



Jessica L. Jordan
Director, Code Compliance
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Date: September 29, 2021

State of South Carolina
The South Carolina Building Codes Council
Molly Price, Administrator
Post Office Box 11329
Columbia, SC 29211-1329

Reference: Request for Appearance at November Meeting

Dear Members of the Council,

Please accept this letter as a request to appear before the South Carolina Building Codes Council at the November 2021 meeting to bring forth to the Council the following issues;

- The continuation of the implementation of Radon Mitigation Controls in Greenville County, pursuant to a request for Local Code Modification based on physical factors, SCCL §6-9-105; Appendix 'F' Residential Code, One and Two Family Dwellings

"SECTION 6-9-105. Variations based on physical or climatological conditions; description of boundaries.

(A) If a municipality or county contends that the codes authorized by this chapter do not meet its needs due to local physical or climatological conditions, the proposed variations and modifications must be submitted to the council.

(B) The council may issue an approval after a finding on the record that the variation or modification provides a reasonable standard of public health, safety, and welfare.

(C) Where a boundary for a physical or climatological condition is referenced in a code, the council, upon adoption of the code, is required to define the boundary so that it approximates the physical or climatological area, using logical geographic features such as major highways, waterbodies, or ridgelines. Political boundaries may not be used unless they approximate the physical area."

A submittal of documentation regarding this item is enclosed.

We thank you for your kind consideration of this request.

Sincerely,

Jessica L. Jordan

Copy: Chrono file



South Carolina Building Codes Council

PO Box 11329

Columbia, SC 29211-1329

Request for Local Code Modification

Jurisdiction: Greenville County Code Compliance

Jurisdiction's Representative: Darren Brock, CBO

Title: Building Official

Address: 301 University Ridge, Suite 4100 Greenville SC 29601

Phone: 864-467-5771

E-mail: dabrock@greenvillecounty.org

Signature: *Darren Brock*

Date: 09/29/2021

Code: International Residential Code (IRC)

Edition: 2021

Section: Appendix F

Check One: Delete and substitute the following Delete without substitution Add the following Modify the following
Type or print proposed modification. Use additional pages if necessary. Underline New language. ~~Line Through Deleted Language.~~

Adopt Appendix F, AF 101.1 thru AF 103.12

Reason: Physical in Nature Climatological in Nature

Type or print the reason for the proposed modification. Use additional pages if necessary.

Greenville County is referenced in the IRC as a county with a "High Radon-Potential" (Zone 1) in the 2021 IRC Figures 101 & 103.1 and Table 101.1.

