

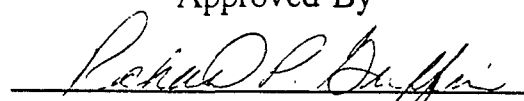
KOCH REFINING COMPANY
INDUSTRIAL HYGIENE EVALUATION
ASBESTOS ABATEMENT PROJECT
KOCH WEST PLANT
DOCK #9, PUMP HOUSE, SIXTH AND D STREET
CORPUS CHRISTI, TEXAS
CONTRACTOR: BASIC INDUSTRIES OF SOUTH TEXAS
NOVEMBER 2, 1995 THROUGH NOVEMBER 30, 1995

Report Prepared By


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Health & Safety Management, Inc.
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Corpus Christi, Texas 78401
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Approved By


Richard P. Griffin, CIH, CSP
President

K 008358

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Koch Refining Company
Koch West Plant
Dock #9, Pump House, Sixth and D Street

Purpose

1. To document the work practices and Personal Protective Equipment (PPE) utilized by Basic Industries of South Texas (BIST) employees engaged in the handling of Asbestos Containing Material (ACM).
2. To determine representative exposure to airborne fiber concentrations by BIST employees engaged in abatement activities.
3. To determine the concentrations of airborne fibers which may have been released during the project.
4. To notify appropriate Koch Refining Company and BIST supervisory personnel of deviations from OSHA regulations and EPA guidelines pertaining to the removal of ACM.

Scope of Work

The removal of approximately 4,970 linear feet and approximately 844 square feet of ACM from Dock #9, Pump House, Sixth and D Street.

Summary of Results

1. Sixteen personal samples were collected on BIST personnel while involved in the abatement activities. Two of these samples were voided due to occluded filter medias. Twelve of these samples yielded calculated eight-hour Time Weighted Average (TWA) results ranging from <0.005 fibers per cubic centimeter (f/cc) to 0.076 f/cc, which were below the eight-hour Permissible Exposure Limit (PEL) of 0.1 f/cc established by OSHA. The remaining two samples yielded results above the OSHA eight-hour PEL of 0.1 f/cc. See "Discussion of Results".
2. Four area samples were collected upwind from the abatement during the course of the project. These samples yielded analytical results ranging from <0.007 f/cc to 0.012 f/cc, which were below the PEL of 0.1 f/cc established by OSHA.
3. Three area samples were collected in the equipment room of the decontamination trailer during the course of the project. These samples yielded analytical results

ranging from 0.007 f/cc to 0.034 f/cc, which were below the PEL of 0.1 f/cc established by OSHA.

4. Two area samples were collected at the entrance of the mini-containment. These samples yielded analytical results of 0.058 f/cc and 0.095 f/cc, which were below the PEL of 0.1 f/cc established by OSHA.
5. Three area samples were collected in the exhaust stream of the Pressure Differential Units (PDUs). These samples yielded analytical results ranging from <0.010 f/cc to 0.041 f/cc, which were below the PEL of 0.1 f/cc established by OSHA.
6. Eleven area samples were collected downwind from the abatement sites during the course of the project. These samples yielded analytical results ranging from <0.005 f/cc to 0.013 f/cc, which were below the PEL of 0.1 f/cc established by OSHA.
7. Two area samples were collected inside the mini-containments during the course of the project. These two samples yielded results of 0.009 f/cc and 0.075 f/cc, which were below the PEL of 0.1 f/cc established by OSHA.
8. One area sample was collected inside the control room, out of the regulated area, during removal of ACM. This sample yielded an analytical result of <0.006 f/cc, which was below the PEL of 0.1 f/cc established by OSHA.
9. Nine clearance samples were collected inside the containments after gross removal of ACM was completed. Eight of these samples yielded results below the EPA standard for clean air of 0.01 f/cc. The remaining sample yielded a result of 0.014 f/cc. See "Discussion of Results."
10. Twenty-one blank samples were submitted for correction of sample analysis during the course of the project.

Discussion of Results

1. Two personal samples, #12234 and #12237, yielded TWA results above the OSHA PEL of 0.1 f/cc; however, it is felt that the employees were not exposed to fiber concentrations above the PEL due to the type of respirator protection utilized while in the containments. 3M Powered Air Purifying Respirators (PAPRs) with dual High Efficiency Particulate Air (HEPA) filters, NIOSH approval #TC-23C-1479, were utilized. The respirators offered a protection factor of 100 x PEL or 100 x 0.1 f/cc = 10 f/cc.
2. Clearance sample #12258 collected on November 16, 1995, yielded an analytical result of 0.014 f/cc, which was above the EPA standard for clean air of 0.01 f/cc.



The containment was wet-wiped and locked down again, and a second clearance sample, #122265, was collected on November 20, 1995, inside the containment. This sample yielded a result of 0.004 f/cc, which was below the EPA standard for clean air of 0.01 f/cc.

