES, INC.

DRY GAS METER CALIBRATION

DATE:	1-22-92	AMBIENT TEMP (°F):	52
TECH:	BDM	BAROMETRIC Pbar:	29.795
		TEST METER ID#:	S5M104564
METER I.D.#	1002	TEST METER Mcf:	1.015

APPROXIMATE CFM		1.00	0.75	0.50	0.30
STD TEST METER VOLUME CF	INITIAL	0.00	0.00	0.00	0.00
	FINAL	10.41	7.30	10.02	10.01
	TOTAL	10.41	7.30	10.02	10.01
FIELD GAS METER VOLUME CF	INITIAL	14.50	3.30	985.70	974.00
	FINAL	24.51	10.70	996.36	984.90
	TOTAL	10.01	7.40	10.66	10.90
STD TEST METER TEMP (°F)		48.0	48.0	53.0	56.5
FIELD GAS METER TEMP (°F)	IN	54.0	52.0	61.0	60.5
	OUT	70.0	63.0	68.0	64.5
	AVERAGE	62.0	57.5	64.5	62.5
STD TEST METER PRESSURE ("H2O)		-1.30	-0.60	-0.30	-0.15
FIELD GAS METER PRESSURE ("H2O)		2.51	1.31	0.54	0.22
FIELD GAS METER, Mcf		1.077972	1.016722	0.974151	0.942440

FIELD AVERAGE Mcf:	1.002821	H@:	1.3042

CHAIN OF CUSTODY RECORD

Submitted to: Enseco

G. 9202701

ANALYSIS REQUES

COMPANY	LOCATION/UNIT
Golden State Metals	Auto Shredder

REPORT NO.	SAMPLER	
42-888	S.A. Davis	

METHOD	REPORT ATTN.	PO#
CARB 425	Terry Rowles	1735

Sample No./ID	Sample Description	Sample Date	Liq.	Filter	Gas				CR VI Hex Chrome 72 Hour	
1	Probe/Nozzle Train #1	1/24	✓						✓	
2	Imp Contents "		✓			COMBINE			✓	
3	Filter "			✓					✓	
4	Probe/Nozzle Train #2		✓							
5	Imp Contents "		✓			COMBINE			✓	
6	Filter "			✓					✓	
7	Probe/Nozzle Train #3		✓							
8	Imp Contents "		✓			COMBINE			✓	
9	Filter "			✓					✓	
10	Probe/Nozzle Train #4 Field Blank		✓							
11	Imp Contents "		✓			COMBINE			✓	
12	Filter "			✓						
13	.1 N NaOH		✓			HOLD FOR Notice				

COMMENTS:
Imp & Filter Combine to 1 sample / train

RELINQUISHED BY	DATE	RECEIVED BY	DATE
[signature]	1/24/92	[signature]	1/25/92 10:30A
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE

PETRO CHEM ENVIRONMENTAL SERVICES, INC.
3207 Antonino Avenue, Bakersfield, CA 93308
(805) 327-7300 FAX (805) 327-3459

Petro Chem Environmental Services, Inc.

CHAIN OF CUSTODY RECORD

Submitted to: Coast to Coast Analytical, Larry Hilpert

ANALYSIS REQUEST

COMPANY	LOCATION/UNIT
Golden State Metals	Auto Shredder

REPORT NO.	SAMPLER
42-888	Tim Brennan

METHOD	REPORT ATTN.	PO#
EPA Method 5	Terry Rowles	

I0459

Sample No./ID	Sample Description	Sample Date	Liq.	Filter	Gas	Total PCB, µg	Total Cd, Pb, Zn, Cu, µg by ICP	PCB µg/ml	Cd, Pb, Zn, Cu, µg/ml		
1	Impingate #1, 250 ml	1/23	X			X	X			—	1
3	Impingate #2, 250 ml	1/23	X			X	X			—	2
5	Probe Wash #1, 100 ml	1/23	X			X	X			—	3
7	Probe Wash #2, 100 ml	1/23	X			X	X			—	4
9	Filter #1, .40791 gram	1/23		X		X	X			—	6
11	Filter #2, .39574 gram	1/23		X		X	X			—	7
13	H_2O Blank, 195 ml	1/23	X					X	X	—	5
15	Filter Blank, .39965 gram	1/23		X				X	X	—	8

COMMENTS:

Need Results by FAX within 2 weeks

PCB by 505/608/8080 Metals by ICP sealed, intact

RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
TC	1/30/92	Kelly Wilson	2/4/92 1130
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE

PETRO CHEM ENVIRONMENTAL SERVICES, INC.
3207 Antonino Avenue, Bakersfield, CA 93308
(805) 327-7300 FAX (805) 327-3459

Petro Chem Environmental Services, Inc.

