



RADON TESTING AND PROTOCOLS PLAN

August 24, 2016

For:

Douglas Educational Service District
1871 NE Stephens St.
Roseburg, OR 97470

Prepared on behalf of Douglas ESD
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The 2015 Legislature passed House Bill (HB) 2031 to be able to determine radon gas levels in our public schools. HB 2931 has become ORS 332.166-167. As directed by this statute, all school districts and ESD's in Oregon must develop a plan to accurately measure facilities for elevated radon levels. A radon gas detection plan must be submitted to the Oregon Health Authority (OHA) by September 1, 2016. Per ORS 332.166-167, actual testing must be done on or before January 1, 2021 and test results sent to OHA and posted on the public school's website. The plan will identify protocols necessary for compliance to the law.

Per ORS 332.166-167, radon measurement teams (i.e. personnel selected to measure a site for elevated radon) must, at a minimum, conduct initial measurements in all frequently occupied rooms in contact with the soil or located above a basement or crawl space. Examples include offices; classrooms; conference rooms; gymnasiums; auditoriums; lunch rooms and break rooms. A minimum of one detector for every 2000 sq. ft. of open floor space is required. United States Environmental Protection Agency (USEPA) studies indicate that radon levels on upper floors are not likely to exceed the levels found in ground floor rooms. Testing rooms on the ground-contact floor or above unoccupied basements or crawlspaces is sufficient to determine if radon is a problem. Areas such as restrooms, hallways, stairwells, closets do not need to be tested.

Initial and follow-up testing, as needed, will use passive test devices. Active devices (electrically powered, continuous radon monitors) may be used in follow-up testing of locations if needed, and used where it is important to determine that radon levels vary according to time of day. Since testing under closed conditions is important to obtain meaningful results from short-term tests, the ESD will schedule testing during the colder months of the year. Closed building conditions are defined as keeping all windows closed; keeping doors closed except for normal entry and exit; and not operating fans or other equipment that brings air in from the outside. Fans that are part of a radon reduction system or small exhaust fans operating for only short periods of time may run during the test period. Testing will occur between October and March in any given year. Short term testing will be used with passive test kits under closed building conditions. Test kits will be placed during weekdays with HVAC systems operating as under normal conditions.

INSTRUCTION CHECKLIST:

1. Test Kit Placement Log and a Test Kit Location Floor Plan will be prepared for each site to be tested for radon. Test kit location will be recorded on both a Log and Floor Plan.
2. Test kits or testing service must meet the current requirements of the national certifying organizations, National Radon Proficiency Program (NRPP) or the National Radon Safety Board (NRSB). Testing will be done in accordance of the directions on the test kit.

3. In accordance with ORS 332.166-167, radon measurement teams must, at a minimum, conduct initial measurements in all frequently occupied rooms in contact with the soil or located above a basement or crawlspace. Room examples include, but not limited to, offices, classrooms, conference rooms, lunchrooms, breakrooms.
4. The number of test kits (radon detectors) will be determined by counting the number of rooms. One detector kit is used for each room that is 2000 square feet or less. Additional test kits are needed for larger rooms.
5. Test kits will be placed in all rooms in contact with the soil or located above a basement or crawlspace that are frequently occupied by students and staff.
6. Testing will occur during the times that students or staff are normally present during the week.
7. In addition to placing detectors, additional test kits will be provided to serve as quality assurance measures. Quality Assurance procedures will be conducted as described in OHA's Testing for Elevated Radon in Oregon Schools.
8. All test kits at our sites must be noted on the Device Placement Log and Floor Plan by the serial number.
9. Test kits will be placed as follows:
 - Where they are least likely to be disturbed or covered up.
 - At least three feet from doors, windows to outside and/or ventilation ducts.
 - At least one foot from exterior walls.
 - At least twenty inches to six feet from floor.
 - Approximately every 2000 square feet in a large area. If a particular test space is larger than 2000 sq. ft., two test kits will be used.
10. In addition to the placement protocol identified in number 9 above, test kits may be placed on an employee's desk or on a bookshelf out of the way. To prevent tampering, kits may be suspended from a wall or ceiling. If the kit is suspended, it should be 20 inches to 6 feet above the floor, at least 1 foot below the ceiling.
11. Test kits WILL NOT be placed in the following locations:
 - Near drafts resulting from heating, vents, air conditioning vents, fans, doors and windows.
 - In direct sunlight.
 - In areas of high humidity such as bathrooms, kitchens, etc.
 - Where they might be disturbed at any time during the test.
12. Testing with short-term test kits will be used under closed conditions (closed windows, doors, except for normal entry and exit).
 - Closed conditions: Short-term tests will be made under closed conditions in order to obtain more representative and reproducible results. Open windows and doors permit the movement of outdoor air into a room. When closed conditions in a room are not maintained during testing, the subsequent

dilution of radon gas by outdoor air may produce a measurement result that falls below the action level in a room that actually has a potential for an elevated radon level. Facilities shall only be tested for radon during periods when the HVAC system is operating as it does normally.

- All external doors should be closed except for normal use.
 - Closed conditions will be verified when placing and retrieving test kits.
13. Short-term test kits will be placed during colder months (November through March).
- Colder months because testing under closed conditions is important to obtain meaningful results from short-term tests. During these months, windows and exterior doors are more likely to be closed and the heating system is more likely to be operating.
 - Short-term measurements (2-5 days) will not occur during severe storms or periods of high winds. The National Weather Service defines severe storm as one that generates winds of 58 mph and/or ¾ inch diameter hail and may produce tornadoes.
14. Test kits will be placed during weekdays with HVAC systems operating in a normal capacity.
- Probable timeline is as follows:
 - +Monday morning – place kits per test kit placement log created for the site. Record data, as needed, on log
 - +Thursday morning – pick up kits, record as needed, and ship with previously requested and received spiked test kits to a radon measurement lab.
 - Ceiling fans, portable humidifiers, dehumidifiers and air filters must be more than 20 feet from the test kits.
 - Combustion appliances (except for water heaters/cooking appliances) may not be in use during testing unless they are the primary source of heat for the building.
 - If radon mitigation systems are in place in the site, they should be functioning.
15. The Douglas ESD will not conduct initial measurements under the following conditions:
- During abnormal weather or barometric conditions (e.g. storms/high winds). If major weather or barometric changes are expected, it is recommended that the 2 to 5-day testing be postponed. United States Environmental Protection Agency (USEPA) studies show that barometric changes affect indoor radon concentrations. Radon concentrations can increase with a sudden drop in barometric pressure associated with storms.
 - During structural changes to a building and/or the renovation of the facility or replacement of the HVAC system.
16. After receiving results of the initial testing, the Douglas ESD will follow the “interpreting initial results” section of the Oregon Health Authorities’ Testing for Elevated Radon in Oregon School.

Follow-up Measurements

Follow-up testing (in rooms with initial short-term measurement of 4.0 pCi/L or higher) should start within one month after receiving the initial test results. Follow-up testing must be made in the same location in a room. When conducting follow-up testing using short-term methods will be done in the same conditions as the initial measurement. Follow directions under Radon Test Placement Strategy and Protocol Checklist and Test Kit Placement again.

Report of Results and Distribution

ORS 332.166-167 requires that school districts make all results readily available to the Board of Directors; the Oregon Health Authority; and parents, guardians, students, employees, volunteers, on a website for the agency.