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1.0 EXECUTIVE SUMMARY

August 24, 2019
EIS JOB No. 2019060.Amity admin radon

Steve Park, Maintenance Supervisor
Amity School District Sd 4J
807 S. Trade Street
Amity, Oregon 97101

RE: Short term radon testing of The Amity Administration SD 4J
building located at 807 S. Trade Street in Amity, Oregon
97101

Dear Mr. Park,

This letter summarizes the finding of a short term (48-hour) radon sampling test episode conducted at the subject school property improvements between Friday, August 9, 2019 and Monday, August 12, 2019. The radon sampling episode was conducted by Charles A. Spear, field representative of Environmental Inspection Services (EIS) with no custodian escort through the entire Amity administration building. No elevated radon considerations were noted for the administration building based on the short term simultaneous test results of the five(5) detached samplers.

The subject school improvements are collectively referred to as the Amity-SD 4J administration building located at 807 S. Trade Street in Amity, Oregon. All short term radon test results were below 4 pCi/L. Radon concentrations varied between a low measurement of 1.7 pCi/L and one (1) high measurements of 2.0 pCi/L. No elevated radon considerations were noted for the administration building based on the short term simultaneous test results of the five(5) detached samplers. The average outdoor radon concentration is 0.4 pCi/L and the average indoor radon concentration is 1.3 pCi/L. The EPA notes there is no safe level of radon. If there are questions concerning the radon testing at the district please initially contact the Amity school district administration authority.


Charles Arthur Spear
Environmental Professional

2.0 RADON ENVIRONMENTAL RISK

The U.S. Environmental Protection Agency (EPA) and other major national and international scientific organizations have concluded that radon is a human carcinogen and poses a serious environmental health problem. The EPA recommends that schools take action to reduce the level of radon concentration levels are 4 pCi/L or higher.

The U.S. surgeon general has warned about the health risk from the exposure to radon in indoor air. The surgeon general has urged Americans to test their homes because radon is the leading cause of lung cancer for non-smokers in the United States and breathing in radon over prolonged periods can present a significant health risk. The USEPA has estimated that approximately 21,000 lung cancer-related deaths occur annually with an estimated 275 lung cancer deaths annually in Oregon.

3.0 RADON DESCRIPTION

Radon gas is an extremely toxic, chemically inert, odorless, colorless, and tasteless naturally-occurring radioactive element having the symbol Rn. Radon has the atomic number 86; an atomic weight of 222; a melting point of -71 degrees Celsius; a boiling point of -62 degrees; and 18 radioactive isotopes. It is derived from the radioactive decay of radium and is used in cancer treatment; as a tracer in leak detection; and in radiology.

4.0 RADON CHARACTERISTICS

The concentrations of radon in a building are dependent on factors to include the concentration of uranium and radium in the soil; the type of underlying geology; soil permeability; available migration pathways such as subsurface utilities; foundation openings; air temperature and pressure differentials and building ventilation.

Radon may migrate into a study area by either a pressure driven transport or no pressure differentials. The subject school was built on concrete foundation and slab on slab foundations. Radon may migrate through foundations by the availability of expansion joints and cracks in the foundation. Radon may also migrate into a building through basements, utility trenches, pipe runs, HVAC systems, and other building ventilation systems. Radon contributions from building materials off-gassing are not often the source of measurable radon.

5.0 RADON TESTING ACTIVITY

A total of five (5) short term radon test units were placed throughout the district administration building frequently occupied areas to include the kitchen, offices, and, board room. No radon measurements approaching four (4) picocuries per liter (pCi/L) were analytically confirmed in any of the samplers. Radon measurements varied between a low radon measurement of 1.7 pCi/L to one high measurement of 2.0 pCi/L. Radon measurements lower than 2.0 pCi/L were confirmed in the remaining four (4) samplers. No elevated radon considerations were noted for the radon test results for the administration building based on these short term simultaneous test results.

The radon samplers were opened on Friday, August 9, 2019 and capped on Monday, August 12, 2019. Radon test results were reported to EIS on Thursday, August 15, 2019. Radon measurement levels varied from a low concentration of 1.7 pCi/L at one (1) test position to one (1) test position reading of 2.0 pCi/L. No elevated radon concentrations were detected in the administration building sampler. The Amity SD 4J school district building radon measurements varied between 1.7 pCi/L to 2.0 pCi/L. with an average reading of 1.86 pCi/L.

The passive radon samplers were placed in the center and at the edges the all the test areas away from walls, windows, and doors to include the offices, and administration support rooms. The capped radon samplers were packaged; logged on a chain of custody form; and shipped to ProLab Laboratories.

