

# INDUSTRIAL HYGIENE REPORT

## RADON TESTING REPORT

### Candalaria School

Report to: Vonnie B. Good, EHS Salem Keizer School District

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On-site: November 26–29, 2018

Report: December 9, 2018

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#### PURPOSE

After initial testing showed radon levels above EPA's Action Level of 4.0 picoCuries/L (pCi/L) in a number of rooms at Candalaria, three radon mitigation systems were installed in August of 2010. To ensure that the systems are functioning properly and levels are well below EPA's Action Level, annual radon testing is performed.

#### CONCLUSION AND RECOMMENDATION

All classrooms and offices had very low to non-detectable levels of radon. Two test locations were at or above the EPA's action level of 4 picoCuries per liter (pCi/l.) These locations are: "Dungeon" or storage room @ 12.3 pCi/L, the fan (formerly the Custodian's) room @4.2pCi/L.

These two spaces are not meant for occupancy and should not be occupied. Storage of hard goods in these spaces is allowed.

#### TESTING

Radon testing was conducted using protocols recommended by the Oregon Health Authority per ORS 332.166-.167. Radon Air-Chek short-term test devices were used in the rooms by suspending the device in each room. The testing occurred from November 26-29, 2018, during normal and routine school ventilation system operation, as well as with the radon mitigation system in operation. Weather conditions during the week of testing had been rainy and then cold.

Quality assurance testing was also conducted by utilizing blank and duplicate samples per the recommendations found in ORS 332.166-.167.

#### EPA RADON GUIDELINES

The EPA has set an Action Level of 4.0 pCi/L (picoCuries per liter) for schools. If classrooms or buildings have radon levels at or above 4.0 pCi/L, EPA recommends that schools take action to reduce the level. These actions include:

Step 1. If your result is 4.0 pCi/L or higher take a follow-up test (Step 2) to be sure.

Step 2. Follow up with either a long-term test or a second short-term test.

The World Health Organization has set their action level at 2.7 pCi/L. Salem Keizer School District has determined that 2.7 pCi/L is a target level where retesting should be done.

## CONTROL OF RADON LEVELS IN SCHOOLS

The major control mechanism for lowering radon levels within school buildings is the use of dilution ventilation. If the amount of outside air delivered into a building increases, the radon levels should decrease. Increasing outside air did not lower the radon levels, so subslab depressurization systems were installed in in this school.

### Sample Data Attached

## CANDALARIA

| Kit #   | Room Id          | Started              | Ended                | pCi/L      | Analyzed   |
|---------|------------------|----------------------|----------------------|------------|------------|
| 9132326 | 1                | 2018-11-26 @ 8:00 am | 2018-11-29 @ 9:00 am | < 0.3      | 2018-12-03 |
| 9132315 | 1                | 2018-11-26 @ 8:00 am | 2018-11-29 @ 9:00 am | 0.5 ± 0.3  | 2018-12-03 |
| 9132316 | 2                | 2018-11-26 @ 8:00 am | 2018-11-29 @ 9:00 am | < 0.3      | 2018-12-03 |
| 9132317 | 3                | 2018-11-26 @ 8:00 am | 2018-11-29 @ 9:00 am | < 0.3      | 2018-12-03 |
| 9132318 | 4                | 2018-11-26 @ 8:00 am | 2018-11-29 @ 9:00 am | 0.7 ± 0.3  | 2018-12-03 |
| 9132319 | 5                | 2018-11-26 @ 8:00 am | 2018-11-29 @ 9:00 am | 0.6 ± 0.3  | 2018-12-03 |
| 9132320 | 6                | 2018-11-26 @ 8:00 am | 2018-11-29 @ 9:00 am | 1.2 ± 0.3  | 2018-12-03 |
| 9132321 | 6 OFFICE         | 2018-11-26 @ 8:00 am | 2018-11-29 @ 9:00 am | 2.2 ± 0.4  | 2018-12-03 |
| 9132325 | CHECK IN         | 2018-11-26 @ 8:00 am | 2018-11-29 @ 9:00 am | < 0.3      | 2018-12-03 |
| 9132348 | CHECK IN         | 2018-11-26 @ 8:00 am | 2018-11-29 @ 9:00 am | < 0.3      | 2018-12-03 |
| 9132312 | COUNSELING       | 2018-11-26 @ 8:00 am | 2018-11-29 @ 9:00 am | 1.6 ± 0.3  | 2018-12-03 |
| 9132311 | COUNSELING       | 2018-11-26 @ 8:00 am | 2018-11-29 @ 9:00 am | 2.2 ± 0.4  | 2018-12-03 |
| 9132314 | DUNGEON          | 2018-11-26 @ 8:00 am | 2018-11-29 @ 9:00 am | 12.3 ± 0.7 | 2018-12-03 |
| 9132313 | FAN ROOM         | 2018-11-26 @ 8:00 am | 2018-11-29 @ 9:00 am | 4.2 ± 0.5  | 2018-12-03 |
| 9132323 | PE OFFICE        | 2018-11-26 @ 8:00 am | 2018-11-29 @ 9:00 am | 0.6 ± 0.3  | 2018-12-03 |
| 9132324 | PE OFFICE        | 2018-11-26 @ 8:00 am | 2018-11-29 @ 9:00 am | < 0.3      | 2018-12-03 |
| 9132308 | PRINCIPAL        | 2018-11-26 @ 8:00 am | 2018-11-29 @ 9:00 am | 1.0 ± 0.3  | 2018-12-03 |
| 9132309 | SMALL COUNSELING | 2018-11-26 @ 8:00 am | 2018-11-29 @ 9:00 am | 2.0 ± 0.4  | 2018-12-03 |
| 9132310 | SMALL COUNSELING | 2018-11-26 @ 8:00 am | 2018-11-29 @ 9:00 am | 1.7 ± 0.4  | 2018-12-03 |
| 9132322 | STAFF RM         | 2018-11-26 @ 8:00 am | 2018-11-29 @ 9:00 am | 1.4 ± 0.3  | 2018-12-03 |