INDOOR AIR QUALITY SURVEY
OCEAN TOWNSHIP
ELEMENTARY SCHOOL

TOWNSHIP OF OCEAN BOARD OF EDUCATION

PREPARED FOR:
Township of Ocean Board of Education
163 Monmouth Blvd
Oakhurst, New Jersey 07755

PREPARED BY:
PARS Environmental, Inc.
500 Horizon Drive, Suite 540
Robbinsville, NJ 08691

PARS PROJECT NO. 789-19A

PARS ENVIRONMENTAL
a Montrose Environmental Group company

August 2019

TABLE OF CONTENTS

1.0 INTRODUCTION

PARS Environmental, Inc. (PARS) was retained by the Township of Ocean Board of Education (District) to conduct an indoor air quality (IAQ) survey of the Ocean Township Elementary School (OTES) after sustaining recent fire damage. The IAQ survey was conducted on August 27, 2019.

Ocean Township Elementary School recently had a fire in the 100-Wing. A floor fan in Room 110 caught fire and spread to the adjacent door, causing extensive smoke damage in the 100-Wing. After extinguishing the fire, the District engaged a fire damage remediation company, Insurance Restoration Specialists (IRS), to remove all smoke damaged materials and clean all damaged permanent fixtures, such as windows, ceiling tile grids, walls, etc. The IAQ survey included investigations in the 100-Wing, and included a visual inspection for additional damage.

Testing was conducted to collect real-time measurement of temperature, humidity, carbon dioxide, and carbon monoxide.

1.1 PROJECT OBJECTIVE

The objective of this project was to survey the overall Indoor Air Quality (IAQ) within OTES and make recommendations based on the survey findings and observations.

2.0 PROJECT METHODOLOGY

2.1 EQUIPMENT

A Q-Trak™ Plus Indoor Air Quality (IAQ) monitor, Model 7575-X, Serial Number 7575X1933002, was utilized to measure several IAQ parameters, including carbon monoxide (CO), carbon dioxide (CO_2), relative humidity (RH), and temperature (°F). Equipment was calibrated by the equipment provider.

3.0 INDOOR AIR QUALITY STANDARDS

Recommended levels established for office settings differ from regulatory levels set for industrial or manufacturing environments. Recommended IAQ contaminant levels for office areas are generally lower because they are based on the individual susceptibility of building occupants and comfort in addition to health.

3.1 INDOOR AIR QUALITY STANDARDS

New Jersey Department of Labor (NJDOL)

The NJDOL has established IAQ regulations through the Public Employees Occupational Safety and Health (PEOSH) Act to protect public employees across the state and improve workplace environments.

American Industrial Hygiene Association (AIHA)

The AIHA has published "The IAQ Investigator's Guide" which references guidelines for volatile organic compounds (VOCs), relative humidity, formaldehyde, and various other materials that may contribute to indoor air quality concerns.

United States Environmental Protection Agency (USEPA)

The USEPA has published the "Mold Remediation in Schools and Commercial Buildings" that provides guidelines for the remediation and cleanup of mold and moisture problems.

3.2 PEOSH INDOOR AIR QUALITY STANDARDS

Temperature

The PEOSH IAQ Standard requires a temperature range of 68°F to 79°F for office environments. The employer must verify that the heating, ventilation, and air-conditioning (HVAC) system is in proper operating order should temperatures fall outside this range. If the system is not found to be in proper operating order, the employer must take the necessary steps to remedy the situation as described by the standard.

Relative Humidity

The PEOSH IAQ standard does not establish an acceptable range for indoor relative humidity; however, it does refer to the AIHA recommended relative humidity range of 30% to 60%.

Carbon Dioxide

Carbon dioxide (CO_2) monitoring is a useful screening technique for determining if outside air supply is sufficient for maintaining acceptable indoor air quality. CO_2 is a naturally occurring constituent of the atmosphere and is also a product of human respiration. During periods of occupancy, CO_2 levels in a building will rise above the normal background level.

The PEOSH IAQ Standard allows a maximum CO_2 threshold of 1,000 parts per million (PPM) for office environments. The employer must verify that the HVAC system is in proper operating order should CO_2 concentrations exceed this threshold. If the system is not found to be in proper operating order, the employer must take the necessary steps to remedy the situation as described by the standard.