6.0 RADON TEST RESULTS SUMMARY TABLE

The radon sample concentrations for the Amity Administration building varied between 1.7 pCi/L and 2.0 pCi/L as summarized in the following five (5) radon samplers;

<u>Sample serial No.</u>	<u>Sample location</u>	<u>Sample test result</u>
4801983	Kitchen	1.7 pCi/L
4806987	Boardroom	1.9 pCi/L
4801861	Boardroom	1.8 pCi/L
4802234	Offices	1.9 pCi/L
4801850	Office	2.0 pCi/L

EIS noted no additional radon measurement requirements for the Amity SD 4J administration building based on the analytical test results. Radon concentration levels have been noted to vary from school to school and also from room to room. All frequently occupied rooms in contact with the ground require testing. This radon sampling episode noted the following;

Total number of testers - Five(5)
High reading - One(1) - 2.0 pCi/L - Office area
Low reading - one -(1)- 1.7 pCi/L - Kitchen

7.0 RADON MEASUREMENT RISK ASSESSMENT

The average Amity administrative building reading was 1.86 pCi/L with analytical test results varying from a radon low concentration measurement of 1.7 pCi/L at one tester location to one (1) high concentration measurements of 2.0 pCi/L at a single location. No additional short term test radon testing is recommended for the Amity Administration building at this time based on the radon short term analytical test results.

The U.S surgeon general has warned about the health risk from the exposure to radon in indoor air. The surgeon general has urged Americans to test their homes because radon is the leading cause of lung cancer for non-smokers in the United States and breathing in radon over prolonged periods can present a significant health risk. The USEPA has estimated that approximately 21,000 lung cancer-related deaths occur annually with an estimated 275 lung cancer deaths annually in Oregon.

8.0 RADON LABORATORY ANALYSIS

The radon was measured at the Pro-Lab Laboratory located at 1675 North Commerce Parkway in Weston, Florida using the liquid scintillation Method (EPA 402-R-92-004). The selected radon sampler devices utilized at the Amity SD 4J administration building is described as passive activated charcoal adsorption devices (AC).

The short term testers utilize activated carbon to absorb the radon gas in the air. The test unit has activated carbon with a perforation screen to filter out radon decay products. The absorber is resealed by EIS and shipped to Pro-Lab for processing and evaluation. The selected passive radon tester devices do not uniformly adsorb radon during the testing episode and are not described as integrating devices.

The total of five (5) radon test units supplied by a certified laboratory known as Pro-lab. The testers were placed within functional administration areas of the Amity administrative areas between Friday, August 9, 2019 and Monday, August 12, 2019. The total of five (5) short term samplers were capped and submitted to Pro-lab laboratories for radon analysis on Monday, August 12, 2019 and received by the Pro-Lab laboratories on Thursday, April 15, 2019. Radon test results were reported to EIS on Monday, August 19, 2019.

Radon measurement levels varied from a low concentration of 1.7 pCi/L at one (1) test positions to a single high concentration reading of 2.0 pCi/L. No elevated radon concentrations were detected in the administration building samplers.

9.0 RECOMMENDATIONS & CONCLUSIONS

In the opinion of EIS, no additional short term radon retesting is required at the Amity SD 4J administration building. In the opinion of EIS, the satisfactory radon test results are generally indicative of generally satisfactory radon conditions in the functional office and administrative support rooms and other student and staff occupied spaces of the subject building and no additional short-term radon testing is required at the school building based on these radon measurement test results at this time. The sample analytical position and result tables are listed in Appendix 2.0 of this report.

In the opinion of EIS, no significant data gaps remain concerning radon risk at the subject property based on current analytical radon test results. Actual radon analytical test results are included as listed in Appendix 2.0 of this report.

In the opinion of EIS, based on actual extensive passive radon testing at the subject buildings no additional limited short term radon retesting is recommended at the Amity SD 4J Administration building at this time. In the opinion of EIS, the satisfactory radon test results are generally indicative of satisfactory radon conditions at the Amity administrative building. If there any questions feel free to contact me at (503) 680-6398.

Respectfully,

Charles A. Spear
Environmental Professional

10.0 LIMITATIONS

This report was prepared in accordance with generally accepted ASTM standards of environmental practice at the time this investigation was performed. Evaluations of the conditions at the site for the purpose of this investigation are made from a limited number of observation points and may be subjective in some cases. The client is solely responsible for providing any notices or disclosures to concerned public agencies or to the public.

Environmental Inspection Services has prepared this report based on information collected from available analytical test results. The scope of this investigation is limited and did include a limited number of radon testers and no subsurface or sub-slab radon screening of soil and groundwater. No radon mitigation was performed on the subject property.

This report is not a substitution for a formal radon mitigation and/or radon mitigation effort. The findings and conclusions are not to be regarded as scientific certainties. Findings are based on professional judgement concerning independent laboratory data significance. This report is an expression of professional opinion and is not a warranty expressed or implied.