$25

818-568 4065

CHAIN OF CUSTODY RECORD

Submitted to: EMS labs
Bernadette Kolk

ANALYSIS REQUEST

COMPANY	LOCATION/UNIT
Golden State Metals	Auto Shredder

REPORT NO.	SAMPLER	PO#
42-888	Tim Brennan	1741

METHOD	REPORT ATTN.
EPA Method 5	

	Sample No./ID	Sample Description	Sample Date	Liq.	Filter	Gas	Total Asbestos, TEM	Asbestos µg/ml, TEM	Asbestos µg/gr, TEM			
✓	2	Impingate #1 ; 250ml	1/23	x			x					
✓	4	Impingate #2 ; 250ml	1/23	x			x					
✓	6	Probe Wash #1 ; 100ml	1/23	x			x					
✓	8	Probe Wash #2 ; 100ml	1/23	x			x					
✓	10	Filter #1 ; 0.40943 gram	1/23		x		x					
✓	12	Filter #2 ; 0.41620 gram	1/23		x		x					
✓	14	H_2O Blank ; 195 ml	1/23	x				x				
✓	16	Filter Blank ; 0.42950 gram	1/23		x				x			

COMMENTS:
Need Results by FAX within 2 weeks
Analysis by TEM

RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
	1/30/92		
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE

PETRO CHEM ENVIRONMENTAL SERVICES, INC.
3207 Antonino Avenue, Bakersfield, CA 93308
(805) 327-7300 FAX (805) 327-3459

Petro Chem Environmental Services, Inc.

* $305
* $250 filter } 2375

Golden State Metals
Sample Volume + Filter Weights

Sample#	Contents	Aliquot	Outside lab
1	Run #1 cond	250/750	C+C
2	" "	" "	EMS
3	Run 2 Cond	" "	C+C
4	" "	" "	EMS
5	Run #1 P/N	100/200	C+C
6	" "	" "	EMS
7	Run 2 P/N	100/200	C+C
8	" "	" "	EMS
9	Run 1 Filter	.40791/.80936	C+C
10	" "	.40913/.80936	EMS
11	Run 2 Filter	.39574/.81063	C+C
12	" "	.41620/.81063	EMS
13	Filter Blank	.39965/.82904	C+C
14	" "	.42950/.82904	EMS
15	H_2O Blank	195 ml	C+C
16	" "	195 ml	EMS

Petro Chem Environmental Services, Inc.

LABORATORY ANALYSIS
EPA METHOD 5 - PARTICULATE ANALYSIS

Company: Golden State Metals
Location/Unit: Shredding Cyclone

Report: 42-888
Date Tested: 1-23-92
Analyst: BCP

METHOD 5

RUN ~~#1~~ Blank

~~Probe/Nozzle~~/Filter Top OT Blank #4

Dish #	#2	#3	Average
Run #2 #1			
final (g) 0.81818	0.81821		0.81820
tare (g) 0.81876	0.81876		0.81876
NET (g)			∅

Filter # OT Blank #3

	#2	#3	Average
Run #1 #1			
final (g) 0.82903	0.82905		0.82904
tare (g) 0.82960	0.82960		0.82960
NET (g)			∅

~~Condensable (aliquot~~ 100 ml

Dish # 16	#2	#3	Average
#1			
final (g) 76.9172	76.9177		76.9175
tare (g) 76.9174	76.9174		76.9174
NET (g)			0.0001

Petro Chem Environmental Services, Inc.

COAST - TO - COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
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San Luis Obispo Division
141 Suburban Road, San Luis Obispo, California 93401

(805) 543-2553
FAX (805) 543-2685

Lab Number : I-0459-5
Project : 42-888 Golden State Metals Auto Shredder

CLIENT: Terry Rowles
Petro Chem Environmental
3207 Antonino Ave
Bakersfield, CA 93308

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
H2O Blank, 195 ml	Aqueous	Tim Brennan	01/23/92	02/04/92

CONSTITUENT	*PQL	RESULT	UNITS	METHOD	ANALYZED	BY	NOTES
Cadmium, Total	0.05	ND	mg/L	EPA 6010	02/22/92	RJ	1
Chromium, Total	0.05	ND	mg/L	EPA 6010	02/22/92	RJ	1
Lead, Total	0.005	ND	mg/L	EPA 7421	02/23/92	RJ	1
Zinc, Total	0.05	ND	mg/L	EPA 6010	02/22/92	RJ	1

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/07/92 by JPB using EPA 3020

02/24/92

MH/rwj/aes

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek, Ph.D.
President

COAST-TO-COAST ANALYTICAL SERVICES

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San Luis Obispo Division
141 Suburban Road, San Luis Obispo, California 93401

(805) 543-2553
FAX (805) 543-2685

Lab Number : I-0459-8
Project : 42-888 Golden State Metals Auto Shredder

CLIENT: Terry Rowles
Petro Chem Environmental
3207 Antonino Ave
Bakersfield, CA 93308

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
Filter Blank, .39965 gram	Filter	Tim Brennan	01/23/92	02/04/92

CONSTITUENT	*PQL	RESULT	UNITS	METHOD	ANALYZED	BY	NOTES
Cadmium, Total	10.	ND	mg/Kg	EPA 6010	02/22/92	RJ	1
Chromium, Total	10.	ND	mg/Kg	EPA 6010	02/22/92	RJ	1
Lead, Total	0.6	ND	mg/Kg	EPA 7421	02/24/92	RJ	1
Zinc, Total	10.	ND	mg/Kg	EPA 6010	02/22/92	RJ	1

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/18/92 by JPB using EPA 3050

02/24/92

MH/rwj/jpb

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek, Ph.D.
President

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FAX (805) 543-2685

Lab Number : I-0459-5
Project : 42-888 Golden State Metals Auto Shredder
Analyzed : 02/19/92
Analyzed by: NZ
Method : EPA508/608

CLIENT: Terry Rowles
Petro Chem Environmental
3207 Antonino Ave
Bakersfield, CA 93308

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
H2O Blank, 195 ml	Aqueous	Tim Brennan	01/23/92	02/04/92

CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
				1,2
POLYCHLORINATED BIPHENYLS				
PCB 1016	(12674112)	0.2	ND	
PCB 1221	(11104282)	0.2	ND	
PCB 1232	(11141165)	0.2	ND	
PCB 1242	(53469219)	0.2	ND	
PCB 1248	(12672296)	0.2	ND	
PCB 1254	(11097691)	0.2	ND	
PCB 1260	(11096825)	0.2	ND	

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/13/92 by CAE using EPA 608.
(2) Results were confirmed on second column on 02/19/92.