Conclusions

1. OSHA regulations and EPA guidelines pertaining to the removal of ACM were followed throughout the project.
2. Based on the sample results and the Personal Protective Equipment (PPE) utilized during abatement, it is felt that employees engaged in the asbestos removal project were not exposed to airborne fiber concentrations above the OSHA PEL of 0.1 f/cc.
3. Based on analytical results, it is felt that employees outside the regulated areas and not involved in the abatement activities were not exposed to airborne fiber concentrations above the OSHA PEL of 0.1 f/cc.

Recommendations

1. Notify the monitored employees with the results of their personal breathing zone samples.
2. Continue to follow all applicable OSHA regulations and EPA guidelines pertaining to the removal and disposal of ACM.
3. Continue to monitor all asbestos abatement projects or projects where ACM may be disturbed.

Observations

1. The area of abatement was demarcated with barricade tape bearing the message "Danger Asbestos". The demarcated area was regulated by the posting of OSHA required "Danger Asbestos" signs.
2. Employees engaged in abatement activities utilized the following Personal Protective Equipment (PPE): two pairs of disposable coveralls with attached hoods and booties, hard hats, cotton gloves, steel-toed rubber boots, safety harnesses, 3M half-face respirators with dual High Efficiency Particulate Air (HEPA) filters (NIOSH approval #TC-21C-488), or 3M full-face PAPRs with dual HEPA filters (NIOSH approval #TC-23C-1479).

3. The workers utilized Nomex coveralls on some removal sites. The suits were washed and dried after each use. The washer and dryer were set up in a regulated building. PPE was utilized in the building. The dryer was exhausted through a Pressure Differential Unit (PDU), which filtered the air through pre-filters and HEPA filters.
4. The workers achieved decontamination before breaks and at the end of the shifts by utilizing BIST's portable decontamination trailer.
5. The abatement workers were transported to the decontamination trailers in the back of BIST's pickup truck before breaks and at the end of the shifts. The truck beds were lined with 6-mil polyethylene during transport. During transport to the decontamination trailers, the workers wore two disposable suits of which the outer suit was taken off and replaced with another suit.
6. The majority of the removal was achieved utilizing mini-containments. Glovebagging was also performed to achieve gross removal.
7. The workers utilized the half-face respirators during construction and demolition of the containments, and the PAPRs during removal inside the containments.
8. A mixture of water and "Certane Raincoat" was utilized during the removal of ACM inside the containment. The surfactant was applied with manually pumped airless sprayers.
9. Sample results were supplied and posted on the next working day after samples were collected.



Methodology

Personal and area samples were collected utilizing SKC low-flow sampling pumps set to draw air at approximately two and one-quarter liters per minute. These pumps were calibrated both prior to and following the sampling period utilizing a primary standard. The calibrator was connected to the pumps following the same sequence of equipment which was used in the actual sampling procedures. Both the beginning and ending flow rates were obtained by averaging the results of three separate calibrations. Each of these calibrations were within 1% of each other. Furthermore, the average of the beginning and ending calibrations were within 10% of each other.

The personal samples were collected in the breathing zones of the individuals. The area samples were collected at a height of approximately five to six feet from floor level in order to determine the potential exposure to employees working in the area. The samples were collected on 25mm filters of 0.8 micrometer porosity mounted in an open-face holder. The fiber content of each filter sample was analyzed following NIOSH procedure 7400 by a laboratory participating in the NIOSH PAT program for asbestos.

Wedges from each filter were examined at 400 power using phase contrast microscopy. Fibers equal to or longer than five microns with a length-to-width ratio of 3:1 were counted as asbestos.

Clearance

The post abatement samples were collected utilizing the Thomas high-volume sampling pump set to draw air at approximately ten liters per minute. These pumps were calibrated both prior to and following the sampling period. The calibrator was connected to the pump following the same sequence of equipment which was used in the actual sampling procedures. The sample volumes were selected so that a detectable limit of 0.01 f/cc or less could be obtained. Both the beginning and ending flow rates were obtained by averaging the results of three separate calibrations. Each of these calibrations were within 1% of each other. Furthermore, the average of the beginning and ending calibrations were within 10% of each other.



APPENDIX

K 008365

Koch Refining Company

Koch West Plant
Dock #9, Pump House, Sixth and D Street

Summary of Data

Personal

<u>HSM95 Sample #</u>	<u>Date</u>	<u>Name/SS#</u>	<u>Airborne fibers f/cc</u>	<u>8-hr TWA</u>
12221	11/02/95	Michael Perez	0.013	0.007
12279	11/22/95	450-29-9027	0.305	0.037
12222	11/02/95	Edward Honojosa 457-35-0230	0.007	0.006
12224	11/03/95	Roy Guerrero	0.211	0.046
12240	11/09/95	458-63-1200	<0.006	<0.005
12231	11/06/95	Ronald Guerrero 458-63-7756	Void	
12234	11/07/95	Daniel Martinez 449-33-9274	2.649	0.579
12237	11/08/95	John Alvarez 451-59-4376	1.216	0.393
12241	11/09/95	Luis M. Garcia 450-27-5002	0.198	0.0076
12244	11/10/95	Andrew Cannon	0.038	0.010
12254	11/14/95	463-82-1712	0.024	0.005
12245	11/10/95	Steve Marroquin 461-33-5868	0.008	0.006
12262	11/18/95	Raul Yanez 459-29-9027	Void	
12282	11/27/95	Stacey Thompson 114-66-2512	0.023	0.009



Summary of Data

Personal (continued)

<u>HSM95</u> <u>Sample #</u>	<u>Date</u>	<u>Name/SS#</u>	<u>Airborne fibers</u> <u>f/cc</u>	<u>8-hr</u> <u>TWA</u>
12292	11/30/95	Margarito Garcia 466-37-7175	0.010	0.008
12293	11/30/95	John Yanez 459-29-9172	<0.006	<0.005

Area (Upwind) (See sampling data sheets for area locations.)