APPENDIX 1.0

RADON ANALYTICAL TEST RESULTS

ENVIROMENTAL INSPECTION SERVICES

charles_a_spear@yahoo.com

11981 FARGO RD NE
AURORA, OR 97002
503.680.6398

AMITY SP ADMINISTRATION SD 4J
807 S. TRADE ST. AMITY, OR 97101

Vial #	Location	Start Date	Start Time	End Date	End Time	LEVEL
4801983	KITCHEN	8/9/2019	7:30AM	8/12/2019	9:36AM	1.7
4806987	BOARD	8/9/2019	7:30AM	8/12/2019	9:36AM	1.9
4801861	BOARD RM	8/9/2019	7:30AM	8/12/2019	9:36AM	1.8
4802234	OFFICES	8/9/2019	7:30AM	8/12/2019	9:36AM	1.9
4801850	OFFICE	8/9/2019	7:30AM	8/12/2019	9:36AM	2.0

TOTAL TESTERS - FIVE(S)
HIGH TESTER - 2.0 pCi/L
LOW TESTER - 1.7 pCi/L
AUG TESTERS - 1.86 pCi/L

RADON ANALYSIS REPORT

PRO-LAB™

1675 North Commerce Parkway, Weston, FL 33326 (954) 384-4446

TEST ID NUMBER: 1250213
DATE RECEIVED: 08/15/2019
REPORT DATE: 08/19/2019

ENVIRONMENTAL INSPECTION SERVICE, INC.
11981 FARGO ROAD NORTHEAST,
AURORA, OR 97002

TEST LOCATION

AMITY SP ADMINISTRATION SD 4J
807 S TRADE ST
YAMHILL COUNTY
AMITY, OR 97101

This is a confidential report of the radon samples that were submitted to our laboratory for measurements of radon-222 levels. The results represent the amount of radon that was present in the air during the time of sampling. The radon is measured in our laboratory using the liquid scintillation method (EPA 402-R-92-004). This report will not be released to anyone without your permission except as required by individual state laws and guidelines.

HERE ARE YOUR TEST RESULTS

<u>VIAL #</u>	<u>ROOM TESTED</u>	<u>DATE OPENED</u>	<u>DATE CAPPED</u>	<u>DATE ANALYZED</u>	<u>RADON LEVEL</u>
4801850	1ST FLOOR OFFICE	Aug 09, 2019 7:30 AM	Aug 12, 2019 9:36 AM	Aug 16, 2019 2:27 AM	2.0 pCi/L

THE EPA RECOMMENDS THAT YOU FIX YOUR HOME IF THE RADON LEVEL IS 4 PICOCURIES (PCi/L) OR HIGHER.
Please read the EPA Citizen's Guide to Radon at www.epa.gov/radon/pubs/citguide.html. Residents of New Jersey should read "Radon Testing and Mitigation: The Basics" at <http://njradon.org/download/mitbas.pdf>. Radon levels less than 4 pCi/L still pose a risk. You may want to take additional measurements because radon levels can vary with the seasons. You may also want to consider doing a long term test to determine the average radon concentrations over a longer period of time. If the radon level is 4.0 pCi/L or higher you should perform either a long-term test or a second short-term test. If the radon level is higher than 10 pCi/L you should perform a second short-term test immediately. If you would like to learn how to lower your radon levels, or have other questions, please contact your state radon office at (971) 673-0490.

LIMITATIONS OF DATA AND PRODUCT LIABILITY

PRO-LAB expressly disclaims any and all liability for any special, incidental, or consequential damages resulting directly or indirectly from the improper use of or improper interpretation of the radon product or its results. Any delays in receipt of the test sample by PRO-LAB shall be the sole responsibility of the purchaser and their legal remedy shall be limited to recourse with their chosen carrier. Additionally, PRO-LAB shall not be responsible for the improper placement of the test canister nor shall PRO-LAB be liable for results derived directly or indirectly from the improper placement of said test canister. PRO-LAB, its agents, its retailers, its distributors, and the manufacturers' sole liability are limited to the cost for the replacement of the test canister itself only.

Jose Figueroa

Jose Figueroa, RMS
NRPP CERT# 109347 RT
NRSB CERT # 18SS007

PRO-LAB NRSB # ARL0028
PRO-LAB NEHA ID # 101461AL

James E. McDonnell IV

James E. McDonnell IV

RADON ANALYSIS REPORT

PRO-LAB™

1675 North Commerce Parkway, Weston, FL 33326 (954) 384-4446

TEST ID NUMBER: 1250212
DATE RECEIVED: 08/15/2019
REPORT DATE: 08/19/2019

ENVIRONMENTAL INSPECTION SERVICE, INC.
11981 FARGO ROAD NORTHEAST,
AURORA, OR 97002

TEST LOCATION

AMITY SP ADMINISTRATION SD 4J
807 S TRADE ST
YAMHILL COUNTY
AMITY, OR 97101

This is a confidential report of the radon samples that were submitted to our laboratory for measurements of radon-222 levels. The results represent the amount of radon that was present in the air during the time of sampling. The radon is measured in our laboratory using the liquid scintillation method (EPA 402-R-92-004). This report will not be released to anyone without your permission except as required by individual state laws and guidelines.

