

R.I. Analytical

Specialists in Environmental Services



June 09, 1994

Mr. David Cookson
American Insulated Wire
36 Freeman St.
P.O. Box 880
Pawtucket, R.I. 02860

Re: Limited Indoor Air Quality Testing conducted at 330 Turner St., S. Attleboro, MA.

Dear Mr. Cookson:

The information presented within this report is in response to your request that our firm conduct limited Indoor Air Quality Testing within the wire testing area and a general inspection of the immediate area of the building. The purpose of this testing was to identify any health hazard or potential health hazard within the wire testing area that may be causing the air quality problem. Defining any type of indoor air quality problem is not a simple task. There are constantly changing interactions of a complex set of factors. There are four elements to indoor air quality testing. They are: building occupants, complaints/symptoms, source of the odors and/or contaminants, problems with design or operation of the HVAC equipment, and a pathway between the poor air quality source and the location of the complaint. The following information outlines the conversation/interviews conducted with the as well as the observations made during the visual survey.

The interviews were conducted in an informal atmosphere as to not upset or overwhelm the interviewees. General questions were asked of the occupants, such as; how the person has been feeling?, what type of illnesses have you had lately?, have any odors been noticed?...etc. Common responses to these types of questions revealed the following comments.

Symptoms:

Generally, the following symptoms were/are being experienced; headaches, burning eyes, dryness in throat. One odor that was noticed was from the fork truck exhaust.

R.I Analytical Laboratories, Inc.
175 Metro Center Blvd., Suite 7, Warwick, RI 02886
Tel (401) 732-5600 / Fax (401) 732-5607

Time of Occurrence:

According to the interviews conducted with the working staff, symptoms seem to have occurred randomly. However, the winter months seem to be the predominant time of symptom occurrence. Due to this wide range of symptom time occurrence and illnesses, it is difficult to link the problems to a specific event (i.e., a petroleum spill, septic seepage, introduction of a new chemical cleaning agents, solvents....etc.). However, a combination of problems may exist that effect sensitive individuals.

Location Within The Building:

The area consists of three fenced testing areas in the middle of the warehouse.

Indoor Air Quality Survey:

The following information outlines those observations made during the visual inspection of the testing area. These observations were made at the time of inspection and relate to only the conditions that existed at that time.

Outdoor Pollution Sources:

1) Vehicle exhaust from nearby loading dock:
   The wire testing area is located adjacent to a loading dock where trucks may idol and exhaust may enter the building. Paints and solvents in the wire marking area. Propane fueled fork trucks.

Ventilation System:

1) Fans within the area are not used continuously, so indoor air circulation or exhaust is manual not automatically controlled.

Non-HVAC Equipment:

1) Possible emissions from warehouse equipment and/or supplies:
Within the warehouse, motorized forklifts (propane fueled) are used during daily operations. This may be a source for aromatic hydrocarbons and/or carbon monoxide detected within the test area. However, these carbon monoxide levels are well below the OSHA allowable limit of 50ppm. Refer to the analytical field results.

Human/Maintenance Activities:

1) Airborne dust and dirt (circulated by sweeping and vacuuming): Refer to the analytical field results.

2) Possible emissions from stored materials:
Within the warehouse, stored product materials are present. This may be a source for aromatic hydrocarbons or odors.

Recommendations:

In an attempt to solve some of the possible indoor air quality problems, we suggest the following response actions be taken.

1) Routine house keeping and keep dust generating activities to a minimum.

2) The warehouse ventilation system should be up-graded to meet ventilation requirements for that type of operation. One best way to solve this problem is by introducing fresh air. If you chose to introduce fresh air, **DO NOT** locate the air intake vent adjacent to the loading dock. Introducing outside fresh air is usually the best solution for enclosed work areas. Any new ventilation system should be installed/inspected by an independent HVAC professional to ensure that the ventilation system is operating correctly.

Conclusion:

The conditions and/or observations mentioned above are not considered immediately dangerous to health and are not uncommon within many buildings where redesign, adaptations have been made to accommodate office spaces or functions within the building. Making the above mentioned changes may reduce the discomfort of the occupants. All observations documented in this report were made under the conditions existing at the time of this investigation. Indoor air quality is affected by a wide variety of conditions including weather, season, occupancy, activity, and outdoor air quality. Therefore, the conditions under which this survey was performed must be carefully considered in assessing the overall air quality.