<u>HSM95</u> <u>Sample #</u>	<u>Date</u>	<u>Airborne fibers</u> <u>f/cc</u>
12219	11/01/95	0.005
12275	11/21/95	<0.007
12286	11/28/95	0.012
12289	11/29/95	<0.011

Area (Downwind)

<u>HSM95</u> <u>Sample #</u>	<u>Date</u>	<u>Airborne fibers</u> <u>f/cc</u>
12218	11/01/95	<0.006
12229	11/06/95	<0.005
12230	11/06/95	<0.005
12235	11/07/95	<0.006
12238	11/08/95	0.010
12249	11/13/95	<0.010
12252	11/14/95	<0.016



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HSM95		Airborne fibers
<u>Sample #</u>	<u>Date</u>	<u>f/cc</u>
12256	11/16/95	<0.010
12274	11/21/95	<0.007
12287	11/28/95	0.013
12290	11/29/95	<0.011

HSM95		Airborne fibers
<u>Sample #</u>	<u>Date</u>	<u>f/cc</u>
12261	11/18/95	0.007
12267	11/20/95	0.025
12268	11/20/95	0.034

HSM95		Airborne fibers
<u>Sample #</u>	<u>Date</u>	<u>f/cc</u>
12225	11/03/95	0.009
12251	11/14/95	0.075

<u>HSM95</u> <u>Sample #</u>	<u>Date</u>	<u>Airborne fibers</u> <u>f/cc</u>
12260	11/18/95	<0.006

105-1642-10000

Summary of Data

Area (Exhaust of PDU)

<u>HSM95</u> <u>Sample #</u>	<u>Date</u>	Airborne fibers <u>f/cc</u>
12242	11/09/95	0.041
12248	11/13/95	<0.010
12257	11/16/95	<0.010

Area (Entrance to Containment)

<u>HSM95</u> <u>Sample #</u>	<u>Date</u>	Airborne fibers <u>f/cc</u>
12278	11/22/95	0.095
12281B	11/27/95	0.058

Clearance (Inside Containment)

<u>HSM95</u> <u>Sample #</u>	<u>Date</u>	Airborne fibers <u>f/cc</u>
12227	11/03/95	0.003
12232	11/06/95	0.007
12246	11/10/95	0.006
12253	11/14/95	<0.004
12258	11/16/95	0.014
12263	11/18/95	<0.004
12265	11/20/95	<0.004
12281A	11/22/95	<0.004
12284	11/28/95	0.006



Summary of Data

Blanks

<u>HSM95 Sample #</u>	<u>Date</u>	<u>fibers/100 fields</u>
12220	11/01/95	2.0
12223	11/02/95	1.0
12226	11/03/95	0.0
12228	11/03/95	7.0
12233	11/06/95	4.0
12236	11/07/95	0.0
12239	11/08/95	5.0
12243	11/09/95	4.0
12247	11/10/95	2.5
12250	11/12/95	2.0
12255	11/14/95	0.0
12259	11/16/95	1.0
12264	11/18/95	2.0
12266	11/20/95	2.0
12269	11/20/95	0.0
12276	11/21/95	1.0
12280	11/22/95	0.0
12283	11/27/95	1.0
12288	11/28/95	3.0



Summary of Data

Blanks (continued)

<u>HSM95</u> <u>Sample #</u>	<u>Date</u>	<u>fibers/100 fields</u>
12291	11/29/95	2.0
12294	11/30/95	1.0



Laboratory Reports

K 008372



HSM LABORATORIES

1245 West Cardinal Drive * Beaumont, Texas 77705
(409) 842-4094 * Fax: (409) 842-4099

Client: Health & Safety Management, Inc.
Attn: Richard P. Griffin
President, CIH, CSP
Project #: CA.190.115
Site: Koch Refinery West Plant
Report Date: January 19, 1996

Lab Service #: CA95.1369
Date Collected: 11/13/95
No. of Samples: 3
Submitted By: Seth Beidron
Date Analyzed: 11/15/95
Analyst: Rudy Orta

Results of Analysis

<u>Lab #</u>	<u>Sample ID#</u>	<u>Fibers Counted</u>	<u>Fields Counted</u>	<u>Air Volume (liters)</u>	<u>Fiber Concentration (fibers/cc)*</u>
CA95.1369	12248HSM95	7.5	100	477.0	<0.010
CA95.1370	12249HSM95	5.0	100	499.5	<0.010
CA95.1371	12250HSM95	2.0	100	---	BLANK

Analytical Method - Phase Contrast Microscopy (NIOSH 7400/Rule A)
NIOSH PAT Laboratory I.D. #10638

NA - Not Analyzed

* - Indicates measurements corrected for blanks.