HERE ARE YOUR TEST RESULTS

<u>VIAL #</u>	<u>ROOM TESTED</u>	<u>DATE OPENED</u>	<u>DATE CAPPED</u>	<u>DATE ANALYZED</u>	<u>RADON LEVEL</u>
4802234	1ST FLOOR OFFICES	Aug 09, 2019 7:30 AM	Aug 12, 2019 9:36 AM	Aug 16, 2019 2:17 AM	1.9 pCi/L

THE EPA RECOMMENDS THAT YOU FIX YOUR HOME IF THE RADON LEVEL IS 4 PICOCURIES (PCi/L) OR HIGHER. Please read the EPA Citizen's Guide to Radon at www.epa.gov/radon/pubs/citguide.html. Residents of New Jersey should read "Radon Testing and Mitigation: The Basics" at <http://njradon.org/download/mitbas.pdf>. Radon levels less than 4 pCi/L still pose a risk. You may want to take additional measurements because radon levels can vary with the seasons. You may also want to consider doing a long term test to determine the average radon concentrations over a longer period of time. If the radon level is 4.0 pCi/L or higher you should perform either a long-term test or a second short-term test. If the radon level is higher than 10 pCi/L you should perform a second short-term test immediately. **If you would like to learn how to lower your radon levels, or have other questions, please contact your state radon office at (971) 673-0490.**

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Jose Figueroa

Jose Figueroa, RMS

NRPP CERT# 109347 RT

NRSB CERT # 18SS007

PRO-LAB NRSB # ARI0028
PRO-LAB NEHA ID # 101461AL

James E. McDonnell IV

James E. McDonnell IV

TEST ID NUMBER: 1250210
DATE RECEIVED: 08/15/2019
REPORT DATE: 08/19/2019

ENVIRONMENTAL INSPECTION SERVICE, INC.
11981 FARGO ROAD NORTHEAST,
AURORA, OR 97002

TEST LOCATION

AMITY SP ADMINISTRATION SD 4J
807 S TRADE ST
YAMHILL COUNTY
AMITY, OR 97101

This is a confidential report of the radon samples that were submitted to our laboratory for measurements of radon-222 levels. The results represent the amount of radon that was present in the air during the time of sampling. The radon is measured in our laboratory using the liquid scintillation method (EPA 402-R-92-004). This report will not be released to anyone without your permission except as required by individual state laws and guidelines.

HERE ARE YOUR TEST RESULTS

<u>VIAL #</u>	<u>ROOM TESTED</u>	<u>DATE OPENED</u>	<u>DATE CAPPED</u>	<u>DATE ANALYZED</u>	<u>RADON LEVEL</u>
4801861	1ST FLOOR BOARD RM	Aug 09, 2019 7:30 AM	Aug 12, 2019 9:36 AM	Aug 16, 2019 2:06 AM	1.8 pCi/L

THE EPA RECOMMENDS THAT YOU FIX YOUR HOME IF THE RADON LEVEL IS 4 PICOCURIES (PCi/L) OR HIGHER. Please read the EPA Citizen's Guide to Radon at www.epa.gov/radon/pubs/citguide.html. Residents of New Jersey should read "Radon Testing and Mitigation: The Basics" at <http://njradon.org/download/mitbas.pdf>. Radon levels less than 4 pCi/L still pose a risk. You may want to take additional measurements because radon levels can vary with the seasons. You may also want to consider doing a long term test to determine the average radon concentrations over a longer period of time. If the radon level is 4.0 pCi/L or higher you should perform either a long-term test or a second short-term test. If the radon level is higher than 10 pCi/L you should perform a second short-term test immediately. **If you would like to learn how to lower your radon levels, or have other questions, please contact your state radon office at (971) 673-0490.**

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Jose Figueroa, RMS

NRPP CERT# 109347 RT
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PRO-LAB NRSB # ARL0028
PRO-LAB NEHA ID # 101461AL



James E. McDonnell IV

RADON ANALYSIS REPORT

PRO-LABTM

1675 North Commerce Parkway, Weston, FL 33326 (954) 384-4446

TEST ID NUMBER: 1250208
DATE RECEIVED: 08/15/2019
REPORT DATE: 08/19/2019

ENVIRONMENTAL INSPECTION SERVICE, INC.
11981 FARGO ROAD NORTHEAST,
AURORA, OR 97002

TEST LOCATION

AMITY SP ADMINISTRATION SD 4J
807 S TRADE ST
YAMHILL COUNTY
AMITY, OR 97101

This is a confidential report of the radon samples that were submitted to our laboratory for measurements of radon-222 levels. The results represent the amount of radon that was present in the air during the time of sampling. The radon is measured in our laboratory using the liquid scintillation method (EPA 402-R-92-004). This report will not be released to anyone without your permission except as required by individual state laws and guidelines.

