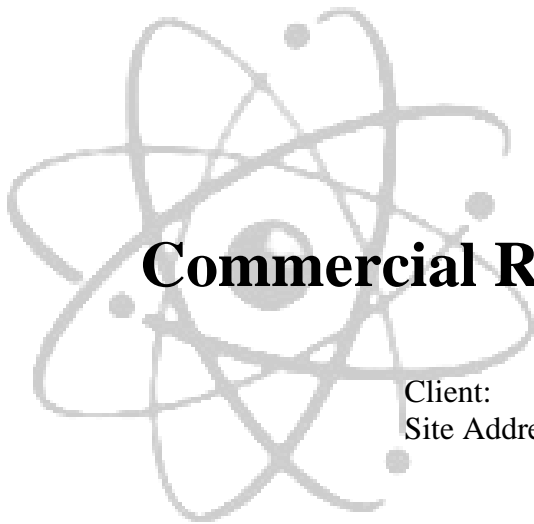


***Radon Detection Specialists, Inc.***

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## **Commercial Radon Survey Report**

Client: Community Consolidated School District 181  
Site Address: Walker School  
120 S Walker  
Clarendon Hills, IL 60514  
Survey Date: May 1, 2012 to May 4, 2012

### **Follow-Up Test**

RDS-R-002  
Prepared by: Kirsten Schmidt  
IL Professional Radon License RNI2006204  
Licensed for Residential and Commercial Radon Testing

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Client: C.C.S.D. 181  
Site Address: Walker School, 120 S Walker  
Clarendon Hills, IL  
Survey Date: 5/1/12 to 5/4/12

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## Basics of Radon and Radon Health Impacts

Radon is recognized by the United States Environmental Protection Agency (USEPA) as well as the scientific and medical communities as a Class A carcinogen, accounting for 15,000 – 22,000 lung cancer deaths annually. Exposure to radon gas is the leading cause of lung cancer among non-smokers.

Radon is a cancer-causing, naturally occurring, radioactive gas which comes from our soil. It can't be seen, smelled or tasted. The only way to know if the level of radon gas in your building exceeds the recommended action level of 4.0 pCi/L is to test. The Department of Nuclear Safety in Illinois requires those testing for radon in commercial buildings, schools and multi-family housing communities, as well as individual residences, to be licensed.

The amount of radon in the soil depends on soil chemistry, which naturally varies. Radon levels in the soil can range from a few hundred to several thousands of pCi/L (pico Curies per liter of air). The amount of radon that escapes from the soil and enters the building depends on the weather, soil porosity, soil moisture, and the suction within the building.

### **Radon is the leading cause of lung cancer among non-smokers.**

- There is no safe level of radon exposure. Any exposure causes some risk of developing cancer. In two 1999 reports, the National Academy of Sciences (NAS) concluded after an exhaustive review that radon is the second leading cause of lung cancer. Only cigarette smoking poses a greater risk. The NAS estimates that 15,000 to 22,000 Americans die every year from radon-related lung cancer. That's 10% of all lung cancer deaths annually.
- The alpha radiation from radon and its decay products cause damage to the sensitive lung tissue. Most of the radiation dose is not actually from radon itself, but rather from radon's chain of short-lived decay products that are inhaled and lodge in the airways of the lungs. These radionuclides decay quickly, producing other radionuclides that continue damaging the lung tissue. Those particles that are retained long enough release radiation and damage the surrounding lung tissue. It is this damage that can lead to lung cancer.

### **What other health risks are related to radon exposure?**

- No other respiratory ailments are linked to radon exposure
- There are preliminary studies that are looking at the link between radon exposure and the development of Parkinson's and Alzheimer's disease. These are early studies. For more information on this issue, please visit our website and read the press release.



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## Scope of Work Performed:

At the recommendation of this testing professional, follow-up radon testing was performed in Room 100 of Walker School, located at 120 S Walker, Clarendon Hills, Illinois. This scope of work included a 3 day (short-term) radon test to confirm previously found elevated levels during the initial round of testing from April 25, 2012 to April 27, 2012.

A total of 4 devices were deployed, including one continuous radon monitor. Of the 3 passive devices deployed, 1 was a single measurement, 1 was a duplicate and 1 was a blank.

Testing was conducted from Tuesday, May 1, 2012 to Friday, May 4, 2012. The devices used were electret ionization chambers (Eperms™) manufactured by RAD ELEC, Inc. and a continuous radon monitors manufactured by Sun Nuclear, model 1027. The report includes a table that details all device measurement results. Because radon levels fluctuate hourly, daily, weekly, seasonally and yearly, these results should not be used to estimate radon levels of rooms that were not tested, or to estimate future radon levels of rooms that were tested. Changes to the building components (both structural and mechanical) can effect radon concentrations. Duplicate devices have been averaged together and demonstrate the precision of the measurements.