Tony Mills
Laboratory Supervisor

K 008373



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1245 West Cardinal Drive * Beaumont, Texas 77705
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Client: Health & Safety Management, Inc.
Attn: Richard P. Griffin
President, CIH, CSP
Project #: CA.190.115
Site: Koch Refinery West Plant
Report Date: January 19, 1996

Lab Service #: CA95.1378
Date Collected: 11/14/95
No. of Samples: 5
Submitted By: Seth Beidron
Date Analyzed: 11/15/95
Analyst: Rudy Orta

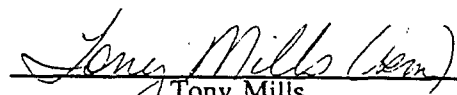
Results of Analysis

<u>Lab #</u>	<u>Sample ID#</u>	<u>Fibers Counted</u>	<u>Fields Counted</u>	<u>Air Volume (liters)</u>	<u>Fiber Concentration (fibers/cc)*</u>
CA95.1378	12251HSM95	50.5	100	335.25	0.075
CA95.1379	12252HSM95	8.0	100	321.75	<0.016
CA95.1380	12253HSM95	4.0	100	1224.0	<0.004
CA95.1381	12254HSM95	10.0	100	207.0	0.024
CA95.1382	12255HSM95	0.0	100	----	BLANK

Analytical Method - Phase Contrast Microscopy (NIOSH 7400/Rule A)
NIOSH PAT Laboratory I.D. #10638

NA - Not Analyzed

* - Indicates measurements corrected for blanks.


Tony Mills
Laboratory Supervisor

K 008374



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Client: Health & Safety Management, Inc.
Attn: Richard P. Griffin
President, CIH, CSP
Project #: CA.190.115
Site: Koch Refinery West Plant
Report Date: January 19, 1996

Lab Service #: CA95.1344
Date Collected: 11/10/95
No. of Samples: 4
Submitted By: Seth Beidron
Date Analyzed: 11/14/95
Analyst: Rudy Orta

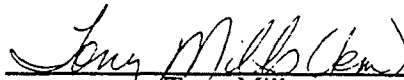
Results of Analysis

<u>Lab #</u>	<u>Sample ID#</u>	<u>Fibers Counted</u>	<u>Fields Counted</u>	<u>Air Volume (liters)</u>	<u>Fiber Concentration (fibers/cc)*</u>
CA95.1344	12244HSM95	23.0	100	273.28	0.038
CA95.1345	12245HSM95	15.0	100	745.8	0.008
CA95.1346	12246HSM95	9.5	100	821.74	<0.006
CA95.1347	12247HSM95	2.5	100	----	BLANK

Analytical Method - Phase Contrast Microscopy (NIOSH 7400/Rule A)
NIOSH PAT Laboratory I.D. #10638

NA - Not Analyzed

* - Indicates measurements corrected for blanks.


Tony Mills
Laboratory Supervisor

K 008375



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Client: Health & Safety Management, Inc.
Attn: Richard P. Griffin
President, CIH, CSP
Project #: CA.190.115
Site: Koch Refinery West Plant
Report Date: January 19, 1996

Lab Service #: CA95.1356
Date Collected: 11/08/95
No. of Samples: 3
Submitted By: Seth Beidron
Date Analyzed: 11/13/95
Analyst: David Ramirez

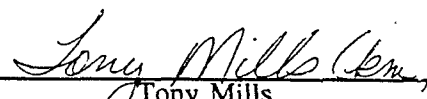
Results of Analysis

<u>Lab #</u>	<u>Sample ID#</u>	<u>Fibers Counted</u>	<u>Fields Counted</u>	<u>Air Volume (liters)</u>	<u>Fiber Concentration (fibers/cc)*</u>
CA95.1356	12237HSM95	169.5	20	348.75	1.216
CA95.1357	12238HSM95	19.5	100	911.25	0.010
CA95.1358	12239HSM95	0.5	100	----	BLANK

Analytical Method - Phase Contrast Microscopy (NIOSH 7400/Rule A)
NIOSH PAT Laboratory I.D. #10638

NA - Not Analyzed

* - Indicates measurements corrected for blanks.