HERE ARE YOUR TEST RESULTS

<u>VIAL #</u>	<u>ROOM TESTED</u>	<u>DATE OPENED</u>	<u>DATE CAPPED</u>	<u>DATE ANALYZED</u>	<u>RADON LEVEL</u>
4806987	1ST FLOOR	Aug 09, 2019 7:30 AM	Aug 12, 2019 9:36 AM	Aug 16, 2019 1:55 AM	1.9 pCi/L

THE EPA RECOMMENDS THAT YOU FIX YOUR HOME IF THE RADON LEVEL IS 4 PICOCURIES (PC/L) OR HIGHER. Please read the EPA Citizen's Guide to Radon at www.epa.gov/radon/pubs/citguide.html. Residents of New Jersey should read "Radon Testing and Mitigation: The Basics" at <http://njradon.org/download/mitbas.pdf>. Radon levels less than 4 pCi/L still pose a risk. You may want to take additional measurements because radon levels can vary with the seasons. You may also want to consider doing a long term test to determine the average radon concentrations over a longer period of time. If the radon level is 4.0 pCi/L or higher you should perform either a long-term test or a second short-term test. If the radon level is higher than 10 pCi/L you should perform a second short-term test immediately. **If you would like to learn how to lower your radon levels, or have other questions, please contact your state radon office at (971) 673-0490.**

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Jose Figueroa

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NRPP CERT# 109347 RT
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PRO-LAB NRSB # ARL0028
PRO-LAB NEHA ID # 101461AL

James E. McDonnell IV

James E. McDonnell IV

RADON ANALYSIS REPORT

PRO-LABTM

1675 North Commerce Parkway, Weston, FL 33326 (954) 384-4446

TEST ID NUMBER: 1250207
DATE RECEIVED: 08/15/2019
REPORT DATE: 08/19/2019

ENVIRONMENTAL INSPECTION SERVICE, INC.
11981 FARGO ROAD NORTHEAST,
AURORA, OR 97002

TEST LOCATION

AMITY SP ADMINISTRATION SD 4J
807 S TRADE ST
YAMHILL COUNTY
AMITY, OR 97101

This is a confidential report of the radon samples that were submitted to our laboratory for measurements of radon-222 levels. The results represent the amount of radon that was present in the air during the time of sampling. The radon is measured in our laboratory using the liquid scintillation method (EPA 402-R-92-004). This report will not be released to anyone without your permission except as required by individual state laws and guidelines.

HERE ARE YOUR TEST RESULTS

<u>VIAL #</u>	<u>ROOM TESTED</u>	<u>DATE OPENED</u>	<u>DATE CAPPED</u>	<u>DATE ANALYZED</u>	<u>RADON LEVEL</u>
4801983	1ST FLOOR KITCHEN	Aug 09, 2019 7:30 AM	Aug 12, 2019 9:36 AM	Aug 16, 2019 3:33 AM	1.7 pCi/L

THE EPA RECOMMENDS THAT YOU FIX YOUR HOME IF THE RADON LEVEL IS 4 PICOCURIES (PCi/L) OR HIGHER. Please read the EPA Citizen's Guide to Radon at www.epa.gov/radon/pubs/citguide.html. Residents of New Jersey should read "Radon Testing and Mitigation: The Basics" at <http://njradon.org/download/mitbas.pdf>. Radon levels less than 4 pCi/L still pose a risk. You may want to take additional measurements because radon levels can vary with the seasons. You may also want to consider doing a long term test to determine the average radon concentrations over a longer period of time. If the radon level is 4.0 pCi/L or higher you should perform either a long-term test or a second short-term test. If the radon level is higher than 10 pCi/L you should perform a second short-term test immediately. **If you would like to learn how to lower your radon levels, or have other questions, please contact your state radon office at (971) 673-0490.**

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Jose Figueroa

Jose Figueroa, RMS

NRPP CERT# 109347 RT
NRSB CERT # 18SS007

PRO-LAB NRSB # ARL0028
PRO-LAB NEHA ID # 101461AL

James E. McDonnell IV

James E. McDonnell IV

APPENDIX 2.0
CHAIN'S OF CUSTODY (COC'S)

RADON TEST CHAIN OF CUSTODY

CLIENT Environmental Inspection Services
11981 Fargo Road
Aurora, Oregon 97002

SCHOOL (Name) Amity SP Administration SD 4J.
(Address) 807 S. Trade Street
Amity, Oregon
97001

Serial No.	Location	Start Date	Cap off time	Stop Date	Cap On Time	Result
------------	----------	------------	--------------	-----------	-------------	--------

[illegible]

971-209-9448 (LOGAN)

APPENDIX 3.0
RADON REGULATION

2017 ORS 332.345¹

Tests of schools for elevated levels of radon

- plan
- results

- (1) A school district shall develop a plan for testing schools for elevated levels of radon. At a minimum, plans developed under this subsection must:
 - (a) Provide for the testing of radon in any frequently occupied room in contact with the ground or located above a basement or a crawlspace; **and**
 - (b) Provide for the testing of radon in a school at least once every 10 years.
- (2) The Oregon Health Authority shall develop model plans for school districts to follow in implementing the requirements of this section. The authority shall seek the input of the Oregon School Boards Association in developing the model plans.
- (3) Results of a test performed under this section must be:
 - (a) Provided to the district school board;
 - (b) Provided to the authority in a manner prescribed by the authority; **and**
 - (c) Made readily available to parents, guardians, students, school employees, school volunteers, administrators and community representatives at the school's office or school district's office or on a website for the school or school district.
- (4) Information provided and made available under subsection (3) of this section must include the level of radon at which the United States Environmental Protection Agency recommends schools take action to reduce indoor radon concentrations. [Formerly 332.167]

Note: Section 3, chapter 729, Oregon Laws 2015, provides:

Sec. 3. (1) A school district shall submit the plan developed under section 2 of this 2015 Act [332.345 (Tests of schools for elevated levels of radon)] to the Oregon Health Authority on or before September 1, 2016.

