LAFAYETTE COLLEGE

Radon Program

Department of Public Safety Department - Environmental, Health and Safety
Standard Operating Procedure (SOP) #24

Purpose and Scope

To minimize potential radon exposure of employees and occupants of college-owned facilities and provide guidelines for the effective remediation of problem areas.

Because Lafayette contains both residential and occupational facilities, standards and recommendations from the U.S. Environmental Protection Agency (EPA) and the Occupational Safety and Health Administration (OSHA) can apply. Therefore, the College has implemented a tiered approach of action levels based on building type for radon risk assessment and management.

The EPA does not have an enforceable standard for indoor radon activity. However, it issues a recommended action level of 4 picocuries per liter of air (pCi/L) for residential buildings and schools (K-12). The action level for all College-owned residential facilities is 4 pCi/L.

The OSHA standard for occupational exposures to all ionizing radiation, including radon, is 100 pCi/L per 40-hours in any work week of seven consecutive days. This is a legally enforceable standard for all workplaces. The action level for all College-owned academic and administrative buildings is 100 pCi/L.

Referenced Documents

1. Pennsylvania Code, Title 25. Environmental Resources, Chapter 240 Radon Certification.
2. Environmental Protection Agency, "A Citizen's Guide to Radon".
3. Environmental Protection Agency, "Consumer's Guide to Radon Reduction".
4. Environmental Protection Agency, "Radon Reduction Methods".
5. Environmental Protection Agency, "Home Buyer's and Seller's Guide to Radon".
6. Environmental Protection Agency, "Application of Radon Reduction Methods".
7. Occupational Safety and Health Administration, Ionizing Radiation Standard, 29 CFR 1920.1096.

Responsibilities

- Public Safety Environmental Health and Safety Division
    - Conduct sampling for radon, upon request, using EPA recommended guidelines.
    - Conduct post-mitigation sampling to determine effectiveness of remediation.
        - Report sampling results:
            - Facilities Operations Director
            - Others as required by law.
    - Results will be sent to the appropriate individuals within 15 days of receiving them.
    - Maintain a record of all air sample results.

- Facilities Operations
    - Review and maintain copies of sampling results from residence halls, academic, and administrative buildings.
    - Coordinate remediation work.
    - Inform Public Safety EHS Division of any major structural or ventilation changes. Additional testing is recommended if these changes take place.

- Facilities Operations Director
    - Review sampling results and recommendations for mitigation.
    - Determine necessary remediation of problem areas.

Radon Activity Testing

Radon is a naturally occurring radioactive gas that is a part of the uranium-238 decay chain. Radon comes from the radioactive decay of uranium that is found in soil and rock all over the world. The inhalation and subsequent alpha decay of radon progeny particles constitutes the primary hazard to radon exposure. Radon is measured in terms of activity (disintegration) levels per unit volume of air. The units for activity levels are picocuries of activity per liter of air (pCi/L), where one picocurie equals 2.22 disintegrations per minute.

Testing will be conducted:

1. Upon request from an employee or resident of a College-owned facility.
2. Following remediation work.
3. Following major structural or ventilation changes to college-owned facilities.

There are two general ways to test for radon:

Short-term testing: The quickest way to test is with short-term tests. Short-term tests are collected over a period ranging from two to 90 days, depending on the device. Because radon levels tend to vary from day to day and season to season, a short-term test is less likely than a long-term test to determine the year-round average radon level.

Long-term testing: Long-term tests remain in an area for more than 90 days. A long-term test will provide a result that is more reflective of the year-round average radon level than a short-term test.

Building Sampling Procedures

Because OSHA's Technical Manual for Indoor Air Quality Investigations cites EPA's Citizen's Guide to Radon, all college-owned facilities, regardless of use, will be sampled according to the following procedures.

1. Take a short-term test. If the result is 4 pCi/L or higher, take a follow-up test (Step 2).
2. Follow up with either a long-term test or a second short-term test:
    - For a better understanding of the year-round average radon level, take a long-term test.
    - If results are needed quickly, take a second short-term test.

Remediation

Residential Facilities

Remediation will be considered if short-term or long-term sampling results are 4 pCi/L or higher.

If remediation is necessary, Facilities Operations may complete the work themselves or contract the work. If work will be performed by Facilities Operations it is recommended that they follow EPA's "Application of Radon Reduction Methods".

Academic and Administrative Facilities

If testing indicates that any work area in an academic or administrative facility is equal to or greater than 100 pCi/L, then the College will either reduce the number of hours worked in the area or introduce engineering controls to reduce radon concentrations.

NOTE: To test or remediate radon levels in Pennsylvania the "person" must first apply for and obtain EPA certification. If the "person" owns or occupies the building the requirement to be certified does not apply (PA Code Title 25, Chapter 240.101 and 240.111 Certification for Radon Mitigation).