

Radon Detection Specialists, Inc.

Commercial Radon Survey Report

Client: Community Consolidated School District 181

Site Address: Hinsdale Middle School

100 S Garfield

Hinsdale, IL 60521

Survey Date: May 2, 2012 to May 4, 2012

Initial Test

RDS-R-002

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

8008 S. Madison Street, Burr Ridge, Illinois 60527

Phone: 630-325-4443 Fax: 630-655-0842



Site Address: HMS, 100 S Garfield, Hinsdale, IL

Survey Date: 5/2/12 to 5/4/12

Table of Contents

Basics of Radon and Radon Health Impacts	3
Scope of Work:	4
Explanation of Quality Assurance Plan for this Site	5
Explanation of Device Results and Site Notes	6
Survey Summary and Recommendations	7
Appendix A: Site Plan Showing Device Locations	8
Appendix B: Individual Device Results Table	9

Phone: 630-325-4443 Fax: 630-655-0842

<u>office@radonresults.com</u>

www.radondetection.net



Site Address: HMS, 100 S Garfield, Hinsdale, IL

Survey Date: 5/2/12 to 5/4/12

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.



Site Address: HMS, 100 S Garfield, Hinsdale, IL

Survey Date: 5/2/12 to 5/4/12

Scope of Work Performed:

At the request of Jim Prusa, Facilities Coordinator for District 181, RDS performed radon testing at Hinsdale Middle School, located at 100 S Garfield, Hinsdale, Illinois. This scope of work included a 2 day (short-term) radon test in all classrooms, offices, and common use spaces of the subject building.

A total of 61 devices were deployed, including one continuous radon monitor. Of the 60 passive devices deployed, 49 were single measurements, 7 were duplicates and 4 were blanks.

Testing was conducted from Wednesday, May 2, 2012 to Friday, May 5, 2012. The devices used were electret ionization chambers (EpermsTM) 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.



Site Address: HMS, 100 S Garfield, Hinsdale, IL

Survey Date: 5/2/12 to 5/4/12

Quality Assurance Plan for this Site

Pre-Deployment Testing Strategy

Tests will be conducted in all classrooms, portable classrooms, offices and common use spaces in the subject building. A minimum of 1 detector will be placed every 2000 square feet in open areas. Tests will not be conducted in rooms that are not frequently occupied such as closets, storage rooms, restrooms, hallways, and stairwells unless the space is considered alterable for future regular use, or the measurement is taken for diagnostic purposes.

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.



Site Address: HMS, 100 S Garfield, Hinsdale, IL

Survey Date: 5/2/12 to 5/4/12

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 were BELOW the recommended action level in all locations tested, with the exception of Music Practice Room 126A. 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 initial short-term survey.
- 2. The subject building is a three-story, brick structure, built slab-on-grade.
- 3. The subject building was originally built in the 1970s.
- 4. The subject building also has four portable classrooms, which were included in this initial survey.
- 5. The device in 127A (Radio Room) was found prematurely closed. The results for this device are, therefore, invalid.



Site Address: HMS, 100 S Garfield, Hinsdale, IL

Survey Date: 5/2/12 to 5/4/12

Survey Summary

The radon levels found during this short-term survey were BELOW the USEPA and IEMA Action Level of 4.0 pCi/L, with the exception of Music Practice Room 126A.

Recommendations

It is the recommendation of this testing professional to perform another short-term test in Room 126A (Music Practice Room). If the results of the second short-term test confirm elevated readings, consultation with an Illinois licensed commercial mitigation firm will be recommended.