02/20/92
ECD/0219A17
MH/gtb/cae/nz
IB13PCB

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek

Mary Havlicek, Ph.D.
President

Petro Chem Environmental Services, Inc.

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141 Suburban Road, San Luis Obispo, California 93401

(805) 543-2553
FAX (805) 543-2685

Lab Number : I-0459-8
Project : 42-888 Golden State Metals Auto Shredder
Analyzed : 02/19/92
Analyzed by: NZ
Method : EPA 8080

CLIENT: Terry Rowles
Petro Chem Environmental
3207 Antonino Ave
Bakersfield, CA 93308

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
Filter Blank, .39965 gram	Filter	Tim Brennan	01/23/92	02/04/92

CONSTITUENT	(CAS RN)	*PQL Total µg	RESULT Total µg	NOTE
				1,2
POLYCHLORINATED BIPHENYLS				
PCB 1016	(12674112)	1.	ND	
PCB 1221	(11104282)	1.	ND	
PCB 1232	(11141165)	1.	ND	
PCB 1242	(53469219)	1.	ND	
PCB 1248	(12672296)	1.	ND	
PCB 1254	(11097691)	1.	ND	
PCB 1260	(11096825)	1.	ND	

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/14/92 by CAE using EPA 8080.
(2) Results were confirmed on second column on 02/19/92.

02/20/92
ECD/0219A12
MH/gtb/cae/nz
IB14PCB

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek

Mary Havlicek, Ph.D.
President

COAST TO COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

San Luis Obispo, CA • Goleta, CA • Benicia, CA • Camarillo, CA • Newport Beach, CA • Valparaiso, IN

San Luis Obispo Division
141 Suburban Road, San Luis Obispo, California 93401

(805) 543-2553
FAX (805) 543-2685

QC Batch ID: IB13PCB

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 02/19/92
Analyzed by: NZ
Method : EPA 8080

METHOD BLANK
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
METHOD BLANK	Impinger			

CONSTITUENT	(CAS RN)	*PQL Total µg	RESULT Total µg	NOTE
				1
POLYCHLORINATED BIPHENYLS				
PCB 1016	(12674112)	1.	ND	
PCB 1221	(11104282)	1.	ND	
PCB 1232	(11141165)	1.	ND	
PCB 1242	(53469219)	1.	ND	
PCB 1248	(12672296)	1.	ND	
PCB 1254	(11097691)	1.	ND	
PCB 1260	(11096825)	1.	ND	

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/13/92 by CAE using EPA 608.

02/20/92
ECD/0219A08
MH/gtb/cae/nz
I0459-1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek, Ph.D.
President

Petro Chem Environmental Services, Inc.

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(805) 543-2553
FAX (805) 543-2685

QC Batch ID: IB13PCB

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 02/19/92
Analyzed by: NZ
Method : EPA 8080

QC SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
QC SPIKE	Impinger			

CONSTITUENT	*PQL Total µg	SPIKE AMOUNT	RESULT Total µg	%REC	NOTE
POLYCHLORINATED BIPHENYLS PCB 1254	1.	10.	8.6	86.	1,2

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/13/92 by CAE using EPA 608.
(2) The QC sample matrix is analyte-free water. Levels of analytes were not detected at the reported PQLs.

02/20/92
ECD/0219A03
MH/gtb/cae/nz
I0459-1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek, Ph.D.
President

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(805) 543-2553
FAX (805) 543-2685

QC Batch ID: IB13PCB

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 02/19/92
Analyzed by: NZ
Method : EPA 8080

QC SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
QC SPIKE DUPLICATE	Impinger			

CONSTITUENT	*PQL Total µg	SPIKE AMOUNT	RESULT Total µg	%REC	%DIFF	NOTE
POLYCHLORINATED BIPHENYLS PCB 1254	1.	10.	7.3	73.	16.	1,2

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/13/92 by CAE using EPA 608.
(2) The QC sample matrix is analyte-free water. Levels of analytes were not detected at the reported PQLs.

02/20/92
ECD/0219A04
MH/gtb/cae/nz
I0459-1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek, Ph.D.
President

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San Luis Obispo Division
141 Suburban Road, San Luis Obispo, California 93401

(805) 543-2553
FAX (805) 543-2685

QC Batch ID: IB18IB18

CLIENT: Coast-to-Coast Analytical Services, Inc.

METHOD BLANK
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
METHOD BLANK	Filter			

CONSTITUENT	*PQL	RESULT	UNITS	METHOD	ANALYZED	BY	NOTE
Lead, Total	0.5	1.1	Total µg	EPA 7421	02/24/92	RJ	1

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/18/92 by JPB using EPA 3050

02/24/92

MH
I0459-6

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek

Mary Havlicek, Ph.D.
President

Petro Chem Environmental Services, Inc.

