# Long Creek School District # 17

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**Radon General Summary**

The district has developed a radon plan as required by ORS 332.345. Long Creek School District will conduct targeted radon sample testing in all buildings every 10 years. This testing occurred in January - March 2017 while the heating system was running on a normal basis. Test results are posted to the school webpage, www.longceekschool.com, as available. According to the Environmental Protection Agency (EPA) action level radon should not be above 4.0 pCi/L. The Long Creek School District is committed to sampling all occupied rooms by 2021. Tests results will be e-mailed and published in the school newsletter. A detailed plan is described below. For more information or any questions please contact the school office at 541-421-3896.

Students and staff only spend a portion of their time at school, the greatest risk to radon exposure is at the home. Please test your residence if you have not already done so. Test kits are available at retail stores, such as hardware stores, for home use and testing is available through licensed professionals.

**Radon Plan**

The 2015 Legislature passed House Bill (HB) 2931 so that elevated radon levels in Oregon schools would be known. House Bill 2931 later became Oregon Revised Statute (ORS) 332.345. As directed by this statute, all school districts in Oregon must develop a plan to accurately measure school buildings for elevated radon levels. This plan develops the protocols necessary for compliance. OHA's Testing for Elevated Radon in Oregon Schools, specifically Appendices A and D guides this effort. Below is the plan developed for the Long Creek School District. Per ORS 332.345, School Radon Measurement Teams (i.e. personnel appointed to measure a school 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 a crawlspace. Testing will occur in all frequently occupied spaces simultaneously per school site. Examples include: offices, classrooms, conference rooms, gyms, auditoriums, cafeterias & break rooms. A minimum of one detector for every 2000 sq. ft. of open floor space or portion thereof 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-contact rooms. Testing rooms on the ground-contact floor or above unoccupied basements or crawlspaces is sufficient to determine if radon is a problem in a school. Areas such as rest rooms, hallways, stairwells, elevator shafts, utility closets, kitchens storage 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, where it is important to determine that radon levels vary according to the time of day. Because testing under closed conditions is important to obtain meaningful results from short-term tests, the District will schedule testing during the coldest 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 machines which bring in air from 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. Testing will occur between October and March in any given school year. Short term testing will be used with passive test kits will be used in "closed building conditions". Test Kits will be placed during weekdays with HVAC (heating, ventilation, air conditioning) systems operating as they do normally. The following is a detailed protocol instruction checklist:

1. A Test Kit Placement Log and a Test Kit Location Floor Plan will be prepared for each school in which radon measurements are made. Long Creek School District will use their emergency/fire escape plan as a template. Test kit location will be accurately recorded on both a Log and Floor Plan. Test kits or testing services must meet the current requirements of the national certifying organizations, National Radon Proficiency Program (NRPP, www.nrpp.info) or the National Radon Safety Board (NRSB, www.nrsb.org). Testing must be done following the directions on the test kit.

2. Per ORS 332.345,, school 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 a crawlspace. Room examples include offices, classrooms, conference rooms, gyms, auditoriums, cafeterias and break rooms.

3. The number of test kits used to measure radon (detectors) must be determined by counting the number of appropriate rooms. One detector kit is used for each room that is 2000 square feet or less. Additional test kits are needed for larger rooms.

4. Added to this number will be the test kits needed for Quality Assurance purposes.

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 school staff.

6. Testing will occur during the time that students and teachers are normally present (during weekdays).

7. In addition to placing detectors, additional test kits will be provided to serve as quality assurance measures (duplicate, blank, and spike measurements). Quality Assurance procedures will be conducted as described in OHA's Testing for Elevated Radon in Oregon Schools.

8. All test kits placed in the school site (detectors, duplicates, and blanks) must be noted on the Device Placement Log and Floor Plan by their serial number.