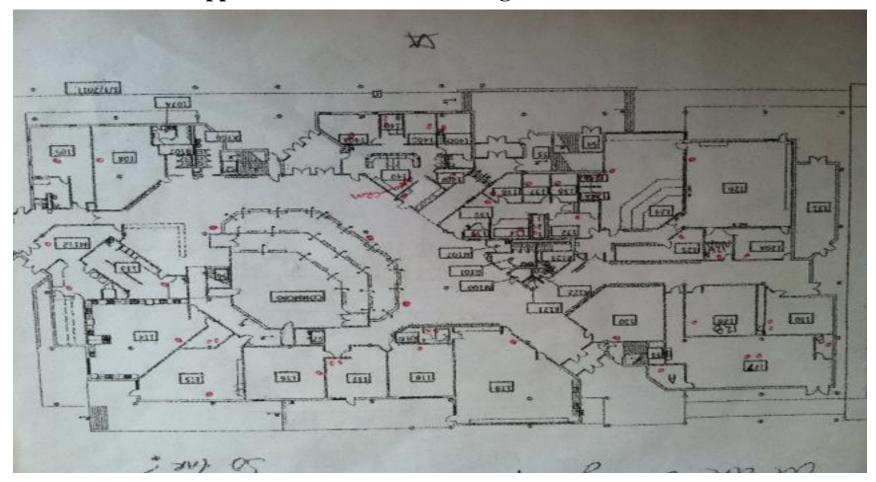
If the results of the second short-term test do not confirm elevated readings, long-term testing will be recommended in the areas where elevated levels were previously found. Long-term testing (testing lasting 90 days or more) provides a better understanding of building radon concentrations and the risks of exposure to radon on an annual basis.

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, or call the state of Illinois Radon Program at 217-782-1325.

Client: C.C.S.D. 181
Site Address: HMS, 100 S Garfield
City, State, ZIP Hinsdale, IL 60521
Survey Date: 5/2/12 to 5/4/12

Page 8 of 15

Appendix A: Site Plan Showing Device Locations



Radon Detection Specialists, Inc.

8008 S. Madison Street, Burr Ridge, Illinois 60527

Phone: 630-325-4443 Fax: 630-655-0842

Site Address: HMS, 100 S Garfield City, State, ZIP Hinsdale, IL 60521 Survey Date: 5/2/12 to 5/4/12

Page 9 of 15

Appendix B: Individual Device Results Table

Electret	Dev	vice 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)	
SFS446	Slab	Mechanical - South	M112 A	5/2/12	1:55 PM	332	5/4/12	2:45 PM	325	2.03	1.2			
SFS663	Slab	Mechanical - North	M112 A	5/2/12	1:55 PM	225	5/4/12	2:45 PM	220	2.03	0.7			
SGH728	Slab	Kitchen	113	5/2/12	1:55 PM	720	5/4/12	2:45 PM	715	2.03	0.5			
SGC592	Slab (Two steps down)	Elevator Equipment		5/2/12	2:00 PM	581	5/4/12	2:45 PM	573	2.03	1.3			
SGI104	Slab	Classroom	109	5/2/12	2:00 PM	751	5/4/12	2:50 PM	744	2.03	1.0			
SFS596	Slab	Classroom	108	5/2/12	2:00 PM	417	5/4/12	2:50 PM	411	2.03	0.9			
SFS709	Slab	Main Office	140	5/2/12	2:05 PM	345	5/4/12	2:50 PM	341	2.03	0.4			
SGH732	Slab	Office	140A	5/2/12	2:05 PM	721	5/4/12	2:50 PM	716	2.03	0.5			
SGC425	Slab	Office	140B	5/2/12	2:05 PM	568	5/4/12	2:50 PM	563	2.03	0.6			
SGC502	Slab	Office	140B	5/2/12	2:05 PM	645	5/4/12	2:50 PM	640	2.03	0.6	Duplicate		

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.

Radon Detection Specialists, Inc.

8008 S. Madison Street, Burr Ridge, Illinois 60527

Phone: 630-325-4443 Fax: 630-655-0842

Site Address: HMS, 100 S Garfield City, State, ZIP Hinsdale, IL 60521 Survey Date: 5/2/12 to 5/4/12

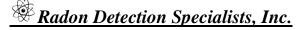
Page 10 of 15

Appendix B: Individual Device Results Table

Electret	Dev	vice 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)	
SGI113	Slab	Office	140C	5/2/12	2:05 PM	718	5/4/12	2:50 PM	710	2.03	1.3			
SGC359	Slab	Office	140D	5/2/12	2:05 PM	476	5/4/12	2:50 PM	471	2.03	0.6			
SFS698	Slab	Electrical	140F	5/2/12	2:10 PM	403	5/4/12	2:50 PM	398	2.03	0.7			
SFS585	Slab	Mail Room	140G	5/2/12	2:10 PM	356	5/4/12	2:50 PM	350	2.03	0.9			
SGH817	Slab	Office	139	5/2/12	2:10 PM	723	5/4/12	2:55 PM	717	2.03	0.8			
SGC439	Slab	"Shack"	135	5/2/12	2:15 PM	473	5/4/12	2:55 PM	467	2.03	0.9			
SGC334	Slab	Office	134	5/2/12	2:15 PM	532	5/4/12	2:55 PM	528	2.03	0.4			
SFS555	Slab	Office	138	5/2/12	2:15 PM	505	5/4/12	2:55 PM	499	2.03	0.9			
SGC537	Slab	Storage	133	5/2/12	2:15 PM	540	5/4/12	2:55 PM	533	2.03	1.1			
SFS668	Slab	Storage	133	5/2/12	2:15 PM	477	5/4/12	2:55 PM	473	2.03	0.4	Duplicate	0.7	

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.