In addition, please note that the OSHA Permissible Exposure Limits (PEL) referenced within this report are based on time-weighted averages (TWA). To determine the actual TWA, personal monitoring pumps must be worn by a designated building occupant for an entire work day. Therefore, the levels reported within this sampling survey should only be used as a general assessment of exposure conditions.

Should changes from existing conditions occur in the future warranting additional air quality monitoring, they should be brought to the attention of RI Analytical for further investigation and documentation. Further discoveries, after review by RI Analytical may merit modification of conclusions presented in this report. No warranties other than those expressed in the contract for this project are expressed or implied.

If you have any questions concerning this information or if we may be of further assistance, please contact this office.

Sincerely,
RI ANALYTICAL
Consulting Services

Fred M. Melnyk
Environmental Consultant

FIELD ANALYTICAL RESULTS:

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***** DATALOGGER SESSION INFORMATION *****
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INSTRUMENT SUMMARY INFORMATION

Unit Serial # : 44138

Total Sessions : 36

Last LEL Span Calibration : 5/03/94 8:11
Last TOX Span Calibration : 5/10/94 10:55
Last CO Span Calibration : 5/10/94 10:55

SESSION	LOCATION #	START TIME	STOP TIME
0	10	5/10/94 10:57	5/10/94 11:59
1	10	5/10/94 10:51	5/10/94 10:52
2	10	5/10/94 10:47	5/10/94 10:50
3	10	5/04/94 14:53	5/04/94 15:11
4	10	5/03/94 14:44	5/03/94 15:35
5	10	5/03/94 10:07	5/03/94 10:10
6	10	5/03/94 10:04	5/03/94 10:06
7	10	5/03/94 09:31	5/03/94 09:33
8	10	5/03/94 08:13	5/03/94 08:14
9	10	5/03/94 08:04	5/03/94 08:09
10	10	4/18/94 11:16	4/18/94 12:59
11	10	4/18/94 11:11	4/18/94 11:12
12	10	4/18/94 10:33	4/18/94 10:34
13	10	4/16/94 08:06	4/16/94 08:23
14	10	4/16/94 07:03	4/16/94 07:06
15	10	4/16/94 06:50	4/16/94 07:01
16	10	4/16/94 06:24	4/16/94 06:40
17	10	3/23/94 16:55	3/23/94 16:58
18	10	3/18/94 11:01	3/18/94 11:48
19	9	3/18/94 10:59	3/18/94 11:01
20	9	3/18/94 10:53	3/18/94 10:54
21	9	3/18/94 10:51	3/18/94 10:52
22	9	3/18/94 10:41	3/18/94 10:43
23	9	3/15/94 12:03	3/15/94 13:46
24	9	3/15/94 11:51	3/15/94 11:58
25	9	3/15/94 11:44	3/15/94 11:46
26	9	3/15/94 11:42	3/15/94 11:44
27	9	3/15/94 11:39	3/15/94 11:41
28	9	3/14/94 10:13	3/14/94 11:26
29	9	3/14/94 10:07	3/14/94 10:08
30	9	3/09/94 14:49	3/09/94 15:50
31	9	3/09/94 11:19	3/09/94 13:22
32	9	3/09/94 11:11	3/09/94 11:12
33	9	3/08/94 16:59	3/08/94 19:04
34	9	3/08/94 15:55	3/08/94 16:56
35	9	3/08/94 15:33	3/08/94 15:53

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***** DATALOGGER SESSION SUMMARY INFORMATION *****
****