9. Test kits should be placed.

a. Where they are least likely to be disturbed or covered up.

b. At least three feet from doors, windows to outside or ventilation ducts.

c. At least one foot from exterior walls.

d. At least 20 inches to six feet from floor.

e. About every 2,000 square feet for large spaces (e.g., a 3500 square foot gymnasium would require two test kits)

Along with the five-item placement protocol above, School Radon Measurement Teams can simply place the test kit on the teacher's desk or up on a bookshelf, out of the way of students. To prevent tampering, kits may be suspended from a wall or ceiling (using string and thumbtack/tape). If they are suspended, they should be 20 inches to 6 feet above the floor, at least 1 foot below the ceiling.

10. Test kits must NOT be placed:

a. Near drafts resulting from heating, ventilating vents, air conditioning vents, fans, doors, and windows.

b. In direct sunlight.

c. In areas of high humidity such as bathrooms, kitchens, laundry rooms, etc.

d. Where they may be disturbed at any time during the test

11. Testing with short-term test kits must be used under closed conditions (closed windows/doors except for normal exit/entry).

a. Closed conditions: Short-term tests should 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. Schools shall only be tested for radon during periods when the HVAC system is operating as it does normally.

b. All external doors should be closed except for normal use – structural and weatherization defects need to be repaired prior to testing.

c. Closed conditions must be verified when placing and retrieving test kits.

12. Short-term test kits will be placed during colder months (October through March).

a: Colder months: Because testing under closed conditions is important to obtain meaningful results from short-term tests, the District will schedule testing during the coldest months of the year. During these months, windows and exterior doors are more likely to be closed. In addition, the heating system is more likely to be operating. This usually results in the reduced intake of outside air. Moreover, studies of seasonal variations of radon measurements in schools found that short-term measurements may more likely reflect the average radon level in a room for the school year when taken during the winter heating season.

b: The District will check and document local weather forecasts prior to placing test kits. Do not conduct short-term measurements (2-5 days) during severe storms or period of high winds. The definition of severe storm by the National Weather Service is one that generates winds of 58 mph and/or ¾ inch diameter hail and may produce tornadoes.

13. Test Kits will be placed during weekdays with HVAC (heating, ventilation, air conditioning) systems operating as they do normally.

Suggested timeline: Monday morning – Place kits (detectors/duplicates/blanks) per Test Kit Placement Log created for school. Record data, as needed, on Log. Thursday morning – Pick up kits, record as needed, ship with (previously requested & received) spiked test kits to Radon Measurement Laboratory.

a. Air conditioning systems that recycle interior air may be operated.

b. Window air conditioning units may be operated in a re-circulating mode, but must be greater than 20 feet from the test kit.

c. Ceiling fans, portable humidifiers, dehumidifiers and air filters must be more than 20 feet from the test kit.

d. Portable window fans should be removed or sealed in place.

e. Fireplaces or combustion appliances (except for water heaters/cooking appliances) may not be used unless they are the primary source of heat for the building.

f. If radon mitigation systems are in place in the school, they should be functioning.

14. The District will not conduct initial measurements under the following conditions:

a. During abnormal weather or barometric conditions (e.g., storms and high winds). If major weather or barometric changes are expected, it is recommended that the 2 to 5-day testing be postponed. USEPA studies show that barometric changes affect indoor radon concentrations. For example, radon concentrations can increase with a sudden drop in barometric pressure associated with storms.

b. During structural changes to a school building and/or the renovation of the building's envelope or replacement of the HVAC system

15. After receiving the results of the initial testing, School Radon Measurement Teams will follow the "Interpreting initial results" section of the OHA's Testing for Elevated Radon in Oregon Schools. 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-up testing using passive short-term test kits should follow the same Quality Assurance procedures and requirements (i.e. percentages of duplicates/blanks/spikes), including quality assurance calculations. Follow directions under Radon Test Placement Strategy and Protocol Checklist and Test Kit Placement again.

**Report of Results & Distribution**

ORS 332.334,345 requires that school districts make all test results available: to the district's school board; the Oregon Health Authority (to post on its website), and readily available to parents, guardians, students, school employees, school volunteers, administrators and community representatives at the school office, district office or on a website for the school or school district.