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QC Batch ID: IB14PCB

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 02/19/92
Analyzed by: NZ
Method : EPA 8080

INSTRUMENT BLANK
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
INSTRUMENT BLANK				

CONSTITUENT	(CAS RN)	*PQL Total µg	RESULT Total µg	NOTE
POLYCHLORINATED BIPHENYLS				
PCB 1016	(12674112)	1.	ND	
PCB 1221	(11104282)	1.	ND	
PCB 1232	(11141165)	1.	ND	
PCB 1242	(53469219)	1.	ND	
PCB 1248	(12672296)	1.	ND	
PCB 1254	(11097691)	1.	ND	
PCB 1260	(11096825)	1.	ND	

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

02/20/92
ECD/0219A07
MH/gtb/cae/nz
I0459-8

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek

Mary Havlicek, Ph.D.
President

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FAX (805) 543-2685

QC Batch ID: IB14PCB

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 02/19/92
Analyzed by: NZ
Method : EPA 8080

METHOD BLANK
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
METHOD BLANK	Filter			

CONSTITUENT	(CAS RN)	*PQL Total µg	RESULT Total µg	NOTE
				1
POLYCHLORINATED BIPHENYLS				
PCB 1016	(12674112)	1.	ND	
PCB 1221	(11104282)	1.	ND	
PCB 1232	(11141165)	1.	ND	
PCB 1242	(53469219)	1.	ND	
PCB 1248	(12672296)	1.	ND	
PCB 1254	(11097691)	1.	ND	
PCB 1260	(11096825)	1.	ND	

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/14/92 by CAE using EPA 8080.

02/20/92
ECD/0219A09
MH/gtb/cae/nz
I0459-6

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek, Ph.D.
President

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QC Batch ID: IB14PCB

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 02/19/92
Analyzed by: NZ
Method : EPA 8080

QC SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
QC SPIKE	Filter			

CONSTITUENT	*PQL Total µg	SPIKE AMOUNT	RESULT Total µg	%REC	NOTE
POLYCHLORINATED BIPHENYLS					1,2
PCB 1016	1.		NS		
PCB 1221	1.		NS		
PCB 1232	1.		NS		
PCB 1242	1.		NS		
PCB 1248	1.		NS		
PCB 1254	1.	10.	6.4	64.	
PCB 1260	1.		NS		

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
* RESULTS listed as 'NS' were not spiked. PQL = Practical Quantitation Limit
(1) Sample Preparation on 02/14/92 by CAE using EPA 8080.
(2) Spike was in analyte-free TCLP extraction solution.

02/21/92
ECD/0219A06
MH/gtb/cae
I0459-6

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek

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CLIENT: Coast-to-Coast Analytical Services, Inc.

QC SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
QC SPIKE	Filter			

CONSTITUENT	*PQL	SPIKE	RESULT	%REC	UNITS	METHOD	ANALYZED	BY	NOTE
Cadmium, Total	5.	50.	42.	84.	Total µg	EPA 6010	02/22/92	RJ	1
Chromium, Total	5.	50	50.	100.	Total µg	EPA 6010	02/22/92	RJ	1
Lead, Total	0.5	200.	200.	100.	Total µg	EPA 7421	02/24/92	RJ	1
Zinc, Total	5.	50	42.	84.	Total µg	EPA 6010	02/22/92	RJ	1

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/18/92 by JPB using EPA 3050

02/24/92

MH/rwj
I0459-6

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek

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FAX (805) 543-2685

CLIENT: Coast-to-Coast Analytical Services, Inc.

QC SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
QC SPIKE DUPLICATE	Filter			

CONSTITUENT	*PQL	SPIKE	RESULT	%DIFF	UNITS	METHOD	ANALYZED	BY	NOTE
Cadmium, Total	5.	50.	43.	2.4	Total µg	EPA 6010	02/22/92	RJ	1
Chromium, Total	5.	50	50.	0.	Total µg	EPA 6010	02/22/92	RJ	1
Lead, Total	0.5	200.	190.	5.1	Total µg	EPA 7421	02/24/92	RJ	1
Zinc, Total	5.	50	43.	2.4	Total µg	EPA 6010	02/22/92	RJ	1

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/18/92 by JPB using EPA 3050

02/24/92

MH/rwj
I0459-6

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek, Ph.D.
President

Petro Chem Environmental Services, Inc.

COAST · TO · COAST ANALYTICAL SERVICES

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141 Suburban Road, San Luis Obispo, California 93401

(805) 543-2553
FAX (805) 543-2685

QC Batch ID: IB197

CLIENT: Coast-to-Coast Analytical Services, Inc.

QC MATRIX SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
MATRIX SPIKE	Impinger			

CONSTITUENT	ORIGINAL	SPIKE	RESULT	%REC	UNITS	METHOD	ANALYZED	BY	NOTE
Cadmium, Total	ND	NS	NS		Total µg	EPA 6010	02/22/92	RJ	1
Chromium, Total	ND	50.	50.	100.	Total µg	EPA 6010	02/22/92	RJ	1
Lead, Total	ND	50.	55.	110.	Total µg	EPA 7421	02/23/92	RJ	1
Zinc, Total	ND	50.	40.	80.	Total µg	EPA 6010	02/22/92	RJ	1

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
* RESULTS listed as 'NS' were not spiked. PQL = Practical Quantitation Limit
(1) Sample Preparation on 02/19/92 by JPB using EPA 3020

02/24/92

MH/rwj/jpb
I0459-1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek, Ph.D.
President

Petro Chem Environmental Services, Inc.