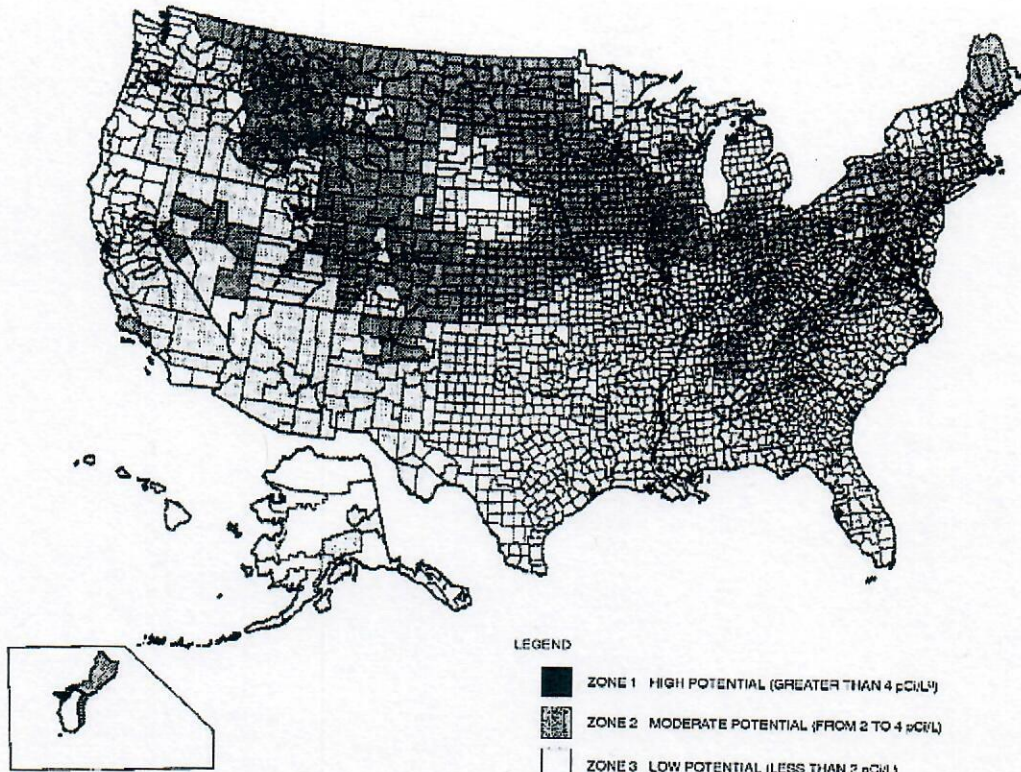
This appendix contains requirements for new construction in jurisdictions where radon-resistant construction is required. These requirements are intended to provide a passive means of resisting radon gas entry and prepare the dwelling for post-construction radon mitigation, if necessary.

SECTION AF101 SCOPE

AF101.1 General.

This appendix contains requirements for new construction in *jurisdictions* where radon-resistant construction is required.

Inclusion of this appendix by *jurisdictions* shall be determined through the use of locally available data or determination of Zone 1 designation in [Figure AF101.1](#) and [Table AF101.1](#).



a. pCi/L stands for picocuries per liter of radon gas. The US Environmental Protection Agency (EPA) recommends that homes that measure 4 pCi/L and greater be mitigated.

The EPA and the US Geological Survey have evaluated the radon potential in the United States and have developed a map of radon zones designed to assist building officials in deciding whether radon-resistant features are applicable in new construction.

The map assigns each of the 3,141 counties in the United States to one of three zones based on radon potential. Each zone designation reflects the average short-term radon measurement that can be expected to be measured in a building without the implementation of radon-control methods. The radon zone designation of highest priority is Zone 1. [Table AF101.1](#) lists the Zone 1 counties illustrated on the map. More detailed information can be obtained from state-specific booklets (EPA-401-R-93-021 through 070) available through the State Radon Offices or from the EPA Regional Offices.

FIGURE AF101.1
EPA MAP OF RADON ZONES

SECTION AF101 SCOPE
TABLE AF101.1
HIGH RADON-POTENTIAL (ZONE 1) COUNTIES^a

ALABAMA
Calhoun
Clay
Cleburne
Colbert
Coosa
Franklin
Jackson
Lauderdale
Lawrence
Limestone
Madison
Morgan
Talladega
CALIFORNIA
Santa Barbara
Ventura
COLORADO
Adams
Arapahoe
Baca
Bent
Boulder
Chaffee
Cheyenne
Clear Creek
Crowley
Custer
Delta
Denver
Dolores
Douglas
El Paso
Elbert
Fremont
Garfield
Gilpin
Grand
Gunnison
Huerfano
Jackson
Jefferson
Kiowa
Kit Carson
Lake
Larimer
Las Animas
Lincoln
Logan
Mesa
Moffat
Montezuma
Montrose
Morgan
Otero
Ouray
Park
Phillips
Pitkin
Prowers
Pueblo
Rio Blanco
San Miguel
Summit
Teller
Washington
Weld
Yuma
CONNECTICUT
Fairfield
Middlesex
New Haven
New London
GEORGIA
Cobb
De Kalb
Fulton

