
HSWMR

Hazardous Substance & Waste Management Research, Inc.

2976 Wellington Circle West
Tallahassee, Florida 32309
Phone: (850) 681-6894
Fax: (850) 906-9777
www.hswmr.com

FROM: Dr. Christopher M. Teaf
President & Director of Toxicology

TO: Laymon Gray
Associate Director
Environmental Health & Safety
Florida State University

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SUBJECT: FSU Sandels Building - Radon Evaluation

The Sandels Building (Sandels) on the campus of Florida State University (FSU) has been evaluated for radon content due to indoor air quality questions that were raised in January 2022. There have been two previous radon sampling events in Sandels, one in January 2022 (26th to 28th) and another in February 2022 (15th to 17th), as well as one annual follow-up testing event in June 2023. In the January 2022 sampling event, 28 48-hour charcoal canister measurements (charcoal) were collected at 24 locations by a state-certified radon contractor, in accordance with standard protocols of the United States Environmental Protection Agency (USEPA) and the Florida Department of Health (FDOH). There were no radon values detected on the 1st, 3rd, or 4th floors greater than the 4 picoCurie/liter (pCi/L) EPA Action Level (range 0.3 to 3.3 pCi/L). Basement results ranged from 2.5 to 5.4 pCi/L, and the 2nd floor results ranged from 4.0 to 7.0 pCi/L. As detailed further in the following paragraphs, those 2nd floor results were not replicated in the subsequent sampling conducted in February 2022. All results for the January and February 2022 sampling events, as well as the June 2023 annual follow-up testing are summarized in the attached table.

For the February 2022 sampling event, 82 measurements were collected at 74 locations by the same certified contractor using charcoal canisters and continuous radon monitors (CRM; both are 48-hr procedures) per standard USEPA and FDOH protocols. None of the charcoal results on the 1st, 2nd, 3rd, or 4th floors reported levels greater than 4 pCi/L (range 0.3 to 1.9 pCi/L). Six of the seven charcoal results from basement samples were greater than 4 pCi/L, with a maximum of 7.5 pCi/L. The CRM protocol, which provides a different perspective and produces a more reliable average view (consisting of 48 subsamples for the final reported average result) was used for two locations on the 2nd

floor, and one location each on the 1st floor and in the basement. Only the basement result (6.1 pCi/L EPA protocol average) exceeded the USEPA Action Level of 4 pCi/L. The other CRM EPA protocol averages were 1.7 pCi/L for the 1st floor monitor, as well as 0.7 pCi/L and 1.4 pCi/L for the 2nd floor monitors. Because the February 2022 sampling was more comprehensive, those data were considered to be most representative of conditions in Sandels at the time.

Detectable radon levels are ubiquitous throughout Florida, with most areas of the state exhibiting low radon. Outdoor levels typically are in the 0.4 to 0.5 pCi/L range, and indoor levels regularly range from 1 to 2 pCi/L. Radon comes from decay of natural radium, and elevated indoor radon is related to local geology. Radon often is present in clays, phosphate rock, and igneous rocks, like granite, and can originate from bedrock far below land surface. Because it is a naturally occurring substance, exposure is common and unavoidable. The Sandels basement, as well as parts of the 1st and 2nd floors, are considered “ground contact” areas, so the noted radon results likely reflect historical construction of Sandels in the 1950s into the hillside existing at this location.

The data summarized herein reflect a very low health risk scenario. Nevertheless, the Sandels Building has undergone considerable indoor air quality improvement efforts, including sealing of slab/wall penetrations, modifications to the ventilation system, and installation of a sub-slab depressurization radon mitigation system. These efforts were completed in late July 2022 and post-mitigation radon sampling was conducted in early August 2022, in accordance with USEPA and FDOH protocols. The attached table includes those post-mitigation radon results, all of which were less than the USEPA Action Level of 4 pCi/L. Based on the corrective actions noted previously, mitigation system installation, and post-mitigation clearance testing, the Sandels Building was placed on the annual maintenance and monitoring program with respect to radon, in accordance with FDOH guidance and FSU policy.

That agency guidance and FSU policy dictate that annual follow-up testing be conducted in the areas of previously elevated (greater than 4 pCi/L) radon levels. The 2023 annual testing for Sandels was completed from June 5 to 7 at nine locations (4 in the basement and 5 on the second floor). All 2023 annual testing results were less than the USEPA Action Level of 4 pCi/L.

RADON MEASUREMENTS - Sandels Building, Florida State University

Building Location	Sampling Dates	Min pCi/L	Location Floor	Max pCi/L	Location Floor	QC	Notes
Sandels (charcoal)	26 to 28 Jan 2022	0.3	multiple	7.0	2nd	NA	No values on 1st, 3rd, 4th floors > 4pCi/L; 2 values in basement > 4 pCi/L; 5 values on 2nd floor > 4 pCi/L
Sandels (charcoal)	15 to 17 Feb 2022	0.3	multiple	7.5	basement	<0.3	No values on 1st, 2nd, 3rd, 4th floors > 4pCi/L (0/63 samples); 6/7 locations in basement > 4 pCi/L

Building Location	Sampling Dates	EPA Protocol Average				QC	Notes
		Min pCi/L	Location Floor	Max pCi/L	Location Floor		
Sandels (CRM)	15 to 17 Feb 2022	0.7	2nd	6.1	basement	NA	EPA protocol average is the average of the 48 subsamples, excluding the first four subsamples

Location	Sampling Dates	Number of Samples	Min pCi/L	Max pCi/L	Notes
Basement (post-mitigation)	8 to 10 Aug 2022	2	1.0	1.1	No results > 4 pCi/L
2nd Floor (post-mitigation)	8 to 10 Aug 2022	5	0.3	0.5	No results > 4 pCi/L

Annual Follow-Up Testing
2023 (June 5 to 7): 9 of 9 samples < 4 pCi/L: Min 0.3, Max 0.5 pCi/L

pCi/L = picocuries per liter

NA = Not Available

QC = Quality Control sample

Shaded results indicate the post-mitigation clearance sampling.