8008 S. Madison Street, Burr Ridge, Illinois 60527 Phone: 630-325-4443 Fax: 630-655-0842

Client: C.C.S.D. 181 Site Address: HMS, 100 S Garfield City, State, ZIP Hinsdale, IL 60521

Survey Date: 5/2/12 to 5/4/12

Page 11 of 15

Appendix B: Individual Device Results Table

Electret	Dev	vice 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)	
SFS488	Slab	Office	136	5/2/12	2:15 PM	320	5/4/12	2:55 PM	317	2.03	0.2			
SFS721	Slab	Office	137	5/2/12	2:15 PM	403	5/4/12	2:55 PM	395	2.03	1.4			
SDF066	Slab	Office	132	5/2/12	2:20 PM	337	5/4/12	2:55 PM	333	2.02	0.4			
SDF079	Slab	Music	124	5/2/12	2:20 PM	195	5/4/12	3:00 PM	191	2.03	0.5			
SFS463	Slab	Music Office	125	5/2/12	2:20 PM	485	5/4/12	3:00 PM	479	2.03	0.9			
SGH853	Slab	Music	126	5/2/12	2:20 PM	725	5/4/12	3:00 PM	719	2.03	0.8			
SFS484	Slab	Music Practice	126A	5/2/12	2:25 PM	434	5/4/12	3:00 PM	416	2.02	4.0			
SGC589	Slab	Music Practice	129A	5/2/12	2:25 PM	465	5/4/12	3:00 PM	460	2.02	0.6			
SGH789	Slab	MDF	130	5/2/12	2:25 PM	725	5/4/12	3:20 PM	719	2.04	0.8			
SGH710	Slab	MDF	130	5/2/12	2:25 PM	676	5/4/12	3:05 PM	670	2.03	0.8	Duplicate	0.8	

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.

Radon Detection Specialists, Inc.

8008 S. Madison Street, Burr Ridge, Illinois 60527

Phone: 630-325-4443 Fax: 630-655-0842

Site Address: HMS, 100 S Garfield City, State, ZIP Hinsdale, IL 60521 Survey Date: 5/2/12 to 5/4/12

Page 12 of 15

Appendix B: Individual Device Results Table

Electret	Dev			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)	
SGC452	Slab	Choral	128	5/2/12	2:30 PM	621	5/4/12	3:05 PM	614	2.02	1.1			
SGH834	Slab	Tech	127	5/2/12	2:30 PM	715	5/4/12	3:05 PM	711	2.02	0.3			
SGC390	Slab	Tech	127	5/2/12	2:30 PM	580	5/4/12	3:05 PM	580	2.02	-0.6	Blank		
SGH734	Slab	Radio	127A	5/2/12	2:30 PM	698	5/4/12	3:05 PM						Device found prematurely closed
SFS662	Slab	Storage	127B	5/2/12	2:30 PM	440	5/4/12	3:05 PM	435	2.02	0.6			
SGC467	Slab	Classroom	120	5/2/12	2:30 PM	590	5/4/12	3:15 PM	589	2.03	-0.4			Below the lower limits of detection
SFS511	Slab	Art	119	5/2/12	2:35 PM	226	5/4/12	3:20 PM	222	2.03	0.5			
SFS664	Slab	Art Storage	119A	5/2/12	2:35 PM	319	5/4/12	3:20 PM	313	2.03	1.0			
SFS496	Slab	Art Storage	119A	5/2/12	2:35 PM	310	5/4/12	3:20 PM	306	2.03	0.4	Duplicate	0.7	
SFS474	Slab	Classroom	118	5/2/12	2:40 PM	422	5/4/12	3:20 PM	418	2.03	0.4			

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.

Radon Detection Specialists, Inc.