Carbon Monoxide

Carbon monoxide (CO) usually originates from outside the building from such sources as automotive traffic and loading docks. Internal sources could include cigarette smoke, petroleum-fired boilers, and petroleum-fired furnaces. Assuming internal sources are limited, monitoring for CO is a useful measure for determining if outside air intakes are being impacted by external sources.

The PEOSH IAQ Standard states that when general ventilation cannot control indoor air contaminants below the Permissible Exposure Limit (PEL), the employer must implement other control measures. The United States Occupational Safety and Health Administration (OSHA) sets enforceable PELs to protect workers against the health effects of exposure to hazardous substances. PELs are regulatory limits on the amount or concentration of a substance in the air. The current PEL for CO is 50 PPM for an eight-hour time weighted average (TWA).

Mold/Fungi

Mold/fungal growth is most likely found in areas that have sufficient moisture, temperature, and nutritive sources to promote proliferation. Nutritive sources within buildings include drywall paper backing, cellulose ceiling tiles, wallpaper, wood wall framing and trim, pipe insulation wrappings, and similar materials.

4.0 INDOOR AIR QUALITY SURVEY RESULTS

Direct reading measurements were taken at the identified locations within the building included in the table below.

Location	Temp. (°F)	Rel. Humidity (%)	CO^2 (ppm)	CO (ppm)
Ocean Twp. Elementary School (Dow Ave)				
Nurse's Office	72.0	51.6	358	0.0
Room 109+	71.8	58.0	323	0.0
Room 108+	72.2	61.8*	386	0.0
Room 110+	71.7	57.2	332	0.0
Room 113+	71.3	56.5	405	0.0
Room 116+	71.1	58.7	340	0.0
Room 216	71.8	58.2	340	0.0
Room 210	72.2	57.8	355	0.0
Room 208	72.2	57.2	331	0.0
Room 201	73.1	56.8	344	0.0
Gym	72.4	57.4	319	0.0
K-2 Room	70.8	54.6	363	0.0
Conference Room	72.9	57.6	333	0.0
Room 100	72.7	54.7	351	0.0

* Areas noted with an asterisk indicate readings vary from the recommended guideline.
+ Rooms were previously damaged by smoke damage from a fire in Room 110. No damage was observed 8/27/19.

4.1 VISUAL OBSERVATIONS

No mold growth was observed at the time of the survey. No smoke damaged building materials or odors were observed in Ocean Township Elementary School as a result of the recent fire.

4.2 SAMPLING RESULTS

Survey results indicate generally acceptable indoor air quality conditions. Certain locations within the school facilities exceed IAQ limits of the recommended guidelines for relative humidity, but only slightly above the recommendation of 60% relative humidity.

All rooms tested throughout OTES were consistent, with no apparent lingering IAQ concerns as a result of the fire in the 100-Wing when compared to air in other areas of the building.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSION

Visual observation of OTES in areas that were the subject of the IAQ survey did not indicate the presence of fungal growth on environmental surfaces. No additional smoke damage was identified in OTES.

Direct reading air measurements for CO_2 fall within NJ PEOSH acceptable limits. No detectable concentrations of CO were detected in any school facility during the time of the survey. Indoor temperatures were well within recommended comfort ranges. Relative humidity slightly exceeded recommended ranges in some rooms, but only by a few percentage points.

5.2 RECOMMENDATIONS

No further testing is recommended at this time. PARS recommends all filters be replaced according to the manufacturer's recommendations and the District's IAQ plan. All vents and registers should also be routinely inspected and cleaned to prevent dust and dirt accumulation.

These results represent the conditions and concentrations present at the time of the survey.

-o0o-

Respectfully Submitted,

PARS ENVIRONMENTAL, INC.

Julian Fernandez-Obregon
Project Industrial Hygienist

6.0 LIMITATIONS

PARS provided these services consistent with the level and skill ordinarily exercised by members of the profession currently practicing under similar conditions. Rooms tested were randomly selected by District personnel, and biased toward smoke damaged areas in OTES. This statement is in lieu of other statements either expressed or implied. This report is intended for the sole use of the Township of Ocean Board of Education. Additionally, the passage of time may result in a change in the environmental characteristics at OTES. This report does not warrant against future operations or conditions that could affect the recommendations made. The results, findings, conclusions, and recommendations expressed in this report are based only on conditions that were observed during the PARS survey.