

M E M O R A N D U M

TO: Nitin Dave
Safety and Health Coordinator

FROM: Alexander Potiyevsky, Senior Safety and Health Specialist
Citywide Office of Occupational Safety and Health (COSH)

DATE: July 3, 2001

SUBJECT: Indoor Air Quality Evaluation
Bureau of Appraisals
Division of Real Estate Services (DRES)
13th Floor, Room 1300
1 Centre Street, NY

General Information

On February 14, 2001 in response to your request, you and I conducted an Indoor Air Quality (IAQ) survey in the Division of Real Estate Services offices located in Room 1300 Centre Street. Air sampling for airborne dust and fiberglass was conducted on May 3 and May 9, 2001.

The request was prompted by the concerns of two (2) employees regarding respiratory problems which they attributed to the office environment. During the survey, we met with several employees and the building engineer.

The survey consisted of a visual inspection of the office area, review of the heating, ventilation and air-conditioning system (HVAC), interviews with the employees, and air monitoring for various environmental parameters, as well as for airborne dust and fiberglass .

In summary, all environmental parameters were within recommended limits. Levels of total dust and fiberglass were well below OSHA permissible exposure limits (see definitions for acronyms at the end of the memo). These findings were verbally disclosed to you and the employees prior to issuing this report.

Ventilation, Air Monitoring and Thermal comfort

The area is served by an air conditioning/ventilation (AC) unit located on the same floor. The mechanical room was inspected on February 14, 2001. It was found to be in good condition with the air filters in good shape. The type of filters used were of the pleated type medium efficiency filters as recommended by EPA/ NIOSH. The unit was in operation, and the outside air dampers were open. The cooling coils were clean, no rust under coils was observed. Ventilation to the offices is provided through ducts and ceiling diffusers. Approximately first 30 feet of duct after the AC unit is lined with fiberglass insulation as per NYC Building Code. It is done in order to reduce the transmission of noise from AC unit through the duct system. Thermal insulation consist of fiberglass covered with acrylic coating to prevent insulation erosion. We visually observed the condition of the internal duct insulation by opening the duct access door. Insulation was found to be in a good shape. The subsequent office and file room air sampling for fiberglass revealed that levels of fiberglass were well below NIOSH REL (see attached Technical report). Total dust air sampling was done in the office area and in the file room. Total dust levels were well below OSHA PEL. The sampling media for dust and fiberglass was analyzed by Free- Col Laboratories, which accredited by American Industrial Hygiene Association.

The carbon monoxide levels were in the range of 0 to 1 parts per million (ppm), which is well below both the OSHA PEL and NAAQS of 50 ppm and 9 ppm accordingly. Formaldehyde was not detected. Carbon dioxide (CO₂) levels were in the range of 525-550 parts per million, below the ASHRAE recommended maximum of 1000 ppm (ASHRAE Standard 62-1989 "Ventilation for Acceptable Indoor Air Quality".) CO₂ levels below 1000 ppm indicating adequate ventilation rate. Since carbon dioxide is given off by humans when exhaling, its level in the air provides an indication on how effective the ventilation system is diluting and removing contaminants from the air. All air vents were in operation. Air velocities measured were in range of 150 - 300 feet per minute.

The temperature on the day of the survey was in the range of 74-75⁰ F and 23-24% respectively, within the ASHRAE guidelines. Relative humidity was 23-24%, slightly below ASHRAE guidelines of 30%. However, employees stated that the office thermometer indicated that on certain days in the winter time the temperature varied between 85-90⁰ F and the relative humidity was down to 10-15%. If in the winter time temperatures are maintained at the lower end of the comfort range (70-73⁰ F), the relative humidity will not fall much below 30%. RH levels below 20% are associated with increased discomfort, drying of mucous membranes, eye irritation and the frequency of colds.

It was observed that the temperature sensor was not functioning properly. The sensor failed to shut the perimeter radiators off when the room temperature reached above 73⁰ F. According to your information, the sensor was later fixed by building maintenance. It should be noted that part of the office area is faced South, so on a sunny day, when the temperature sensor failed, the temperature may go up to 90⁰ F.

Recommendations:

COSH recommends the following to improve the safety and health aspects of the work environment:

- Maintain space air temperature at the lower end of the comfort range (70-73⁰ F) during heating periods.
- If thermal discomfort is experienced, then the Building Engineer should be notified of the problem as soon as possible (ext. 2062, Boiler Room).

A technical report and Appendix (General information on Indoor Air Quality) is attached. Please contact me at (212) 669-8852 if you have any questions.

c: George Sultana
Sylvia Pryce

Legend

OSHA:	Occupational Safety and Health Administration
NIOSH:	National Institute of Occupational Safety and Health
PEL:	Permissible Exposure Limit
REL:	Recommended Exposure Limit
ASHRAE:	American Society of Heating, Refrigerating and Air-Conditioning Engineers
HVAC:	Heating, Ventilating and Air Conditioning
NAAQS :	National Ambient Air Quality Standards
EPA:	Environmental Protection Agency

DCAS-DRES
FY01--031

TECHNICAL REPORT

Indoor Air Quality Survey
 Bureau of Appraisals
 Division of Real Estate Services
 1 Centre Street, 13th Fl South

Table 1

February 14, 2001

Location	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)	Temperature (°F)	Relative Humidity (%)
Room 1300	525-550	0-1	74-75	23-24

ppm= parts per million

°F = Degrees Fahrenheit

Table 1
 May 3/May 9, 2001

	File room	Office area	
Total Dust	< 0.02 mg/m ³	< 0.02 mg/m ³	NIOSH method 0500
Fiberglass	< 0.008 Fibers/cc	< 0.02 Fibers/cc	NIOSH method 7400

OSHA PEL for Total dust = 15 mg/m³

NIOSH REL for Fiberglass = 3 fibers/cc

mg/m³ milligram per cubic meter

cc cubic centimeter

Air samples were analyzed by Free-Col Laboratories (see attached Lab report).

ASHRAE Recommended Comfort Guidelines:

<i>Relative Humidity</i>	<i>Winter Temp</i>	<i>Summer Temp</i>
30%	68.5 ⁰ F -76.0 ⁰ F	74.0 ⁰ F- 80.0 ⁰ F
40%	68.5 ⁰ F -75.5 ⁰ F	73.5 ⁰ F- 79.5 ⁰ F
50%	68.5 ⁰ F -74.5 ⁰ F	73.0 ⁰ F- 79.0 ⁰ F
60%	68.0 ⁰ F -74.0 ⁰ F	72.5 ⁰ F- 78.0 ⁰ F

Carbon Dioxide (CO₂) = 1000 ppm (upper limit)

OSHA Permissible Exposure Limits:

Carbon Monoxide (CO): 50 ppm

Methods of Monitoring

Temperature -	Temperature was measured using a TSI thermoanemometer
Relative humidity (RH)	RH was measured using a Cole Parmer Psychrometer
Carbon Dioxide(CO ₂)	Monitoring for (CO ₂) was conducted with a Riken Keiki brand analyzer
Carbon Monoxide (CO)	Monitoring for CO was performed with a Gas Tech Model-GX-91