Gwinnett
IDAHO
Benewah
Blaine
Boise
Bonner
Boundary
Butte
Camas
Clark
Clearwater
Custer
Elmore
Fremont
Gooding
Idaho
Kootenai
Latah
Lemhi
Shoshone
Valley
ILLINOIS
Adams
Boone
Brown
Bureau
Calhoun
Carroll
Cass
Champaign
Coles
De Kalb
De Witt
Douglas
Edgar
Ford
Fulton
Greene
Grundy
Hancock
Henderson
Henry
Iroquois
Jersey
Jo Daviess
Kane
Kendall
Knox
La Salle
Lee
Livingston
Logan
Macon
Marshall
Mason
McDonough
McLean
Menard
Mercer
Morgan
Moultrie
Ogle
Peoria
Platt
Pike
Putnam
Rock Island
Sangamon
Schuyler
Scott
Stark
Stephenson
Tazewell
Vermilion
Warren
Whiteside
Winnebago
Woodford
INDIANA
Adams
Allen

Bartholomew
Benton
Blackford
Boone
Carroll
Cass
Clark
Clinton
De Kalb
Decatur
Delaware
Elkhart
Fayette
Fountain
Fulton
Grant
Hamilton
Hancock
Harrison
Hendricks
Henry
Howard
Huntington
Jay
Jennings
Johnson
Kosciusko
LaGrange
Lawrence
Madison
Marion
Marshall
Miami
Monroe
Montgomery
Noble
Orange
Putnam
Randolph
Rush
Scott
Shelby
St. Joseph
Steuben
Tippecanoe
Tipton
Union
Vermillion
Wabash
Warren
Washington
Wayne
Wells
White
Whitley
IOWA
All Counties
KANSAS
Atchison
Barton
Brown
Cheyenne
Clay
Cloud
Decatur
Dickinson
Douglas
Ellis
Ellsworth
Finney
Ford
Geary
Gove
Graham
Grant
Gray
Greeley
Hamilton
Haskell
Hodgeman
Jackson

Jewell
Johnson
Kearny
Kingman
Kiowa
Lane
Leavenworth
Lincoln
Logan
Marion
Marshall
McPherson
Meade
Mitchell
Nemaha
Ness
Norton
Osborne
Ottawa
Pawnee
Phillips
Pottawatomie
Pratt
Rawlins
Republic
Rice
Riley
Rooks
Rush
Saline
Scott
Sheridan
Sherman
Smith
Stanton
Thomas
Trego
Wallace
Washington
Wichita
Wyandotte
KENTUCKY
Adair
Allen
Barren
Bourbon
Boyle
Bullitt
Casey
Clark
Cumberland
Fayette
Franklin
Green
Harrison
Hart
Jefferson
Jessamine
Lincoln
Marion
Mercer
Metcalfe
Monroe
Nelson
Pendleton
Pulaski
Robertson
Russell
Scott
Taylor
Warren
Woodford
MAINE
Androscoggin
Aroostook
Cumberland
Franklin
Hancock
Kennebec
Lincoln
Oxford

Penobscot
Piscataquis
Somerset
York
MARYLAND
Baltimore
Calvert
Carroll
Frederick
Harford
Howard
Montgomery
Washington
MASS.
Essex
Middlesex
Worcester
MICHIGAN
Branch
Calhoun
Cass
Hillsdale
Jackson
Kalamazoo
Lenawee
St. Joseph
Washtenaw
MINNESOTA
Becker
Big Stone
Blue Earth
Brown
Carver
Chippewa
Clay
Cottonwood
Dakota
Dodge
Douglas
Faribault
Fillmore
Freeborn
Goodhue
Grant
Hennepin
Houston
Hubbard
Jackson
Kanabec
Kandiyohi
Kittson
Lac Qui Parle
Le Sueur
Lincoln
Lyon
Mahnomen
Marshall
Martin
McLeod
Meeker
Mower
Murray
Nicollet
Nobles
Norman
Olmsted
Otter Tail
Pennington
Pipestone
Polk
Pope
Ramsey
Red Lake
Redwood
Renville
Rice
Rock
Roseau
Scott
Sherburne
Sibley