Session Started
10:57 5/10/94

Session Completed
11:59 5/10/94

Session Duration
1:02:00

Session Interval
0:01:00

Highest Temperature
86½ 11:57

Lowest Temperature
74½ 18:18

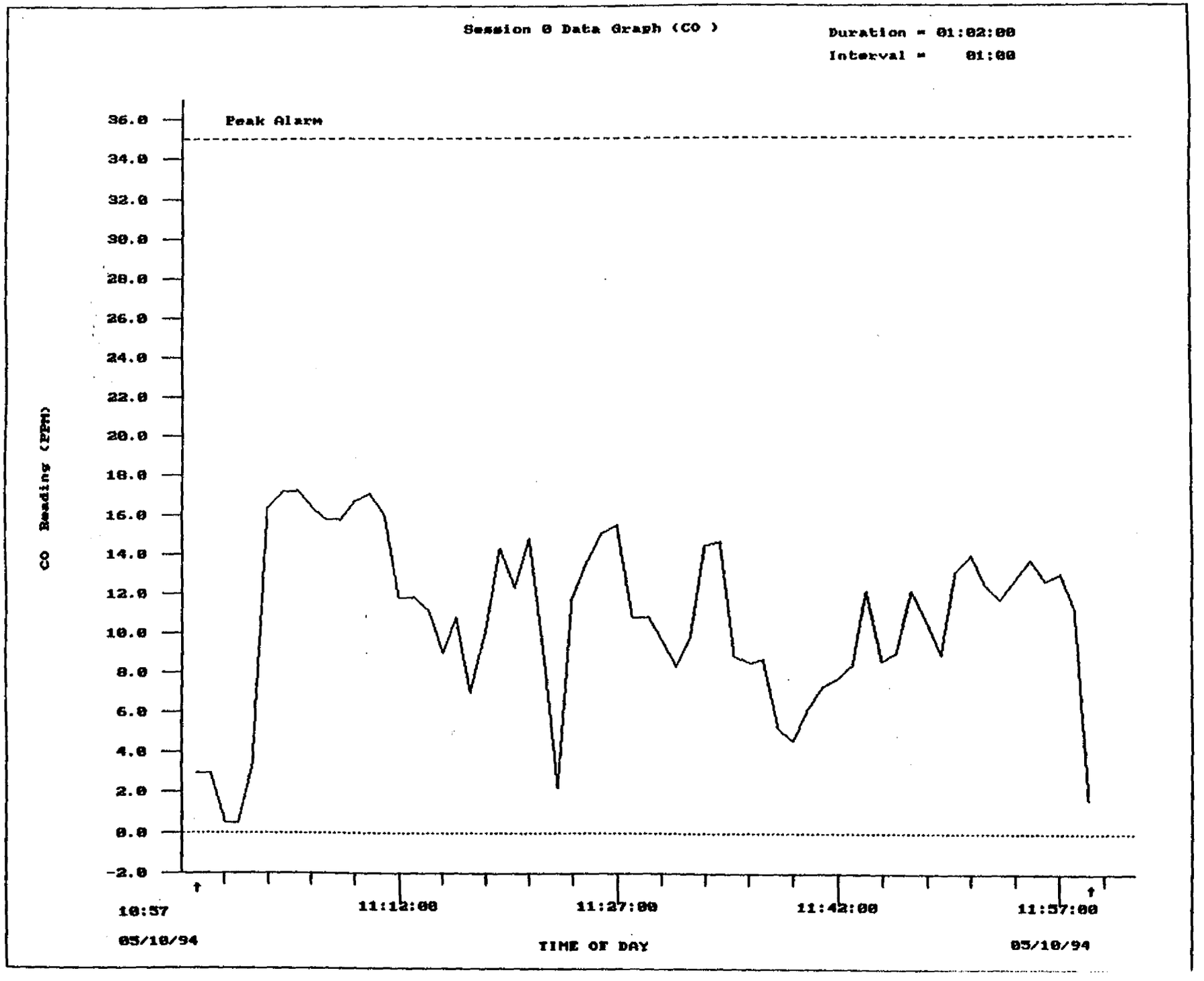
Session Location #
10

Channel	Highest	Lowest	Peak STEL	Last TWA
Oxygen	21.3 10:59	20.4 10:58	N/A	N/A
LEL	0 11:00	-1 11:17	N/A	N/A
TOX	18 11:03	0 10:57	14	1
CO	17 11:04	0 11:00	14	1