Tony Mills
Laboratory Supervisor

K 008376



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Client: Health & Safety Management, Inc.
Attn: Richard P. Griffin
President, CIH, CSP
Project #: CA.190.115
Site: Koch Refinery West Plant
Report Date: January 19, 1996

Lab Service #: CA95.1398
Date Collected: 11/16/95
No. of Samples: 4
Submitted By: Seth Beidron
Date Analyzed: 11/17/95
Analyst: Nancy Berry

Results of Analysis

<u>Lab #</u>	<u>Sample ID#</u>	<u>Fibers Counted</u>	<u>Fields Counted</u>	<u>Air Volume (liters)</u>	<u>Fiber Concentration (fibers/cc)*</u>
CA95.1398	12256HSM95	5.5	100	479.25	<0.010
CA95.1399	12257HSM95	7.0	100	481.5	<0.010
CA95.1400	12258HSM95	35.5	100	1224.0	0.014
CA95.1401	12259HSM95	1.0	100	----	BLANK

Analytical Method - Phase Contrast Microscopy (NIOSH 7400/Rule A)
NIOSH PAT Laboratory I.D. #10638

NA - Not Analyzed

* - Indicates measurements corrected for blanks.

Tony Mills (km)
Tony Mills
Laboratory Supervisor

K 008377



HSM LABORATORIES

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Client: Health & Safety Management, Inc.
Attn: Richard P. Griffin
President, CIH, CSP
Project #: CA.190.115
Site: Koch Refinery West Plant
Report Date: January 19, 1996

Lab Service #: CA95.1428
Date Collected: 11/18/95
No. of Samples: 5
Submitted By: Seth Beidron
Date Analyzed: 11/20/95
Analyst: Nancy Berry

Results of Analysis

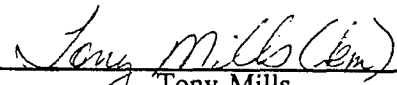
<u>Lab #</u>	<u>Sample ID#</u>	<u>Fibers Counted</u>	<u>Fields Counted</u>	<u>Air Volume (liters)</u>	<u>Fiber Concentration (fibers/cc)*</u>
CA95.1428	12260HSM95	4.5	100	866.25	<0.006
CA95.1429	12261HSM95	19.5	100	1194.24	0.007
CA95.1430	12262HSM95	----	---	-----	--NA--
CA95.1431	12263HSM95	8.0	100	1234.0	<0.004
CA95.1432	12264HSM95	2.0	100	----	BLANK

Comments: Sample #12262HSM95 could not be analyzed due to excessive dust and dirt particulates on the filter membrane which occluded the fields of view.

Analytical Method - Phase Contrast Microscopy (NIOSH 7400/Rule A)
NIOSH PAT Laboratory I.D. #10638

NA - Not Analyzed

* - Indicates measurements corrected for blanks.


Tony Mills
Laboratory Supervisor

K 008378



HSM LABORATORIES

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Client: Health & Safety Management, Inc.
Attn: Richard P. Griffin
President, CIH, CSP
Project #: CA.190.115
Site: Koch Refinery West Plant
Report Date: January 19, 1996

Lab Service #: CA95.1438
Date Collected: 11/20/95
No. of Samples: 2
Submitted By: Seth Beidron
Date Analyzed: 11/20/95
Analyst: Nancy Berry

Results of Analysis

<u>Lab #</u>	<u>Sample ID#</u>	<u>Fibers Counted</u>	<u>Fields Counted</u>	<u>Air Volume (liters)</u>	<u>Fiber Concentration (fibers/cc)*</u>
CA95.1438	12265HSM95	8.0	100	1224.0	<0.004
CA95.1439	12266HSM95	2.0	100	----	BLANK

Analytical Method - Phase Contrast Microscopy (NIOSH 7400/Rule A)
NIOSH PAT Laboratory I.D. #10638

NA - Not Analyzed

* - Indicates measurements corrected for blanks.


Tony Mills
Laboratory Supervisor

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HSM LABORATORIES

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Client: Health & Safety Management, Inc.
Attn: Richard P. Griffin
President, CIH, CSP
Project #: CA.190.115
Site: Koch Refinery West Plant
Report Date: January 19, 1996

Lab Service #: CA95.1489
Date Collected: 11/20/95
No. of Samples: 3
Submitted By: Seth Beidron
Date Analyzed: 11/26/95
Analyst: Rudy Orta

Results of Analysis

<u>Lab #</u>	<u>Sample ID#</u>	<u>Fibers Counted</u>	<u>Fields Counted</u>	<u>Air Volume (liters)</u>	<u>Fiber Concentration (fibers/cc)*</u>
CA95.1489	12267HSM95	46.5	100	945.0	0.025
CA95.1490	12268HSM95	64.5	100	940.8	0.034
CA95.1491	12269HSM95	0.0	100	----	BLANK

Analytical Method - Phase Contrast Microscopy (NIOSH 7400/Rule A)
NIOSH PAT Laboratory I.D. #10638

NA - Not Analyzed

* - Indicates measurements corrected for blanks.