Stearns
Steele
Stevens
Swift
Todd
Traverse
Wabasha
Wadena
Waseca
Washington
Watsonwan
Wilkin
Winona
Wright
Yellow Medicine
MISSOURI
Andrew
Atchison
Buchanan
Cass
Clay
Clinton
Holt
Iron
Jackson
Nodaway
Platte
MONTANA
Beaverhead
Big Horn
Blaine
Broadwater
Carbon
Carter
Cascade
Chouteau
Custer
Daniels
Dawson
Deer Lodge
Fallon
Fergus
Flathead
Gallatin
Garfield
Glacier
Granite
Hill
Jefferson
Judith Basin
Lake
Lewis and Clark
Madison
McCone
Meagher
Missoula
Park
Phillips
Pondera
Powder River
Powell
Prairie
Ravalli
Richland
Roosevelt
Rosebud
Sanders
Sheridan
Silver Bow
Stillwater
Teton
Toole
Valley
Wibaux
Yellowstone
NEBRASKA
Adams
Boone
Boyd
Burt
Butler

Cass
Cedar
Clay
Colfax
Cuming
Dakota
Dixon
Dodge
Douglas
Fillmore
Franklin
Frontier
Furnas
Gage
Gosper
Greeley
Hamilton
Harlan
Hayes
Hitchcock
Hurston
Jefferson
Johnson
Kearney
Knox
Lancaster
Madison
Nance
Nemaha
Nuckolls
Otoe
Pawnee
Phelps
Pierce
Platte
Polk
Red Willow
Richardson
Saline
Sarpy
Saunders
Seward
Stanton
Thayer
Washington
Wayne
Webster
York
NEVADA
Carson City
Douglas
Eureka
Lander
Lincoln
Lyon
Mineral
Pershing
White Pine
NEW HAMPSHIRE
Carroll
NEW JERSEY
Hunterdon
Mercer
Monmouth
Morris
Somerset
Sussex
Warren
NEW MEXICO
Bernalillo
Colfax
Mora
Rio Arriba
San Miguel
Santa Fe
Taos
NEW YORK
Albany
Allegany
Broome
Cattaraugus

Cayuga
Chautauqua
Chemung
Chenango
Columbia
Cortland
Delaware
Dutchess
Erie
Genesee
Greene
Livingston
Madison
Onondaga
Ontario
Orange
Otsego
Putnam
Rensselaer
Schoharie
Schuyler
Seneca
Steuben
Sullivan
Tioga
Tompkins
Ulster
Washington
Wyoming
Yates
N. CAROLINA
Alleghany
Buncombe
Cherokee
Henderson
Mitchell
Rockingham
Transylvania
Watauga
N. DAKOTA
All Counties
OHIO
Adams
Allen
Ashland
Auglaize
Belmont
Butler
Carroll
Champaign
Clark
Clinton
Columbiana
Coshocton
Crawford
Darke
Delaware
Fairfield
Fayette
Franklin
Greene
Guernsey
Hamilton
Hancock
Hardin
Harrison
Holmes
Huron
Jefferson
Knox
Licking
Logan
Madison
Marion
Mercer
Miami
Montgomery
Morrow
Muskingum
Perry
Pickaway

