



PARS
Environmental
Inc.

MICROBIAL, RADON & INDOOR AIR QUALITY ASSESSMENT

**Deal Elementary School
201 Roseld Avenue
Deal, New Jersey**

PREPARED FOR:

**Ms. Maria-Pia Lordi, MBA, RSBA, QPA, CEFM
Business Administrator
Deal Board of Education
201 Roseld Avenue
Deal, New Jersey 07723**

PREPARED BY

**PARS Environmental, Inc.
500 Horizon Drive Suite 540
Robbinsville, NJ 08691
(609) 890-7277**

**PARS Project No.: 863-13
AUGUST 2017**



**DEAL ELEMENTARY SCHOOL
MICROBIAL, RADON, AND
INDOOR AIR QUALITY ASSESSMENT
AUGUST 2017**

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1.0 INTRODUCTION AND OBJECTIVES

On July 14 and 18, 2017 PARS Environmental, Inc. (PARS) conducted a Microbial (mold), Radon, and Indoor Air Quality (IAQ) assessment for the Deal Board of Education at the Deal Elementary School located at 201 Roseld Avenue, Deal, New Jersey.

Fungi (mold), pollen, or airborne particulates are found in virtually every environment, indoors and outdoors. The amount of mold outdoors varies in types and concentrations. There are currently no standards for indoor levels. However, the levels of fungi and pollen should be lower indoors than outdoors. Furthermore, the species of fungi and pollen found indoors should be similar to those outdoors.

Radon is a naturally occurring radioactive gas, which has always been a part of our environment. It's a natural decay product of uranium and is found in soil everywhere in varying concentrations. The New Jersey Department of Environmental Protection (NJDEP) and the United States Environmental Protection Agency (USEPA) have found that radon can be an unwelcome part of our indoor environment. Radon gas can accumulate in enclosed places, but its presence, even in high concentrations, cannot be detected by human senses because the gas is invisible and has no odor. Long term or chronic exposure to radon has been linked to lung cancer. The greater the concentration and the longer a person is exposed, the greater the risk. However, because of its physical characteristics, the only way to detect the presence of radon gas and measure the concentration in air is via testing. So people wanting to limit their exposure must first conduct a test to determine what their exposure levels are.¹

Good indoor air quality includes control of airborne pollutants, the introduction and distribution of adequate outdoor air, and maintenance of acceptable temperature and relative humidity. Good indoor air quality contributes to a favorable learning environment for students, performance of teachers and staff, and a sense of comfort, health, and well-being.

2.0 SCOPE OF WORK AND METHODOLOGY

2.1 SCOPE OF WORK

The scope of work included the following tasks:

1. A visual assessment of rooms, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 11A, 12/Guidance room, 13, 14, 15, 16, Nurse's room, Cafeteria, Kindergarten, Main hallway, Kitchen, and Big Gymnasium as directed by the Deal Elementary School representative.
2. Collection of indoor air samples from each locations, and two ambient air samples outside the building.

¹ <http://njradon.org/radoinfo.htm>



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3. The measurement of comfort parameters (carbon dioxide, carbon monoxide, temperature, and relative humidity) in classrooms 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 11A, 12/Guidance room, 13, 14, 15, 16, Nurse's room, Cafeteria, Kindergarten, Main hallway, Kitchen, and Big Gymnasium.
4. Twenty one (21) Radon canisters were deployed for a minimum of 48 hours in classrooms throughout the building to evaluate the potential for radon gas to be present in the building.

2.2 METHODOLOGY

2.2.1 MEASUREMENT OF IAQ COMFORT PARAMETERS

The Q-Trak™ Plus IAQ monitor was utilized to measure several IAQ parameters, including carbon monoxide (CO), carbon dioxide (CO₂), relative humidity (RH), and temperature (°F). Equipment was calibrated prior to use by the equipment provider.

2.2.2 COLLECTION OF MICROBIAL AIR SAMPLES

The air samples were collected utilizing Air-O-Cell sampling cassettes, which are designed for collection and analysis of a wide range of airborne aerosols, including fungal spores, pollen, and insect parts, skin cell fragments, fibers, and inorganic particulates. The cassette is attached to a sampling pump which draws air through the cassette media. Air enters the cassette, the particles become impacted on the sampling substrate, and the air leaves through the exit orifice.

The recommended flow rate for sampling for the Air-O-Cell sampling cassettes is 15 liters per minute (lpm). The pumps were run for 10 minutes. The volume of air collected in each sample cassette was 150 liters.