The testing was conducted in accordance with the Illinois Emergency Management Agency Division of Nuclear Safety (IEMA) and the United States Environmental Protection Agency (USEPA) testing protocols for commercial radon measurements, the device manufacturer's recommendations, and the RDS Quality Assurance Plan.



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## Quality Assurance Plan for this Site

### Pre-Deployment Testing Strategy

For this round of follow-up testing, testing will be limited to Room 100. Initial testing in this room found radon levels to be 11.8 pCi/L.

### Materials and Methods

RDS will use electret ionization chambers and a continuous radon monitor to measure radon levels in the air in the above referenced property. The test will comply with all protocols set forth by IEMA, as well as the RDS Quality Assurance Plan. Duplicate tests will be conducted for not less than 10% of the total single devices placed to measure precision. Field blanks will be deployed for not less than 5% of the total number of tests deployed to measure background gamma radiation. Spike tests will be conducted at a minimum of 3% for the total amount of devices deployed (annually) to measure accuracy. The initial voltage reading will take place not more than 24 hours prior to deployment and the final voltage of the devices will be determined within 24 hours of retrieval.

RDS will locate devices in such a way to limit unintentional interference from building occupants. A walk-through inspection of the building prior to device deployment will allow RDS to document observations regarding radon entry mechanisms and general building pressure gradients. Test results will be reported in picoCuries per liter (pCi/L) of air. The effects of the HVAC system on radon progeny will not be evaluated and working level exposure (WL) will not be calculated during this test.



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## Explanation of Device Results and Site Notes

Appendix A provides a detailed drawing showing device locations, if an appropriate and accurate drawing is provided by the client and dimensional device plotting is possible. If Appendix A is blank, please refer to the Device Placement columns provided in Appendix B (Room Use and Room Number) as an explanation of device locations.

Appendix B identifies all of the devices deployed and their reported radon levels. The results were determined using calculations supplied by the device manufacturer.

**The radon levels continue to be above the recommended action level in Room 100.** Air exchange rates for the facility were not available at the time of testing. Air exchange rates can affect the radon concentration based on dilution of radon gas.

Notes Regarding Appendix B:

- All radon levels are expressed in picoCuries per liter (pCi/L) of air.
- The building was tested according to IEMA, and USEPA protocol in regard to device placement and analytical methods of calculating results.
- Tampering was not detected at the time the devices were retrieved, unless noted in the Comment Column.
- Devices were placed strategically to reduce accidental interference by building occupants.
- Duplicates are averaged together. It is the average of the two devices upon which decisions with regard to mitigation should be based.

## Site Notes:

1. The subject building was occupied and fully-functional during this round of follow-up testing.



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## Survey Summary

The radon levels found in Room 100 during this round of follow-up testing continue to be above the USEPA and IEMA Action Level of 4.0 pCi/L.

## Recommendations

Because this follow-up testing confirms the elevated levels found during the initial survey, consultation with an Illinois licensed Commercial Mitigation firm is recommended. A list of commercial mitigation firms can be found on the Illinois Emergency Management Agency Department of Nuclear Safety's website, [www.state.il.us/idns](http://www.state.il.us/idns).

Once mitigation is complete, please call to schedule a full-building, post-mitigation retest to determine the effectiveness of the mitigation efforts.



**Radon Detection Specialists** is licensed for both residential and commercial radon testing in Illinois. For more information regarding radon testing and mitigation practices in the state of Illinois, please visit the Illinois Emergency Management Agency Department of Nuclear Safety's website, [www.radon.illinois.gov](http://www.radon.illinois.gov), or call the state of Illinois Radon Program at 217-782-1325.




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## **Appendix A: Site Plan Showing Device Locations**

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### Appendix B: Individual Device Results Table

Electret	Device Placement			Start			Stop			Exposure Period	Radon Level	Control Measurement	Duplicate Device Avg. Radon Level	Comments
	Foundation	Room Use	Room No.	Date	Time	Volts	Date	Time	Volts	Days	(pCi/L)	Duplicate/Blank	(pCi/L)	
SGI026	Slab	Office	100	5/1/12	8:05 AM	762	5/4/12	2:20 PM	702	3.26	8.1			
SFS451	Slab	Office	100	5/1/12	8:05 AM	344	5/4/12	2:20 PM	289	3.26	8.4	Duplicate	8.3	
SEY682	Slab	Office	100	5/1/12	8:05 AM	189	5/4/12	2:20 PM	188	3.26	-0.4	Blank		
CRM 4060	Slab	Office	100	5/1/12	8:05 AM		5/4/12	2:20 PM			7.4			See hourly results attached

All radon levels are expressed in picoCuries per liter (pCi/L).  
 Results of duplicate devices are averaged to determine the radon level in that location.


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