Pike
Preble
Richland
Ross
Seneca
Shelby
Stark
Summit
Tuscarawas
Union
Van Wert
Warren
Wayne
Wyandot
PENNSYLVANIA
Adams
Allegheny
Armstrong
Beaver
Bedford
Berks
Blair
Bradford
Bucks
Butler
Cameron
Carbon
Centre
Chester
Clarion
Clearfield
Clinton
Columbia
Cumberland
Dauphin
Delaware
Franklin
Fulton
Huntingdon
Indiana
Juniata
Lackawanna
Lancaster
Lebanon
Lehigh
Luzerne
Lycoming
Mifflin
Monroe
Montgomery
Montour
Northampton
Northumberland
Perry
Schuylkill
Snyder
Sullivan
Susquehanna
Tioga
Union
Venango
Westmoreland
Wyoming
York
RHODE ISLAND
Kent
Washington
S. CAROLINA
Greenville
S. DAKOTA
Aurora
Beadle
Bon Homme
Brookings
Brown
Brule
Buffalo
Campbell
Charles Mix
Clark
Clay

Codington
Corson
Davison
Day
Deuel
Douglas
Edmunds
Faulk
Grant
Hamlin
Hand
Hanson
Hughes
Hutchinson
Hyde
Jerauld
Kingsbury
Lake
Lincoln
Lyman
Marshall
McCook
McPherson
Miner
Minnehaha
Moody
Perkins
Potter
Roberts
Sanborn
Spink
Stanley
Sully
Turner
Union
Walworth
Yankton
TENNESSEE
Anderson
Bedford
Blount
Bradley
Claiborne
Davidson
Giles
Grainger
Greene
Hamblen
Hancock
Hawkins
Hickman
Humphreys
Jackson
Jefferson
Knox
Lawrence
Lewis
Lincoln
Loudon
Marshall
Maury
McMinn
Meigs
Monroe
Moore
Perry
Roane
Rutherford
Smith
Sullivan
Trousdale
Union
Washington
Wayne
Williamson
Wilson
UTAH
Carbon
Duchesne
Grand
Plute

Sanpete
Sevier
Uintah
VIRGINIA
Alleghany
Amelia
Appomattox
Augusta
Bath
Bland
Botetourt
Bristol
Brunswick
Buckingham
Buena Vista
Campbell
Chesterfield
Clarke
Clifton Forge
Covington
Craig
Cumberland
Danville
Dinwiddie
Fairfax
Falls Church
Fluvanna
Frederick
Fredericksburg
Giles
Goochland
Harrisonburg
Henry
Highland
Lee
Lexington
Louisa
Martinsville
Montgomery
Nottoway
Orange
Page
Patrick
Pittsylvania
Powhatan
Pulaski
Radford
Roanoke
Rockbridge
Rockingham
Russell
Salem
Scott
Shenandoah
Smyth
Spotsylvania
Stafford
Staunton
Tazewell
Warren
Washington
Waynesboro
Winchester
Wythe
WASHINGTON
Clark
Ferry
Okanogan
Pend Oreille
Skamania
Spokane
Stevens
W. VIRGINIA
Berkeley
Brooke
Grant
Greenbrier
Hampshire
Hancock
Hardy
Jefferson

Marshall
Mercer
Mineral
Monongalia
Monroe
Morgan
Ohio
Pendleton
Pocahontas
Preston
Summers
Wetzel
WISCONSIN
Buffalo
Crawford
Dane
Dodge
Door
Fond du Lac
Grant
Green
Green Lake
Iowa
Jefferson
Lafayette
Langlade
Marathon
Menominee
Pepin
Pierce
Portage
Richland
Rock
Shawano
St. Croix
Vernon
Walworth
Washington
Waukesha
Waupaca
Wood
WYOMING
Albany
Big Horn
Campbell
Carbon
Converse
Crook
Fremont
Goshen
Hot Springs
Johnson
Laramie
Lincoln
Natrona
Niobrara
Park
Sheridan
Sublette
Sweetwater
Teton
Uinta
Washakie