- (2) Notwithstanding section 2 (1)(b) of this 2015 Act, plans developed under section 2 of this 2015 Act shall require initial testing of schools for elevated levels of radon on or before January 1, 2021.
- (3) Subsection (2) of this section does not apply to any school that has been tested for elevated

levels of radon on or after January 1, 2006. [2015 c.729 §3]

Note: See note under 332.341 (Provision of information to school districts about elevated levels of radon).

¹ Legislative Counsel Committee, *CHAPTER 332—Local Administration of Education*, https://www.oregonlegislature.gov/bills_laws/ors/ors332.html (2017) (last accessed Mar. 30, 2018).



Managing Radon in Schools

The Indoor Air Quality Tools for Schools Approach: Key Drivers and Strategies for Success

Successful school IAQ management programs are works in progress, and most districts put the components of success in place over time. The “Framework for Effective School IAQ Management: Key Drivers” is a system enhanced by continuous reinforcement. Implementation of one Key Driver will support and contribute to the development of another.

Strategies that support the Key Drivers complement this positive feedback loop. Overall program efficacy increases as school districts incorporate each Key Driver into their programs. This document describes how the “Framework for Effective School IAQ Management: Key Drivers” displayed in the graphic can help schools address radon risks as part of a comprehensive IAQ management program.

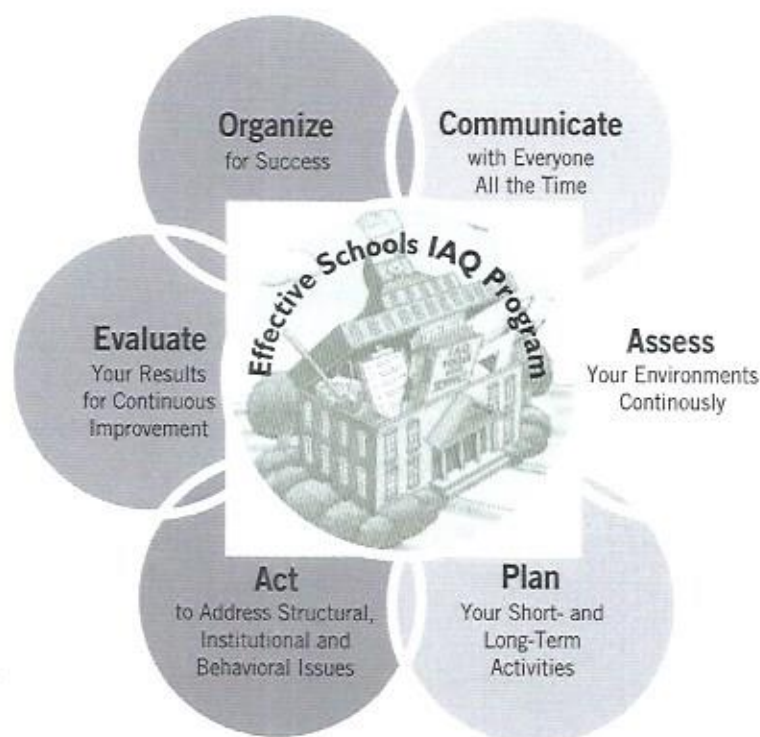
Successful IAQ management in schools comprises effective pollution source control. Radon — a radioactive gas — is one of the most hazardous indoor pollutants. Radon is the leading cause of lung cancer among non-smokers. In the U.S., an estimated 20,000 people die from radon-induced lung cancer annually. Thousands of classrooms nationwide have elevated radon levels, needlessly exposing hundreds of thousands of students and staff to this serious health risk.

EPA recommends testing all schools for radon. As part of an effective IAQ management program, schools can take simple steps to test for radon and reduce risks to occupants if high radon levels are found. The only way to know if elevated radon levels are present is to test. Many schools have successfully applied radon mitigation strategies to control indoor radon levels.

Radon gas enters from the soil beneath the school through cracks and openings in the foundation. Air pressure inside a building is sometimes lower than pressure in the soil under the foundation. Because of this difference in pressure, a building acts like a vacuum, drawing radon inside from the soil. Typical cracks and openings include joints where the floor meets the wall, expansion joints in the floor, openings in the floor for pipes and wires, and hollow masonry walls that penetrate the floor.

EPA offers detailed guidance on radon testing, results interpretation and mitigation in schools. Also, the *IAQ Design Tools for Schools* document provides guidance on how to control radon in renovation and construction projects and how to manage radon risks during repair, renovation and maintenance of existing facilities.

