



INDOOR AIR QUALITY INVESTIGATION
[Client Name]
[City, State]

Prepared for:

[Client]
[Site Name, Address]

Prepared by:

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[Date]

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INDOOR AIR QUALITY INVESTIGATION

[Client Name; Site]

1.0 EXECUTIVE SUMMARY

[Client] requested that Parks Environmental Consulting, Inc. (Parks) perform a preliminary indoor air quality investigation at the [Site name, address]. Mr. Tim Marxhausen of Parks performed the indoor air quality investigation on [date]. The investigation was requested in response to employee concerns about indoor air quality at the site.

Based on the occupant's complaint information (headaches, sinus congestion, runny nose, and increased allergies) and at the request of [Client], Parks' decided to first perform a cursory inspection for possible causes. Field measurements of general indoor air quality parameters such as humidity, temperature, carbon dioxide (CO₂) and carbon monoxide (CO) were made during Parks' site visit. Wall moisture levels were checked by use of a hand-held moisture meter. Field observations were made for possible causes of the adverse health effects.

Our measurements indicated generally acceptable indoor air levels, except for CO₂, in most areas of the facility. Temperatures in the building averaged 70-75 degrees Fahrenheit. Humidity levels throughout the building averaged between 15 and 30 percent.

Carbon Dioxide readings ranged from 850 to 2,200 parts per million (ppm). Levels above 1,000 ppm are considered above average and indicative of a lack of outside make-up air to the building, or lack of air changes in an area. The elevated CO₂ levels were measured throughout the facility except in the "corporate" office area and loading dock. CO₂ levels were highest throughout the upper level (1,900 to 2,200 ppm).

Carbon Monoxide readings were all low at 1-2 ppm. Moisture readings on interior walls were acceptable, with no elevated moisture content noted at the points checked.

No evidence of chemical spills or mishandling was observed. No water damage or pest infestation was observed. No visible mold was observed in areas visited by Parks during our tour and review of the facility.

In summary, our limited indoor air quality investigation revealed elevated CO₂ levels throughout the facility except the corporate offices and loading dock area. The levels detected could contribute to occupant's feeling of malaise or headache. No other causes or possible reasons for the reported respiratory problems and adverse health affects were noted during Parks' limited site review.

2.0 SITE INVESTIGATION PROCEDURES

Mr. Tim Marxhausen of Parks visited the site the afternoon of [date]. [Client representative] provided building access and gave Parks a tour of the facility. Several activities were performed during the course of the investigation, including staff interviews, HVAC equipment review, cursory inspection of accessible interior spaces, and measurement of general indoor air comfort parameters: temperature, humidity, carbon dioxide and carbon monoxide.

On [Date], an indoor air quality measuring instrument was set-up in a data-log mode in the Parts Bin area to record IAQ parameters over a 24-hour period. (Data provided in Appendix A)

3.0 Site Measurements and Testing

3.1 General Indoor Air Quality Measurements

Carbon monoxide, carbon dioxide, temperature and relative humidity were measured throughout the facility. A hand-held direct reading instrument was used. Temperature and relative humidity generally met comfort standards set by the American Society of Heating and Refrigeration and Air Conditioning Engineers (ASHRAE) Standard 62-2001. Relative Humidity was somewhat low (all readings 15-30%), but the occupants did not report symptoms usually related to dry air such as dry skin, eyes, nasal and throat passages.

ASHRAE has set 1000 ppm as a recommended upper limit for Carbon Dioxide levels within occupied, ventilated spaces. Readings in the 1,000 to 1,400ppm range were measured throughout most of the main level (except for the corporate offices and loading dock which were below 900 ppm); readings of 1,900 to 2,300 ppm were measured throughout the upper level.

On [date], the direct reading instrument was set up at 4:30pm in the Parts Crib area of main level to record the indoor air quality measurements over a 24-hour period. Results of the data gathering are provided in Appendix A. In summary, CO₂ readings ranged from a high of 1,011ppm at 4:30pm to a low of 634 ppm at 6:15 AM and then rose to 938 ppm by 2:00pm on March 23rd.

3.2 Moisture Meter Readings

Parks checked various interior walls, particularly building perimeter walls in select offices as directed by [client contact]. Walls in common areas were also randomly checked. Readings were taken in four offices (approximately 10 readings per office). A hand-held Tramex brand moisture encounter meter was used. This device provides an indication of moisture levels in drywall, plaster and wood up to a depth of about 3/8 inch.

No elevated moisture readings were noted.

4.0 CONCLUSIONS AND FINAL REMARKS

Parks conducted a limited Indoor Air Quality screening at the [Site] on [date]. Moisture readings on select interior walls were fine with no moisture noted.

Indoor air quality comfort measurements for temperature, humidity, and carbon monoxide were taken. Readings for these parameters were acceptable, except as noted below.

Carbon dioxide readings throughout most of the facility were high compared to typical indoor office spaces and industry recommended levels. The CO₂ readings above 1,000 ppm on most of the main level, and in the 2,000 ppm range on the upper level, could contribute to occupant's feelings of malaise, headache, and lethargy. Readings in the Parts Crib area on March 22-23 were acceptable, although it appears CO₂ may rise above 1,000 ppm in the late afternoons based on the March 17 and 22 readings.

The Occupational Safety and Health Administration (OSHA) worker exposure limit for CO₂ is 5,000 ppm. The ASHREA recommended CO₂ level for occupied office settings is a maximum of 1,000 ppm. While the CO₂ levels measured during Park's investigation were not near the OSHA limit (and probably not a serious threat to occupant's health), ASHRAE considers CO₂ levels above 1,000ppm indicative of unacceptable indoor air. It is recommended that the ventilation

system be checked and adjusted to provide more fresh air to the main and upper levels. ASHRAE defines good indoor air as air with CO₂ levels at 600-800 ppm, and 20-35 cubic feet of outdoor air per minute per person. (CO₂ levels >1,000 ppm indicate outdoor air per minute per person levels <15 cfm)

5.0 LIMITATIONS

Observations, data, findings and conclusions stated in this report reflect site conditions at the time of Parks' investigation. These conditions could change as a result of any number of factors (e.g. future moisture intrusion; presence of substances not detectable by our limited review and measurements; changes in building condition due to weather, construction activity, etc.). Should further research, testing, or investigation be conducted at the site, the additional information and data should be reviewed by Parks and the conclusions presented herein may be modified. This report is prepared for the sole use of our client.

Parks Environmental Consulting, Inc.

Tim Marxhausen
Industrial Hygienist
Sr. Project Manager

DATE

Appendix A

Indoor Air Quality Parameter Measurements

Graph and Data Table

Parts Bin Indoor Air Measurements

● CO₂

▲ CO

■ Temp

▼ rh