Tony Mills
Laboratory Supervisor

K 008380



HSM LABORATORIES

1245 West Cardinal Drive * Beaumont, Texas 77705
(409) 842-4094 * Fax: (409) 842-4099

Client: Health & Safety Management, Inc.
Attn: Richard P. Griffin
President, CIH, CSP
Project #: CA.190.115
Site: Koch Refinery West Plant
Report Date: January 19, 1996

Lab Service #: CA95.1470
Date Collected: 11/22/95
No. of Samples: 4
Submitted By: Seth Beidron
Date Analyzed: 11/22/95
Analyst: David Ramirez

Results of Analysis

<u>Lab #</u>	<u>Sample ID#</u>	<u>Fibers Counted</u>	<u>Fields Counted</u>	<u>Air Volume (liters)</u>	<u>Fiber Concentration (fibers/cc)*</u>
CA95.1470	12278HSM95	25.5	100	134.4	0.095
CA95.1471	12279HSM95	79.5	100	130.5	0.305
CA95.1472	12280HSM95	0.0	100	---	BLANK
CA95.1473	12281HSM95-A	5.5	100	1240.0	<0.004

Analytical Method - Phase Contrast Microscopy (NIOSH 7400/Rule A)
NIOSH PAT Laboratory I.D. #10638

NA - Not Analyzed

* - Indicates measurements corrected for blanks.

Tony Mills (km)
Tony Mills
Laboratory Supervisor

K 008381



HSM LABORATORIES

1245 West Cardinal Drive * Beaumont, Texas 77705
(409) 842-4094 * Fax: (409) 842-4099

Client:	Health & Safety Management, Inc.	Lab Service #:	CA95.1467
Attn:	Richard P. Griffin	Date Collected:	11/21/95
	President, CIH, CSP	No. of Samples:	3
Project #:	CA.190.115	Submitted By:	Seth Beidron
Site:	Koch Refinery West Plant	Date Analyzed:	11/22/95
Report Date:	January 19, 1996	Analyst:	David Ramirez

Results of Analysis

<u>Lab #</u>	<u>Sample ID#</u>	<u>Fibers Counted</u>	<u>Fields Counted</u>	<u>Air Volume (liters)</u>	<u>Fiber Concentration (fibers/cc)*</u>
CA95.1467	12274HSM95	4.0	100	711.9	<0.007
CA95.1468	12275HSM95	8.0	100	706.5	<0.007
CA95.1469	12276HSM95	1.0	100	----	BLANK

Analytical Method - Phase Contrast Microscopy (NIOSH 7400/Rule A)
NIOSH PAT Laboratory I.D. #10638

NA - Not Analyzed

* - Indicates measurements corrected for blanks.


Tony Mills
Laboratory Supervisor

K 008382



HSM LABORATORIES

1245 West Cardinal Drive * Beaumont, Texas 77705
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Client: Health & Safety Management, Inc.
Attn: Richard P. Griffin
President, CIH, CSP
Project #: CA.190.115
Site: Koch Refinery
Report Date: January 19, 1996

Lab Service #: CA95.1297
Date Collected: 11/06/95
No. of Samples: 5
Submitted By: Seth Biedron
Date Analyzed: 11/07/95
Analyst: Nancy Berry

Results of Analysis

<u>Lab #</u>	<u>Sample ID#</u>	<u>Fibers Counted</u>	<u>Fields Counted</u>	<u>Air Volume (liters)</u>	<u>Fiber Concentration (fibers/cc)*</u>
CA95.1297	12229HSM95	7.0	100	971.8	<0.005
CA95.1298	12230HSM95	8.0	100	980.84	<0.005
CA95.1299	12231HSM95	----	---	----	--NA--
CA95.1300	12232HSM95	20.0	100	1151.4	0.007
CA95.1301	12233HSM95	4.0	100	----	BLANK

Comments: Sample #12231HSM95 could not be analyzed due to excessive dust and dirt particulates on the filter membrane which occluded the fields of view.

Analytical Method - Phase Contrast Microscopy (NIOSH 7400/Rule A)
NIOSH PAT Laboratory I.D. #10638

NA - Not Analyzed

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Tony Mills
Laboratory Supervisor

K 008383



HSM LABORATORIES

1245 West Cardinal Drive * Beaumont, Texas 77705
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Client: Health & Safety Management, Inc.
Attn: Richard P. Griffin
President, CIH, CSP
Project #: CA.190.115
Site: Koch Refinery West Plant
Report Date: January 19, 1996

Lab Service #: CA95.1521
Date Collected: 11/28/95
No. of Samples: 3
Submitted By: Seth Beidron
Date Analyzed: 12/04/95
Analyst: David Ramirez

Results of Analysis

<u>Lab #</u>	<u>Sample ID#</u>	<u>Fibers Counted</u>	<u>Fields Counted</u>	<u>Air Volume (liters)</u>	<u>Fiber Concentration (fibers/cc)*</u>
CA95.1521	12286HSM95	20.3	100	701.4	0.012
CA95.1522	12287HSM95	21.5	100	695.3	0.013
CA95.1523	12288HSM95	3.0	100	----	BLANK

Analytical Method - Phase Contrast Microscopy (NIOSH 7400/Rule A)
NIOSH PAT Laboratory I.D. #10638

NA - Not Analyzed

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Tony Mills
Laboratory Supervisor

K 008384



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1245 West Cardinal Drive * Beaumont, Texas 77705
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Client:	Health & Safety Management, Inc.	Lab Service #:	CA95.1524
Attn:	Richard P. Griffin	Date Collected:	11/29/95
	President, CIH, CSP	No. of Samples:	3
Project #:	CA.190.115	Submitted By:	Seth Beidron
Site:	Koch Refinery West Plant	Date Analyzed:	12/04/95
Report Date:	January 19, 1996	Analyst:	David Ramirez