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***** DATALOGGER SESSION INFORMATION *****
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Time	Run	O2	LEL	TOX	STEL	CO	STEL	Temp.	Batt.
10:57:00	0:00:00	20.8	0	0	N/A	3	N/A	74	6.4
10:58:00	0:01:00	20.4	0	1	N/A	3	N/A	75	6.4
10:59:00	0:02:00	21.3	0	2	N/A	0	N/A	76	6.4
11:00:00	0:03:00	20.6	0	1	N/A	0	N/A	76	6.4
11:01:00	0:04:00	20.7	0	4	N/A	3	N/A	77	6.4
11:02:00	0:05:00	20.6	0	16	N/A	16	N/A	77	6.4
11:03:00	0:06:00	20.8	0	18	N/A	17	N/A	77	6.4
11:04:00	0:07:00	20.8	0	17	N/A	17	N/A	77	6.4
11:05:00	0:08:00	20.9	0	17	N/A	16	N/A	78	6.4
11:06:00	0:09:00	20.9	0	16	N/A	15	N/A	78	6.4
11:07:00	0:10:00	20.9	0	16	N/A	15	N/A	79	6.4
11:08:00	0:11:00	20.9	0	17	N/A	16	N/A	79	6.4
11:09:00	0:12:00	20.8	0	17	N/A	17	N/A	79	6.4
11:10:00	0:13:00	21.0	-1	16	N/A	16	N/A	80	6.4
11:11:00	0:14:00	20.7	-1	12	N/A	11	N/A	80	6.4
11:12:00	0:15:00	21.0	-1	12	12	11	11	81	6.4
11:13:00	0:16:00	20.7	-1	11	13	11	12	81	6.4
11:14:00	0:17:00	20.8	-1	10	13	9	13	81	6.4
11:15:00	0:18:00	21.0	-1	11	14	10	13	82	6.4
11:16:00	0:19:00	21.0	-1	7	14	7	14	81	6.4
11:17:00	0:20:00	21.0	-1	10	14	10	13	81	6.4
11:18:00	0:21:00	21.0	-1	14	13	14	13	81	6.4
11:19:00	0:22:00	20.7	-1	12	13	12	13	81	6.4
11:20:00	0:23:00	21.1	-1	14	13	14	12	81	6.4
11:21:00	0:24:00	21.1	-1	6	12	8	12	80	6.4
11:22:00	0:25:00	21.1	0	1	11	2	11	80	6.4
11:23:00	0:26:00	20.6	0	13	11	11	11	81	6.4
11:24:00	0:27:00	20.7	0	14	11	13	11	82	6.4
11:25:00	0:28:00	20.7	0	15	11	15	10	82	6.4
11:26:00	0:29:00	20.7	0	16	11	15	11	82	6.4
11:27:00	0:30:00	20.6	0	13	11	10	11	83	6.4
11:28:00	0:31:00	20.8	0	13	11	10	11	83	6.4
11:29:00	0:32:00	20.7	0	11	11	9	11	83	6.4
11:30:00	0:33:00	20.8	0	10	11	8	11	83	6.4
11:31:00	0:34:00	20.6	0	11	11	9	11	83	6.4
11:32:00	0:35:00	20.8	0	16	12	14	11	83	6.4
11:33:00	0:36:00	20.8	0	15	12	14	11	83	6.4
11:34:00	0:37:00	20.8	0	10	12	8	11	83	6.4
11:35:00	0:38:00	20.8	0	10	12	8	10	83	6.4
11:36:00	0:39:00	20.8	0	10	12	8	10	83	6.4
11:37:00	0:40:00	20.8	0	6	12	5	11	83	6.4
11:38:00	0:41:00	20.8	0	5	12	4	10	83	6.4
11:39:00	0:42:00	20.9	0	7	11	6	10	83	6.4
11:40:00	0:43:00	20.8	0	8	11	7	9	83	6.4
11:41:00	0:44:00	20.7	0	9	10	7	9	84	6.4
11:42:00	0:45:00	20.7	0	9	10	8	8	84	6.4
11:43:00	0:46:00	20.8	0	12	10	12	8	84	6.4
11:44:00	0:47:00	20.8	0	8	10	8	8	84	6.4
11:45:00	0:48:00	20.8	0	9	10	9	8	84	6.4
11:46:00	0:49:00	20.8	0	12	10	12	9	84	6.4
11:47:00	0:50:00	20.7	0	11	9	10	8	84	6.4
11:48:00	0:51:00	20.8	0	10	9	8	8	84	6.4
11:49:00	0:52:00	20.8	0	13	9	13	8	84	6.4
11:50:00	0:53:00	20.5	0	13	9	13	9	85	6.4
11:51:00	0:54:00	20.5	0	13	10	12	9	85	6.4
11:52:00	0:55:00	20.7	0	12	10	11	9	85	6.4
11:53:00	0:56:00	20.7	0	13	10	12	10	85	6.4
11:54:00	0:57:00	20.7	0	13	11	13	10	86	6.3
11:55:00	0:58:00	20.7	0	12	11	12	11	85	6.3
11:56:00	0:59:00	20.5	0	13	11	13	11	86	6.3

11:57:00	1:00:00	20.8	0	11	12	11	11	86	6.3
11:58:00	1:01:00	20.8	-1	0	11	1	11	85	6.3


Session 0 Data Graph (CO)
Duration = 01:02:00
Interval = 01:00
Peak Alarm
36.0
34.0
32.0
30.0
28.0
26.0
24.0
22.0
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
-2.0
CO Reading (PPM)
10:57
05/10/94
11:12:00
11:27:00
11:42:00
11:57:00
TIME OF DAY
05/10/94

R.I. Analytical

Specialists in Environmental Services

CERTIFICATE OF ANALYSIS

American Insulated Wire Corporation
Attn: Mr. David Cookson
36 Freeman Street
Pawtucket, RI 02862

DATE RECEIVED: 05/10/94
DATE REPORTED: 06/09/94
P.O. #:
INVOICE #: G3316

SAMPLE DESCRIPTION: Exposed air monitoring samples from 330 Turner Street, South Attleboro, MA

Subject samples, collected by RIAL personnel, have been analyzed by our laboratory with the attached results.