COAST-TO-COAST ANALYTICAL SERVICES

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FAX (805) 543-2685

QC Batch ID: IB197

CLIENT: Coast-to-Coast Analytical Services, Inc.

QC MATRIX SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
MATRIX SPIKE DUPLICATE	Impinger			

CONSTITUENT	ORIGINAL	SPIKE	RESULT	%DIFF	UNITS	METHOD	ANALYZED	BY	NOTE
Cadmium, Total	ND	NS	NS		Total µg	EPA 6010	02/22/92	RJ	1
Chromium, Total	ND	50.	50.	0.	Total µg	EPA 6010	02/22/92	RJ	1
Lead, Total	ND	50.	53.	3.7	Total µg	EPA 7421	02/23/92	RJ	1
Zinc, Total	ND	50.	40.	0.	Total µg	EPA 6010	02/22/92	RJ	1

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01.
* RESULTS listed as 'NS' were not spiked. PQL = Practical Quantitation Limit
(1) Sample Preparation on 02/19/92 by JPB using EPA 3020

02/24/92

MH/rwj/jpb
I0459-1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek

Mary Havlicek, Ph.D.
President

Petro Chem Environmental Services, Inc.

Analysis of Water by Transmission Electron Microscopy
(EPA-600/4-83-043)

Client: PETRO-CHEM ENVIRONMENTAL

EMS No. 23604

Sample No. 16 (BLANK)

Date Analyzed 2/7/92

Fibers (chrysotile)	BDL*	MFL
Fibers > 5 µm in length (chrysotile)	BDL*	MFL
Fibers > 10 µm in length (chrysotile)	BDL*	MFL
Mass (chrysotile)	0	ug/L
More/Less than 5 Fibers in Sample (chrysotile)	LESS	
Poisson 95% Confidence Interval	0 to 0.3	MFL
Detection Limit	0.08	MFL

* BDL : Below Detection Limit; MFL: Million Fibers per Liter

Particle Size Distribution (Chrysotile)

Particle Length - Microns

O -0.49	0.50 - 0.99	1.00 - 1.49	1.50 - 1.99	2.00 - 2.49	2.5 - 4.99	5.00 - 9.99	10 & UP
0	0	0	0	0	0	0	0

Particle Width - Microns

O - .04	.05 - .09	.1 - .14	.15 - .19	.2 - .24	.25 - .49	.50 - .99	1 & UP
0	0	0	0	0	0	0	0

Aspect Ratio L/W

0 - 9.9	10 - 19.9	20 - 29.9	30 - 39.9	40 - 49.9	50 - 99	100 - 199	200 & UP
0	0	0	0	0	0	0	0

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-568-4065

TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client Petro- Chem
Sample No. #16 (Blank)

METHOD OF ANALYSIS
- EPA Yamate Level I ☐
- Level II ☐
- Level III ☐
- AHERA ☐

LENGTHS
- All Sizes (EPA) ☐
- (µm):≥0.5 ☐
- ≥1.0 ☐
- ≥5.0 ☐
- ≥10.0 ☐
- PCM Range* ☐

*(≥0.25 µm width, ≥5.0 µm length)

ASPECT RATIO 3:1 ☐ 5:1 ☐

Approved By ______ Date ______

FILTER TYPE/AREA (mm^2)
- MCE/385 ☐
- MCE/314 ☐
- MCE/1017 ☑
- Other ☐

TYPE OF SAMPLE
- Air ☐
- Soil ☐
- Bulk ☐
- Water ☑
- Wipe ☐
- Other ☐
- Dust/Microvac ☐

PORE SIZE
- 0.45 µm ☐
- 0.8 µm ☐
- .1 µm ☐
- .22 µm ☑
- Other ☐

G.O. Area (mm^2) 0.0067
No. of G.O. to Analyze 20
Filter Lot No. ______

PREP

DIRECT PREP ☑
INDIRECT PREP ☐

Volume ______ liters
Working Volume 100 ml
Weight ______ grams
Ashed Area ______ %
Date 2-5-92
Prepared By FG

ANALYSIS

GRID
- 1 ☒
- 2 ☐
- 3 ☐
- 4 ☐

Grid Address 1A
Screen Magnification 19300x
Camera Constant 28.4
Accelerating Voltage 100 KV
Beam Current 10 µa

Analyst S. Ahmed Date 2/7/92

Page ☐ of ☐

MICROSCOPE
- 600A ☐
- 600B ☒
- HU11E ☐
- HU125E ☐

A

1	NSD																	
2	NSD																	
3	NSD																	
4	NSD																	
5	NSD																	

OBSERVATIONS:

- Clean ☐
- Debris: ☒ Very Light ☐ Light ☒ Moderate ☐ Heavy ☐ Very Heavy ☐
- Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
- Other ☐

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-568-4065

TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client Petro-Chem
Sample No. #16

RECEIVING

ANALYSIS

GRID
1 ☐ 3 ☐
2 ☒ 4 ☐

Grid Address 1B
Screen Magnification 19300 x
Camera Constant 26.4
Accelerating Voltage 100 KV
Beam Current 10 µa

Analyst S. Ahmed Date 2/7/92

MICROSCOPE
600A ☐
600B ☒
HU11E ☐
HU125E ☐

B

Grid Opening	Structure Number	Structure	Width	Length														
1	NSD																	
2	NSD																	
3	NSD																	
4	NSD																	
5	NSD																	

OBSERVATIONS:

Clean ☐	Very Light ☐	Light ☒	Moderate ☐	Heavy ☐	Very Heavy ☐
Debris: ☒	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Gypsum: ☐					
Other ☐					

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-568-4065

Petro Chem Environmental Services, Inc.

TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client Petro - Chem.
Sample No. # 16

MICROSCOPE
600A [X]
600B [ ]
HU11E [ ]
HU125E [ ]

GRID
1 [ ] 3 [X]
2 [ ] 4 [ ]

Grid Address 1-C
Screen Magnification 19300x
Camera Constant 28.4
Accelerating Voltage 100 KV
Beam Current 10 µa

Analyst RS Date 2/7/92

C

Grid Opening	Structure Number	Structure	Width	Length														
1	NSD																	
2																		
3																		
4																		
5																		

OBSERVATIONS:

Clean [ ]	Very Light [ ]	Light [ ]	Moderate [ ]	Heavy [ ]	Very Heavy [ ]
Debris: [ ]	Very Light [ ]	Light [ ]	Moderate [ ]	Heavy [ ]	Very Heavy [ ]
Gypsum: [ ]					
Other [ ]					

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-568-4065

Petro Chem Environmental Services, Inc.

TEM ASBESTOS ANALYSIS

EMS Lab No. 23604
Client Petro - Chem
Sample No. # 16

MICROSCOPE
600A ☑
600B ☒
HU11E ☐
HU125E ☐

GRID
1 ☐ 3 ☐
2 ☐ 4 ☒

Grid Address 1-D
Screen Magnification 19300 x
Camera Constant 284
Accelerating Voltage 100 KV
Beam Current 10 µa

Analyst RS Date 2/7/92

Grid Opening	Strata Number	Strata	Width	Length														
1	NSD																	
2	NSD																	
3	NSD																	
4	NSD																	
5	NSD																	

OBSERVATIONS:

Clean ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Debris: ☐	Very Light ☐	Light ☐	Moderate ☐	Heavy ☐	Very Heavy ☐
Gypsum: ☐					
Other ☐					

EMS LABORATORIES 117 West Bellevue Drive / Pasadena CA 91105-2503 / 818-568-4065

Petro Chem Environmental Services, Inc.

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RECEIVED

APR 8 1992

KERN COUNTY AIR
POLLUTION CONTROL DISTRICT

COMPANY : GOLDEN STATE METALS
UNIT : AUTO SHREDDER
DATE : 1-23&24-92
REPORT : 42-888 A

SUMMARY OF RESULTS

NICKEL *

ANALYSIS OF PARTICULATE CATCH (AVERAGE OF 2 RUNS)

	RUN 1	RUN 1	AVERAGE
Total ug	25	25	25
ug/DSCF	1.1E-05	1.1E-05	1.1E-05
ug/DSCM	3.1E-07	3.1E-07	3.1E-07
LBS/HR	1.2E-03	1.2E-03	1.2E-03

* Not detected, used 1/2 detection limit

INTRODUCTION

On January 23 & 24, 1992, Petro Chem Environmental Services, Inc. (PCES) performed a series of emission source tests for Golden State Metals located in Kern County, California. The unit tested was the Auto Shredder Residue Separator. Concentrations and emissions of nickel was determined using the following procedure:

Parameters	Method	# Test Runs
Nickel (Ni)	ICP Analysis of particulate catch, Coast to Coast Analytical	2

When pollutant (nickel) was not detected in a sample run, the results were asterisked and one-half the detection limit was used for emission calculations.

All sampling was performed by Tim Brennan, Bob Martin, and Scott Davis of Petro Chem Environmental Services, Inc.

COMPANY : GOLDEN STATE METALS
UNIT : AUTO SHREDDER
DATE : 1-23&24-92
REPORT : 42-888 A

METHOD 5
FIELD DATA @ 60°F

	RUN #: 1	2
	TIME: 1033	1228
Vm (dry gas sampled)	33.52	34.94
Y (meter calib. factor)	1.004973	1.004973
P bar (Barometric pressure)	30.06	30.06
P static (stack pressure, " H2O)	-0.7	-0.7
Delta H (differential meter press, " H2O)	0.74	0.78
Tm (meter temperature, R°)	503	508
Vol H2O mls	7	7.7
Vm(std),dscf	35.05	36.18
Bws-H2O vapor	0.0092	0.0098
MF-moisture factor	0.9908	0.9902
% CO2	0	0
% O2	20.9	20.9
% N2	79.1	79.1
Md-MW stk gas,dry	28.84	28.84
Ms-MW stk gas,wet	28.74	28.73
Cp-pitot tube	0.84	0.84
Avg sq rt ^p	0.856	0.881
T stack, R°	517	519
Stack area,ft2	4.34	4.34
Vs-fps	47.59	49.09
Qstd-dscfm	12386	12720
Area noz,ft2	2.07E-04	2.07E-04
Sample time	60	60
% Isokinetic	98.7	99.2

COMPANY : GOLDEN STATE METALS
UNIT : AUTO SHREDDER
DATE : 1-23-92
REPORT : 42-888 A

NICKEL
LBS/HR

POLLUTANT	TEST #	Vm(std)	DSCFM	TOTAL ug	ug/DSCF	LBS/HR
Ni	* 1	35.05	12386	25.0	1.1E-05	1.2E-03
	* 2	36.18	12720	25.0	1.1E-05	1.2E-03
				AVERAGE	1.1E-05	1.2E-03

* Not detected on all runs, used 1/2 detection limit.