Results of Analysis

<u>Lab #</u>	<u>Sample ID#</u>	<u>Fibers Counted</u>	<u>Fields Counted</u>	<u>Air Volume (liters)</u>	<u>Fiber Concentration (fibers/cc)*</u>
CA95.1524	12289HSM95	5.0	100	438.8	<0.011
CA95.1525	12290HSM95	3.0	100	438.8	<0.011
CA95.1526	12291HSM95	2.0	100	----	BLANK

Analytical Method - Phase Contrast Microscopy (NIOSH 7400/Rule A)
NIOSH PAT Laboratory I.D. #10638

NA - Not Analyzed

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Tony Mills
Laboratory Supervisor

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1245 West Cardinal Drive * Beaumont, Texas 77705
(409) 842-4094 * Fax: (409) 842-4099

Client: Health & Safety Management, Inc.
Attn: Richard P. Griffin
President, CIH, CSP
Project #: CA.190.115
Site: Koch Refinery West Plant
Report Date: January 19, 1996

Lab Service #: CA95.1527
Date Collected: 11/30/95
No. of Samples: 3
Submitted By: Seth Beidron
Date Analyzed: 12/04/95
Analyst: David Ramirez

Results of Analysis

<u>Lab #</u>	<u>Sample ID#</u>	<u>Fibers Counted</u>	<u>Fields Counted</u>	<u>Air Volume (liters)</u>	<u>Fiber Concentration (fibers/cc)*</u>
CA95.1527	12292HSM95	19.0	100	911.3	0.010
CA95.1528	12293HSM95	7.0	100	856.5	<0.006
CA95.1529	12294HSM95	1.0	100	----	BLANK

Analytical Method - Phase Contrast Microscopy (NIOSH 7400/Rule A)
NIOSH PAT Laboratory I.D. #10638

NA - Not Analyzed

* - Indicates measurements corrected for blanks.


Tony Mills
Laboratory Supervisor

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1245 West Cardinal Drive * Beaumont, Texas 77705
(409) 842-4094 * Fax: (409) 842-4099

Client:	Health & Safety Management, Inc.	Lab Service #:	CA95.1496
Attn:	Richard P. Griffin	Date Collected:	11/27/95
	President, CIH, CSP	No. of Samples:	4
Project #:	CA.190.115	Submitted By:	Seth Beidron
Site:	Koch Refinery West Plant	Date Analyzed:	11/28/95
Report Date:	January 19, 1996	Analyst:	Rudy Orta

Results of Analysis

<u>Lab #</u>	<u>Sample ID#</u>	<u>Fibers Counted</u>	<u>Fields Counted</u>	<u>Air Volume (liters)</u>	<u>Fiber Concentration (fibers/cc)*</u>
CA95.1496	12281HSM95-B	28.5	100	236.25	0.058
CA95.1497	12282HSM95	21.0	100	436.5	0.023
CA95.1498	12283HSM95	1.0	100	---	BLANK
CA95.1499	12284HSM95	16.5	100	1224.0	0.006

Analytical Method - Phase Contrast Microscopy (NIOSH 7400/Rule A)
NIOSH PAT Laboratory I.D. #10638

NA - Not Analyzed

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Tony Mills
Laboratory Supervisor

K 008387



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1245 West Cardinal Drive * Beaumont, Texas 77705
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Client: Health & Safety Management, Inc.
Attn: Richard P. Griffin
President, CIH, CSP
Project #: CA.190.115
Site: Koch Refinery West Plant
Report Date: January 19, 1996

Lab Service #: CA95.1317
Date Collected: 11/07/95
No. of Samples: 3
Submitted By: Seth Beidron
Date Analyzed: 11/15/95
Analyst: Rudy Orta

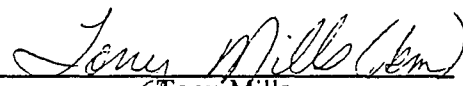
Results of Analysis

<u>Lab #</u>	<u>Sample ID#</u>	<u>Fibers Counted</u>	<u>Fields Counted</u>	<u>Air Volume (liters)</u>	<u>Fiber Concentration (fibers/cc)*</u>
CA95.1317	12234HSM95	250.0	20	236.28	2.649
CA95.1318	12235HSM95	5.0	100	900.00	<0.006
CA95.1319	12236HSM95	0.0	100	----	BLANK

Analytical Method - Phase Contrast Microscopy (NIOSH 7400/Rule A)
NIOSH PAT Laboratory I.D. #10638

NA - Not Analyzed

* - Indicates measurements corrected for blanks.