Framework for Effective School IAQ Management





EPA

Managing Radon in Schools

Key Drivers for Success & St

Organize for Success

Secure Senior Buy-In

Ensure senior-level support. Encourage administrators and facilities managers to connect with radon professionals to share their stories and solicit advice. Partner with parent groups, local health departments, facilities and maintenance organizations and other credible organizations to build understanding, trust and support.

Develop a Systematic Approach

Use the *IAQ Tools for Schools* Action Kit to tie your goals for radon testing to your overarching IAQ, health and environmental program goals. Coordinate this effort with existing IAQ management program activities.

Build an Effective Team

Assemble a multidisciplinary team to plan for radon testing and mitigation. Include on your team a trained radon professional; start by talking with your state radon program representative. Invite members from existing IAQ or Health and Safety Committees, facilities managers, air-conditioning technicians, IAQ professionals, school administrators, other staff and parents.

Design Standard Operating Procedures, or SOPs

Develop district-wide radon management procedures and adapt testing protocols and remedial action steps according to the needs of each school.

Organize
for Success

Act
to Address Structural,
Institutional and
Behavioral Issues

Communicate with Everyone All the Time

Make the Radon Program Meaningful

Include radon awareness as part of your overall IAQ management training and education efforts. Share with parents and staff the link between radon and building operations, and encourage them to test their homes as the home is often the most significant source of radon exposure.

Be Transparent and Inclusive

Communicate your action plan to stakeholders and the importance of radon testing. Share your testing results, mitigation plans and follow-up testing plans. In cases of elevated radon levels, ensure that your mitigation plan is in place so you can communicate those plans to parents. Invite key stakeholders to examine the issue and be part of the solution.

Communicate
with Everyone
All the Time

Plan
Your Short- and
Long-Term
Activities

Assess Your Environments Continuously



Links and Resources

<http://www.epa.gov/radon> — Visit EPA's Radon home page for facts, discussion points, and frequently asked questions and answers.

<http://www.epa.gov/radon/pubs> — Visit this webpage for EPA's radon guidance for schools.

<http://www.epa.gov/radon/whereyoulive.html> — Call your state radon office for state-specific recommendations.

<http://www.epa.gov/radon/radonleaders.html> — Connect with radon professionals and solicit advice.

<http://www.sosradon.org> — View the National Radon Poster Contest announcement and rules.

<http://www.epa.gov/iaq/schooldesign> — View the *IAQ Design Tools for Schools* document.

<http://www.epa.gov/iaq/schools/actionkit.html> — Order or print an *IAQ Tools for Schools* kit.



APPENDIX 4.0
CONSULTANT RESUME

RESUME

CHARLES ARTHUR SPEAR

**CERTIFIED ENVIRONMENTAL CONSULTANT (CEC)
ENVIRONMENTAL ASSESSMENT ASSOCIATION**

**REGISTERED ENVIRONMENTAL ASSESSOR
(Former) REA - 01241**

AHERA INSPECTOR (EPA CERTIFICATION NO. IR-19-2439A)

**CERTIFIED ENVIRONMENTAL INSPECTOR
CEI - 10364**

Professional Background

Charles A. Spear, President and founder of Environmental Inspection Services has over 30 years technical experience ranging from facility food technologist to hazardous waste site remediation at Federal SUPERFUND sites from California to Maryland. Mr. Spear has successfully performed over 3,000 Phase One, Phase Two, and Phase Three Environmental Site Assessment inspections on properties from California to Alaska and east to Maryland. Mr. Spear has managed such projects as spilled mustard gas and organophosphate demilitarization and remediation as a decontamination sergeant of the U.S. Army Chemical Corps Technical Escort Unit Drill & Transfer Unit at Umatilla Army Depot and removal of leaking solvent underground storage tanks in California and Oregon. Additional experience included supervision as a USARMY NBC Specialist of focused remediation at the Federal Superfund site known as Aberdeen Proving Grounds, Maryland (Michaelsville Landfill). EIS does not conduct or perform geological work. Geologic work is referred to a state registered geologist.

Specifically, Mr. Spear has worked with clients such as: Housing & Urban Development, the International Fabric Care Industry (IFI), the U.S. Environmental Protection Agency, The U.S. Department of Defense, The Oregon Department of Environmental Quality (ODEQ), The Oregon Department of Forestry, INTEL, Sun Microsystems, IBM, Rohm & Haas, General Electric, AT&T, Texaco, Unocal, BP, Lockheed Missile and Space Center, FMC Corporation, Oregon Department of Fish & Wildlife, Washington Department of Fish & Wildlife, City of Beaverton, City of Hillsboro, City of Corvallis, Housing Authority of Portland, Northwest Oregon Housing Authority, Washington County Department of Housing, Housing & Urban Development, numerous lenders and mortgage companies, many private development and site remedial site projects, and many attorneys and investors.

Mr. Spear managed complex solvent tank farm removals at Xidex Corporation in Sunnyvale, California and was the site cleanup manager at the Rose City Plating Site currently developed as the Oregon Convention Center. Mr. Spear is a certified hazardous waste professional who has coupled military experience as a Nuclear, Biological and Chemical Specialist (U.S. Army MOS 54E20) with experience as a professional industrial and process research engineer in both the corrugated paper and petroleum industries.

