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DATE: 12 August 2022 (*updated from 15 March 2022*)

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 radon sampling events in Sandels, one in January 2022 (26th to 28th) and another in February 2022 (15th to 17th). In the January 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 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, those 2nd floor results were not replicated in subsequent sampling. All results for the January and February 2022 sampling events 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 per 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 and is more recent, 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 reflected 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 has been updated to include those results, all of which were below the USEPA Action Level of 4 pCi/L. Based on the corrective actions noted previously, mitigation system installation, and post-mitigation clearance testing, further investigation or other action regarding radon at Sandels is not deemed necessary at this time.

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

pCi/L = picocuries per liter

NA = Not Available

QC = Quality Control sample

Shaded results indicate the post-mitigation clearance sampling.