COMPANY : GOLDEN STATE METALS
UNIT : AUTO SHREDDER
TEST DATE : 1-23-92
REPORT : 42-888 A

TOTAL MICROGRAMS

POLLUTANT	RUN	PROBE WASH, µg	FILTER, µg	IMPINGATE, µg	TOTAL µg
Ni *	1	5 *	1.3 *	18.75 *	25.0
	2	5 *	1.3 *	18.75 *	25.0
				AVERAGE	25.0

* Results were listed on analytical data as 'ND', used 1/2 DL.

COMPANY : GOLDEN STATE METALS
UNIT : AUTO SHREDDER
TEST DATE : 1-23-92
REPORT : 42-888 A

TOTAL MICROGRAMS

POLLUTANT	RUN	PROBE WASH, µg	FILTER, µg	IMPINGATE, µg	TOTAL µg
Ni *	1	5 *	1.3 *	18.75 *	25.0
	2	5 *	1.3 *	18.75 *	25.0
				AVERAGE	25.0

* Results were listed on analytical data as 'ND', used 1/2 DL.

Total ug = mg/li * sample volume * 1/2 DL * 1000 ug/mg

Sample volumes & filter weights:

Probe wash (ml) : 200
Impinger (ml) : 750
Filter (gm) : .40791 gm / .80936 gm.

COAST TO COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

San Luis Obispo, CA • Goleta, CA • Benicia, CA • Camarillo, CA • Newport Beach, CA • Valparaiso, IN

San Luis Obispo Division
141 Suburban Road, San Luis Obispo, California 93401

(805) 543-2553
FAX (805) 543-2685

Lab Number : I-0864-1
Project : 42-888 Golden State Metals Auto Shredder

CLIENT: Terry Rowles
Petro Chem Enviromental
3207 Antonino Ave
Bakersfield, CA 93308

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
(I0459-1) Impingate #1, 250 ml	Impinger	Tim Brennan	01/23/92	02/04/92

CONSTITUENT	*PQL	RESULT	UNITS	METHOD	ANALYZED	BY	NOTES
Nickel, Total	0.05	ND	mg/L	EPA 6010	03/18/92	BC	1

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01, L.A.Co.CSD#10187.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/19/92 by JPB using EPA 3020

03/19/92

MH/rwj

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek, Ph.D.
President

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Lab Number : I-0864-2
Project : 42-888 Golden State Metals Auto Shredder

CLIENT: Terry Rowles
Petro Chem Enviromental
3207 Antonino Ave
Bakersfield, CA 93308

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
(I0459-2 Impingate #2, 250 ml	Impinger	Tim Brennan	01/23/92	02/04/92

CONSTITUENT	*PQL	RESULT	UNITS	METHOD	ANALYZED	BY	NOTES
Nickel, Total	0.05	ND	mg/L	EPA 6010	03/18/92	BC	1

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01, L.A.Co.CSD#10187.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/19/92 by JPB using EPA 3020

03/19/92

MH/rwj

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek

Mary Havlicek, Ph.D.
President

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Lab Number : I-0864-3
Project : 42-888 Golden State Metals Auto Shredder

CLIENT: Terry Rowles
Petro Chem Enviromental
3207 Antonino Ave
Bakersfield, CA 93308

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
(I0459-3) Probe Wash #1, 100 ml	Probe Wash	Tim Brennan	01/23/92	02/04/92

CONSTITUENT	*PQL	RESULT	UNITS	METHOD	ANALYZED	BY	NOTES
Nickel, Total	0.05	ND	mg/L	EPA 6010	03/18/92	BC	1

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01, L.A.Co.CSD#10187.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/19/92 by JPB using EPA 3020

03/19/92

MH/rwj

Respectfully submitted,
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Mary Havlicek

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President

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Lab Number : I-0864-4
Project : 42-888 Golden State Metals Auto Shredder

CLIENT: Terry Rowles
Petro Chem Enviromental
3207 Antonino Ave
Bakersfield, CA 93308

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
(I0459-4) Probe Wash #2, 100 ml	Probe Wash	Tim Brennan	01/23/92	02/04/92

CONSTITUENT	*PQL	RESULT	UNITS	METHOD	ANALYZED	BY	NOTES
Nickel, Total	0.05	ND	mg/L	EPA 6010	03/18/92	BC	1

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01, L.A.Co.CSD#10187.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/19/92 by JPB using EPA 3020

03/19/92

MH/rwj

Respectfully submitted,
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Mary Havlicek, Ph.D.
President

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Lab Number : I-0864-6
Project : 42-888 Golden State Metals Auto Shredder

CLIENT: Terry Rowles
Petro Chem Environmental
3207 Antonino Ave
Bakersfield, CA 93308

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
(I0459-6) Filter #1, .40791 gram	Filter	Tim Brennan	01/23/92	02/04/92