Tony Mills
Laboratory Supervisor

K 008388



HSM LABORATORIES

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Client: Health & Safety Management, Inc.
Attn: Richard P. Griffin
President, CIH, CSP
Project #: CA.190.115
Site: Koch Refinery West Plant
Report Date: January 19, 1996

Lab Service #: CA95.1314
Date Collected: 11/02/95
No. of Samples: 3
Submitted By: Seth Beidron
Date Analyzed: 11/15/95
Analyst: Rudy Orta

Results of Analysis

<u>Lab #</u>	<u>Sample ID#</u>	<u>Fibers Counted</u>	<u>Fields Counted</u>	<u>Air Volume (liters)</u>	<u>Fiber Concentration (fibers/cc)*</u>
CA95.1314	12221HSM95	17.0	100	610.2	0.013
CA95.1315	12222HSM95	13.5	100	877.5	0.007
CA95.1316	12223HSM95	1.0	100	----	BLANK

Analytical Method - Phase Contrast Microscopy (NIOSH 7400/Rule A)
NIOSH PAT Laboratory I.D. #10638

NA - Not Analyzed

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Tony Mills
Laboratory Supervisor

K 008389



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1245 West Cardinal Drive * Beaumont, Texas 77705
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Client:	Health & Safety Management, Inc.	Lab Service #:	CA95.1311
Attn:	Richard P. Griffin	Date Collected:	11/01/95
	President, CIH, CSP	No. of Samples:	3
Project #:	CA.190.115	Submitted By:	Seth Beidron
Site:	Koch Refinery West Plant	Date Analyzed:	11/15/95
Report Date:	January 19, 1996	Analyst:	Rudy Orta

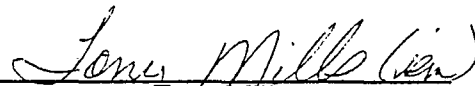
Results of Analysis

<u>Lab #</u>	<u>Sample ID#</u>	<u>Fibers Counted</u>	<u>Fields Counted</u>	<u>Air Volume (liters)</u>	<u>Fiber Concentration (fibers/cc)*</u>
CA95.1311	12218HSM95	7.5	100	877.5	<0.006
CA95.1312	12219HSM95	11.5	100	869.12	0.005
CA95.1313	12220HSM95	2.0	100	----	BLANK

Analytical Method - Phase Contrast Microscopy (NIOSH 7400/Rule A)
NIOSH PAT Laboratory I.D. #10638

NA - Not Analyzed

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Tony Mills
Laboratory Supervisor

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HSM LABORATORIES

1245 West Cardinal Drive * Beaumont, Texas 77705
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Client: Health & Safety Management, Inc.
Attn: Richard P. Griffin
President, CIH, CSP
Project #: CA.190.115
Site: Koch Refinery West Plant
Report Date: January 19, 1996

Lab Service #: CA95.1306
Date Collected: 11/03/95
No. of Samples: 5
Submitted By: Seth Beidron
Date Analyzed: 11/13/95
Analyst: Rudy Orta

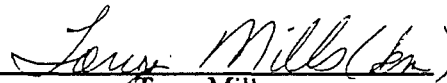
Results of Analysis

<u>Lab #</u>	<u>Sample ID#</u>	<u>Fibers Counted</u>	<u>Fields Counted</u>	<u>Air Volume (liters)</u>	<u>Fiber Concentration (fibers/cc)*</u>
CA95.1306	12224HSM95	100.0	94	237.3	0.211
CA95.1307	12225HSM95	10.0	100	558.22	0.009
CA95.1308	12226HSM95	0.0	100	----	BLANK
CA95.1309	12227HSM95	14.0	100	1216.8	0.003
CA95.1310	12228HSM95	7.0	100	----	BLANK

Analytical Method - Phase Contrast Microscopy (NIOSH 7400/Rule A)
NIOSH PAT Laboratory I.D. #10638

NA - Not Analyzed

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Tony Mills
Laboratory Supervisor

K 008391



HSM LABORATORIES

1245 West Cardinal Drive * Beaumont, Texas 77705
(409) 842-4094 * Fax: (409) 842-4099

Client: Health & Safety Management, Inc.
Attn: Richard P. Griffin
President, CIH, CSP
Project #: CA.190.115
Site: Koch Refinery West Plant
Report Date: January 19, 1996

Lab Service #: CA95.1340
Date Collected: 11/09/95
No. of Samples: 4
Submitted By: Seth Beidron
Date Analyzed: 11/14/95
Analyst: Rudy Orta

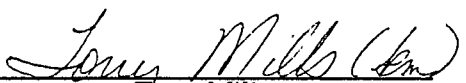
Results of Analysis

<u>Lab #</u>	<u>Sample ID#</u>	<u>Fibers Counted</u>	<u>Fields Counted</u>	<u>Air Volume (liters)</u>	<u>Fiber Concentration (fibers/cc)*</u>
CA95.1340	12240HSM95	4.0	100	906.75	<0.006
CA95.1341	12241HSM95	101.5	60	418.1	0.198
CA95.1342	12242HSM95	34.0	100	364.5	0.041
CA95.1343	12243HSM95	4.0	100	----	BLANK

Analytical Method - Phase Contrast Microscopy (NIOSH 7400/Rule A)
NIOSH PAT Laboratory I.D. #10638

NA - Not Analyzed

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Tony Mills
Laboratory Supervisor

K 008392