References: NIOSH Manual of analytical Methods, U.S. Department of Health and Human Services, 3rd., February 1984.

Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, EPA 600-4-89 017, June 1988.

If you have any questions regarding this work, or if we may be of further assistance, please contact us.

Approved by:

Michael S. Rose
Laboratory Manager

Anthony E. Perrotti
President

aiw:pjh

R.I. Analytical Laboratories, Inc.
41 Illinois Ave., Warwick, RI 02888, (401) 737-8500 · Fax: (401) 738-1970

CERTIFICATE OF ANALYSIS

American Insulated Wire Corporation
DATE RECEIVED: 05/10/94 **INVOICE #:** G3316
DATE REPORTED: 06/09/94 **P.O. #:**

Sample Location: Warehouse - Wire Testing Area

PARAMETER	SAMPLE TYPE	FLOW RATE	TOTAL FLOW	RESULTS
Total Nuisance Dust	area	2 LPM	120 liters	2.92 mg/m^3

Permissible exposure limit 15 mg/m^3

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Sample Location: Warehouse - Wire Testing Area

PARAMETER	SAMPLE TYPE	FLOW RATE	TOTAL FLOW	RESULTS
Ozone	area	1 LPM	45 liters	<0.13 mg/m^3

Permissible exposure limit 0.20 mg/m^3

The values reported above are for area type samples. The permissible exposure limits indicated are based on a time weighted average (TWA). To determine the TWA levels personnel monitoring pumps must be worn by designated employees over the entire work day. Therefore, the levels reported for area type samples should only be used as a general assessment of exposure conditions.

CERTIFICATE OF ANALYSIS

American Insulated Wire Corporation
DATE RECEIVED: 05/10/94 **INVOICE #:** G3316
DATE REPORTED: 06/09/94 **P.O. #:**

Sample Location: Warehouse - Wire Testing Area

SAMPLE TYPE	FLOW RATE	TOTAL FLOW
Area	0.018 lpm	6.70 liters

PARAMETER	RESULTS	PERMISSIBLE EXPOSURE LIMIT (TWA)
Volatile Organic Compounds: (Method #8240)		
1,1,1-trichloroethane	0.022 mg/m^3	1,910 mg/m^3
carbon tetrachloride	0.031 "	31 "
trichloroethylene	0.114 "	269 "
tetrachloroethylene	0.094 "	339 "
toluene	0.078 "	377 "
ethylbenzene	0.043 "	434 "
xylenes	0.127 "	434 "
Detection Limit:	0.007 mg/m^3	

The values reported above are for area type samples. The permissible exposure limits indicated are based on a time weighted average (TWA). To determine the TWA levels personnel monitoring pumps must be worn by designated employees over the entire work day. Therefore, the levels reported for area type samples should only be used as a general assessment of exposure conditions.

Note: A list of other volatile organic compounds tested for is attached.

R.I. ANALYTICAL LABORATORIES, INC.

CERTIFICATE OF ANALYSIS

American Insulated Wire Corporation
DATE RECEIVED: 05/10/94 **INVOICE #:** G3316
DATE REPORTED: 06/09/94 **P.O. #:**

Volatile Organic Compounds
Method #8240

methylene chloride
1,1-dichloroethylene
1,1-dichloroethane
trans-1,2-dichloroethylene
chloroform
1,2-dichloroethane
1,1,1-trichloroethane
carbon tetrachloride
bromodichloromethane
1,2-dichloropropane
cis-1,3-dichloropropylene
trichloroethylene
trans-1,3-dichloropropylene
1,1,2-trichloroethane
dibromochloromethane
bromoform
tetrachloroethylene
1,1,2,2-tetrachloroethane
chlorobenzene
2-chloroethyl vinyl ether
dichlorobenzenes
benzene
toluene
ethylbenzene
xylenes

R.I. ANALYTICAL LABORATORIES, INC.