8008 S. Madison Street, Burr Ridge, Illinois 60527

Phone: 630-325-4443 Fax: 630-655-0842

Site Address: HMS, 100 S Garfield City, State, ZIP Hinsdale, IL 60521 Survey Date: 5/2/12 to 5/4/12

Page 13 of 15

Appendix B: Individual Device Results Table

Electret	Device Placement Electret				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)	
SGH792	Slab	Classroom	117	5/2/12	2:45 PM	755	5/4/12	3:25 PM	751	2.03	0.3			
SGH651	Slab	Classroom	117	5/2/12	2:45 PM	725	5/4/12	3:25 PM	726	2.03	-0.9	Blank		
SGI085	Slab	Classroom	116	5/2/12	2:45 PM	727	5/4/12	3:25 PM	722	2.03	0.5			
SFS519	Slab	Commons - W		5/2/12	2:45 PM	218	5/4/12	3:25 PM	214	2.03	0.5			
SFS535	Slab	Commons - Center		5/2/12	2:45 PM	468	5/4/12	3:25 PM	462	2.03	0.9			
SGC460	Slab	Commons - E		5/2/12	2:45 PM	561	5/4/12	3:30 PM	558	2.03	0.1			
SGC563	Slab	Home Ec	114	5/2/12	2:45 PM	523	5/4/12	3:30 PM	521	2.03	-0.1			Below the lower limits of detection
SFS556	Slab	Storage	114A	5/2/12	2:45 PM	336	5/4/12	3:30 PM	331	2.03	0.7			
SFS710	Slab	Storage	114A	5/2/12	2:45 PM	495	5/4/12	3:30 PM	489	2.03	0.9			
SGC453	Slab	Classroom	115	5/2/12	2:45 PM	587	5/4/12	3:35 PM	581	2.03	0.8	Duplicate	0.9	

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.

Radon Detection Specialists, Inc.

8008 S. Madison Street, Burr Ridge, Illinois 60527

Phone: 630-325-4443 Fax: 630-655-0842

Site Address: HMS, 100 S Garfield City, State, ZIP Hinsdale, IL 60521 Survey Date: 5/2/12 to 5/4/12

Page 14 of 15

Appendix B: Individual Device Results Table

Electret	Dev			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)	
SFS509	Raised, vented, platform	Portable	4	5/2/12	2:55 PM	281	5/4/12	3:10 PM	277	2.01	0.5			
SCG461	Raised, vented, platform	Portable	3	5/2/12	2:55 PM	558	5/4/12	3:10 PM	554	2.01	0.4			
SGI123	Raised, vented, platform	Portable	3	5/2/12	2:55 PM	725	5/4/12	3:10 PM	725	2.01	-0.6	Blank		
SGH872	Raised, vented, platform	Portable	2	5/2/12	2:55 PM	740	5/4/12	3:15 PM	736	2.01	0.3			
SGI015	Raised, vented, platform	Portable	2	5/2/12	2:55 PM	708	5/4/12	3:15 PM	703	2.01	0.6	Duplicate	0.5	
SFS692	Raised, vented, platform	Portable	1	5/2/12	2:55 PM	374	5/4/12	3:10 PM	370	2.01	0.4			
SFS501	Raised, vented, platform	Portable	1	5/2/12	2:55 PM	197	5/4/12	3:10 PM	194	2.01	0.2	Duplicate	0.3	
SFS458	Slab	Music Storage	124A	5/2/12	3:00 PM	252	5/4/12	3:00 PM	248	2.00	0.5			
SGC556	Slab	Music Storage	124B	5/2/12	3:00 PM	624	5/4/12	3:00 PM	619	2.00	0.6			
SDF231	Slab	Music Storage	124B	5/2/12	3:00 PM	197	5/4/12	3:00 PM	197	2.00	-0.6	Blank		

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.



8008 S. Madison Street, Burr Ridge, Illinois 60527

Phone: 630-325-4443 Fax: 630-655-0842

Site Address: HMS, 100 S Garfield City, State, ZIP Hinsdale, IL 60521 Survey Date: 5/2/12 to 5/4/12

Page 15 of 15

Appendix B: Individual Device Results Table

Electret	Dev	vice 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)	
CRM 14460	Slab	Main Office	140	5/2/12	2:50 pm		5/4/12	3:35 pm			0.3			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.

Radon Detection Specialists, Inc.

8008 S. Madison Street, Burr Ridge, Illinois 60527

Phone: 630-325-4443 Fax: 630-655-0842