Mr. Spear has managed food industry quality control as an inplant food technologist and prepared cost reduction programs as a corrugated boxboard industrial engineer in Dallas, Texas. He is currently registered with the states of California, Washington, and Oregon and is an active member of the national respected Environmental Assessment Association. Due diligence projects have been performed throughout the United States from Fairbanks, Alaska to San Diego, California.

Professional experience includes the following:

Professional Experience

- * Dry Cleaner Inspections
- * Environmental Consultation
- * Waste Reduction Audits
- * Regulatory Compliance Audits
- * Drum Yard Clearances
- * Tank Farm Removals/Replacements
- * Lab Packaging & Supervision
- * Environmental Site Assessments
- * Superfund Site Remediation
- * Hazardous Waste site Project Design & Management
- * Habitat/Wetlands Restoration
- * AHERA asbestos inspections for school districts
- * Landfill Remediation
- * Agricultural assessments
- * Indoor air quality inspections

Professional Employment/Consultation

- * C.F.S. Continental Coffee, Inc., Food technologist, Chicago, Illinois
- * Holiday Industries, Research Engineer, Grand Prairie, Texas
- * Alton Packaging Corporation, Industrial Engineer, Dallas, Texas
- * U.S. Army Chemical Corps., Nuclear, Biological, Chemical Specialist - Special assignment - Umatilla Army Depot (DATS)
Oregon and permanent assignment U.S. Army Chemical Corps. Technical Escort Unit in Edgewood, Maryland

- * Rollins Environmental Services, Remedial Project Manager
- * Crown Environmental Services, Technical Director, Redmond, California
- * Dames & Moore, Remedial design Engineer, Portland, Oregon
- * Pegasus Environmental Management Services, Director of Technical Services
- * Pacific Tank & Construction, Manager of Estimation, Portland, Oregon
- * Enviro-Logic Inc., Director of Environmental Site Assessment Division
- * Environmental Inspection Services Founder / President

Professional Education

- * American Standard for Testing & Materials ASTM E1527-13 Training
- * Bachelor of Science, Chemistry, Northeastern Illinois University, 1978
- * U.S. Army Chemical School, Ft. McClellan, Alabama, 1983
- * U.S. Army Technical Escort Unit, Accident / Incident Response Training Center 1983
- * Registered Environmental Assessor REA - 01241 (Former classification)
- * Certified environmental Inspector CEI - 10364
- * AHERA Certified Asbestos Inspector IR-19-2439A
- * ODEQ Soil Matrix Assessor & UST Decommission Supervisor ID No. 10305
- * Washington DOE Registered Environmental Assessor
- * Wetland Specialist - Training Wetlands Institute 1997
- * EPA / HUD Lead-Based Paint (LBP) Certified Inspector & Risk Assessor

Additional Education

- * Joint Military Material Packaging & Transportation
- * Asbestos Abatement Seminar attendance 1987
- * Thin Layer Chromatography, 1989
- * Oregon Registered Underground storage Tank Supervisor, 1998
- * Oregon Registered Soil Matrix Assessor, 1998
- * Washington Registered Assessor, 1991
- * Washington Registered Underground Storage Tank Supervisor, 1991
- * Wetland Training Institute Delineation Course Study University of Portland March 1997
- * 40-Hour HAZMAT Certified
- * AHERA-Certified Inspector

Special Skills

- * Facility Environmental Compliance Audits
- * ASTM standard Environmental Site Assessments
- * Computer Programming
- * Organic surfactant chemical synthesis and analysis
- * Hazardous Waste Site remediation/ estimating/ standards development
- * Design of filtration systems, batch and continuous process optimization studies
- * QA/QC Procedures
- * SUPERFUND Site Management
- * Industrial/ Research Engineering
- * Hazardous Waste Site Remediation/ Consultation
- * Wetlands Delineation and Habitat Restoration

Certification

- * U.S. Army MOS 54E20 - U.S. Army Chemical Corps.
- * International Fire Code Institute (IFCI) Certified UST Supervisor
- * International Fire Code Institute (IFCI) Certified Soil Matrix Assessor
- * Certified Hazardous Waste Manager
- * 40-hour OSHA Training
- * 40-hour OSHA Supervisor Training
- * Registered Environmental Assessor (DOE)
- * DEQ Registered UST Supervisor
- * DEQ Registered Soil Matrix Assessor
- * Resolution Trust Corporation (RTC) approved Environmental Assessor
- * California Registered Environmental Assessor (REA-01241)- program discontinued
- * Department of Ecology (DOE) Registered Environmental Assessor
- * Environmental Assessment Association, Certified Environmental Inspector & Transaction Specialist (CEI-10364)
- * Environmental Assessment Association, Certified Environmental Consultant (CEC)
- * AHERA Certified Asbestos Inspector
- * Wetland Delineator Graduate Wetland Training Institute, University of Portland 1997
- * EPA / HUD LBP Inspector & Risk Assessor
- * ASTM Training class, May, 2004