CONSTITUENT	*PQL	RESULT	UNITS	METHOD	ANALYZED	BY	NOTES
Nickel, Total	5.	ND	Total µg	EPA 6010	03/18/92	BC	1

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01, L.A.Co.CSD#10187.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/18/92 by JPB using EPA 3050

03/19/92

MH/rwj

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek, Ph.D.
President

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Lab Number : I-0864-7
Project : 42-888 Golden State Metals Auto Shredder

CLIENT: Terry Rowles
Petro Chem Enviromental
3207 Antonino Ave
Bakersfield, CA 93308

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
(I0459-7) Filter #2, .39574 gram	Solid/Soil/ Sludge	Tim Brennan	01/23/92	02/04/92

CONSTITUENT	*PQL	RESULT	UNITS	METHOD	ANALYZED	BY	NOTES
Nickel, Total	5.	ND	Total µg	EPA 6010	03/18/92	BC	1

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01, L.A.Co.CSD#10187.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/18/92 by JPB using EPA 3050

03/19/92

MH/rwj

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek, Ph.D.
President

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Lab Number : I-0864-8
Project : 42-888 Golden State Metals Auto Shredder

CLIENT: Terry Rowles
Petro Chem Enviromental
3207 Antonino Ave
Bakersfield, CA 93308

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
(I0459-8) Filter Blank, .39965 gram	Filter	Tim Brennan	01/23/92	02/04/92

CONSTITUENT	*PQL	RESULT	UNITS	METHOD	ANALYZED	BY	NOTES
Nickel, Total	5.	ND	Total µg	EPA 6010	03/18/92	BC	1

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01, L.A.Co.CSD#10187.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/18/92 by JPB using EPA 3050

03/19/92

MH/rwj

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek, Ph.D.
President

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CLIENT: Terry Rowles
Petro Chem Enviromental
3207 Antonino Ave
Bakersfield, CA 93308

Lab Number : I-0864-5
Project : 42-888 Golden State Metals Auto Shredder

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
(I0459-5) H2O Blank, 195 ml	Aqueous	Tim Brennan	01/23/92	02/04/92

CONSTITUENT	*PQL	RESULT	UNITS	METHOD	ANALYZED	BY	NOTES
Nickel, Total	0.05	ND	mg/L	EPA 6010	03/18/92	BC	1

Lab Certifications: CAELAP#1598, NYELAP#11177, UTELAP#E-142, A2LA#0136-01, L.A.Co.CSD#10187.
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) Sample Preparation on 02/19/92 by JPB using EPA 3020

03/19/92

MH/rwj

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Mary Havlicek, Ph.D.
President

Golden State Metals
Sample Volume + Filter Weights

Sample#	Contents	Aliquot	Outside lab
1	Run #1 Cond	250/750	C+C
2	" "	" "	EMS
3	Run 2 Cond	" "	C+C
4	" "	" "	EMS
5	Run #1 P/N	100/200	C+C
6	" "	" "	EMS
7	Run 2 P/N	100/200	C+C
8	" "	" "	EMS
9	Run 1 Filter	.40791/.80936	C+C
10	" "	.40913/.80936	EMS
11	Run 2 Filter	.39574/.81063	C+C
12	" "	.41620/.81063	EMS
13	Filter Blank	.39965/.82904	C+C
14	" "	.42950/.82904	EMS
15	H_2O Blank	195 ml	C+C
16	" "	195 ml	EMS

CHAIN OF CUSTODY RECORD

Submitted to: Coast to Coast Analytical, Larry Hilpert

ANALYSIS REQUEST

COMPANY	LOCATION/UNIT
Golden State Metals	Auto Shredder

REPORT NO.	SAMPLER
42-888	Tim Brennan

METHOD	REPORT ATTN.	PO#
EPA Method 5	Terry Rowles	

	Sample No./ID	Sample Description	Sample Date	Liq.	Filter	Gas	Total PCB, µg	Total Cd, Pb, Zn, Cr, µg by ICP	PCB µg/m³ or As µg/m³	Cd, Pb, Zn, Cr, µg/m³		
												I0459
I0864-1	1	Impingate #1, 250 ml	1/23	X			X	X			—	1
-2	3	Impingate #2, 250 ml	1/23	X			X	X			—	2
-3	5	Probe Wash #1, 100 ml	1/23	X			X	X			—	3
-4	7	Probe Wash #2, 100 ml	1/23	X			X	X			—	4
-6	9	Filter #1, .40791 gram	1/23		X		X	X			—	6
-7	11	Filter #2, .39574 gram	1/23		X		X	X			—	7
-5	13	H_2O Blank, 195 ml	1/23	X					X	X	—	5
-8	15	Filter Blank, .39965 gram	1/23		X				X	X	—	8

COMMENTS:

Need Results by FAX within 2 weeks

PCB by 505/608/8080 Metals by ICP sealed, intact

RELINQUISHED BY:	DATE	RECEIVED BY:	DAT
[illegible]	1/30/92	Kelly Wilson	2/4/92 1130
RELINQUISHED BY:	DATE	RECEIVED BY:	DAT
RELINQUISHED BY:	DATE	RECEIVED BY:	DAT

PETRO CHEM ENVIRONMENTAL SERVICES, INC.
3207 Antonino Avenue, Bakersfield, CA 93308
(805) 327-7300 FAX (805) 327-3459

$25