A BIO-Pump Plus Model No. ZBP-200, Serial No. 2118 was used to collect the air samples. The pump was calibrated via an Air-O-Cell flow meter prior to use.

2.2.3 LABORATORY ANALYSES

EMSL Analytical, Inc. (EMSL) located in Cinnaminson, New Jersey performed the analyses of the microbial air samples. EMSL is an American Industrial Hygiene Association (AIHA) environmental microbiology accredited laboratory (AIHA Certification #100194).

The air samples were analyzed for the presence of fungal spores and particulates by optical microscopy (EMSL Method 05-TP-003).



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2.2.4 RADON TESTING

Twenty one (21) radon canisters were placed in different school rooms for a minimum of 48 hours by Mark Tobias, a NJ Certified Radon Measurement Technician, of Tobias Radon Testing (MET10670). Canisters were initially deployed on July 15, 2018 and were retrieved on July 26, 2018 for measurement. All the samples were delivered to Radiation Data located in Skillman, New Jersey for analysis. Radiation Data is a NJDEP certified Radon Analytical Laboratory (License #18017) and NJDEP Radon Measurement Business (License MEB 90016 NRSB ARL 9002).

3.0 RESULTS

3.1 VISUAL ASSESSMENT

No visible mold growth, water infiltration or water damage to building materials were observed in rooms nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 11A, 12/Guidance room, 13, 14, 15, 16, Nurse's room, Cafeteria, Kitchen, Main hallway, Kindergarten and Big Gymnasium.

3.2 IAQ COMFORT PARAMETERS

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 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. Similarly, the USEPA has published an *Indoor Air Quality Tools for Schools* Coordinator's Guide (http://www2.epa.gov/sites/production/files/2014-1/documents/coordinators_guide.pdf) and an *Indoor Air Quality Tools for Schools* Reference Guide (http://www2.epa.gov/sites/production/files/2014-08/documents/reference_guide.pdf) offer



RADIATION DATA
P.O. BOX 150
SKILLMAN, NJ 08558
(609) 466-4300
FAX (609) 466-4302

NJDEP Radon Laboratory License 11912
NJDEP Radon Measurement Business License MEB 90016

Radon Test Result: Deal Elementary School
201 Roseld Ave.
Deal, NJ 07723

Test Dates: 07/14/17-07/17/17

Test ID/N#	Location	Radon(pCi/L)
10849	Gym/Auditorium/Café	0.1
10850	K	0.0
10851	A	0.1
10852	1	0.2
10853	2	0.1
10854	3	0.3
10855	4	0.0
10856	5	0.1
10857	6	0.0
10858	7	0.0
10861	8	0.1
10862	9	0.4
10863	10	0.1
10864	11	0.1
10865	11A	0.3
10866	13	0.3
10867	14	0.1
10868	15	0.0
10869	16	0.0
10870	(0=Basement) Gym	0.1
10871	(1=First Floor) (2=Higher) Gym	0.4

MES10128

MES13199

J. Keith Balcker

K. Balcker-McKee

This notice is provided to you by an organization or individual certified by NJDEP to perform radon gas or radon progeny testing measurements. N.J.S.A. 26:2D-73 requires that no certified person disclose to anyone except the DEP or the Dept. of Health the address or owners of a nonpublic building that the person has tested or treated for the presence of radon gas or radon progeny, unless the owner of the building waives in writing this right of confidentiality. In the case of a prospective sale of a building that has been tested for radon gas or progeny, the seller shall provide the buyer, at the time the contract of sale is entered into, with a copy of the results of that test and evidence of any subsequent mitigation or treatment. Any prospective buyer who contracts for the testing shall have the right to receive the results of that testing. Any questions, comments or complaints regarding the persons performing these measurements, or related mitigation, or safeguarding services, should be directed to the NJDEP, Attn: Radon Section, Bureau of Environmental Radiation, at 1-800-648-0394.

LIMITATION OF LIABILITY: While we at Radiation Data, and all of our licensed professional technicians, make every effort to maintain quality control (including duplicate canister tests, blanks, and "spiked" detectors, we make no warranty of any kind, either express or implied, for the consequences of false test results. Before any remediation action is taken, it is important that follow-up tests be conducted in accordance with USEPA protocols and NJDEP regulations. It is well known that radon concentrations fluctuate greatly under changing weather conditions. Furthermore, radon tests cannot be CBRTIFIED, since there is no chain of custody of the test kit, and the "closed-house" conditions cannot be monitored continuously.