ALABAMA Calhoun Clay Cleburne Colbert Coosa Franklin Jackson Lauderdale Lawrence Limestone Madison Morgan Talladega **CALIFORNIA** Santa Barbara Ventura **COLORADO** Adams Arapahoe Baca Bent Boulder Chaffee Cheyenne Clear Creek Crowley Custer Delta Denver Dolores Douglas El Paso Elbert Fremont Garfield Gilpin Grand Gunnison Huerfano Jackson Jefferson Kiowa Kit Carson Lake Larimer Las Animas Lincoln Logan Mesa Moffat Montezuma Montrose Morgan Otero Ouray Park Phillips Pitkin Prowers Pueblo Rio Blanco San Miguel Summit Teller Washington Weld Yuma **CONNECTICUT** Fairfield Middlesex New Haven New London **GEORGIA** Cobb De Kalb Fulton Gwinnett **IDAHO** Benewah Blaine Boise Bonner Boundary Butte Camas Clark Clearwater Custer Elmore Fremont Gooding Idaho Kootenai Latah Lemhi Shoshone Valley **ILLINOIS** Adams Boone Brown Kalb De Witt Douglas Edgar Ford Fulton Greene Grundy Hancock Henderson Henry Iroquois Jersey Jo Daviess Kane Kendall Knox La Salle Lee Livingston Logan Macon Marshall Mason Mc Donough McLean Menard Mercer Morgan Moultrie Ogle Peoria Piatt Pike Putnam Rock Island Sangamon Schuyler Scott Stark Stephenson Tazewell Vermilion Warren Whiteside Winnebago Woodford **INDIANA** Adams Allen Bartholomew Benton Blackford Boone Carroll Cass Clark Clinton De Kalb Decatur Delaware Elkhart Fayette Fountain Fulton Grant Hamilton Hancock Harrison Hendricks Henry Howard Huntington Jay Jennings Johnson Kosciusko La Grange Lawrence Madison Marion Marshall Miami Joseph Steuben Tippecanoe Tipton Union Vermillion Wabash Warren Washington Wayne Wells White Whitley **IOWA** All Counties **KANSAS** Atchison Barton Brown Cheyenne Clay Cloud Decatur Dickinson Douglas Ellis Ellsworth Finney Ford Geary Gove Graham Grant Gray Greeley Hamilton Haskell Hodgeman Jackson Jewell Johnson Joseph Washtenaw **MINNESOTA** Becker Big Stone Blue Earth Brown Carver Chippewa Clay Cottonwood Dakota Dodge Douglas Faribault Fillmore Freeborn Goodhue Grant Hennepin Houston Hubbard Jackson Kanabec Kandiyohi Kittson Lac Qui Parle Le Sueur Lincoln Lyon Mahanomen Marshall Martin McLeod Meeker Mower Murray Nicollet Nobles Norman Olmsted Otter Tail Pennington Pipestone Polk Pope Ramsey Red Lake Redwood Renville Rice Rock Roseau Scott Sherburne Sibley Stearns Steele Stevens Swift Todd Traverse Wabasha Wadena Waseca Washington Watonwan Wilkin Winona Wright Yellow Medicine **MISSOURI** Andrew Atchison Buchanan Cass Clay Clinton Holt Iron Jackson Nodaway Platte **MONTANA** Beaverhead Big Horn Blaine Broadwater Carbon Carter Cascade Chouteau Custer Daniels Dawson Deer Lodge Fallon Fergus Flathead Gallatin Garfield Glacier Granite Hill Jefferson Judith Basin Lake Lewis and Clark Madison McCone Meagher Missoula Park Phillips Pondera Powder River Powell Prairie Ravalli Richland Roosevelt Rosebud Sanders Sheridan Silver Bow Stillwater Teton Toole Valley Wibaux Yellowstone **NEBRASKA** Adams Boone Boyd Burt Butler Cass Cedar Clay Colfax Cuming Dakota Dixon Dodge Douglas Fillmore Franklin Frontier Furnas Gage Gosper Gre Willow Richardson Saline Sarpy Saunders Seward Stanton Thayer Washington Wayne Webster York **NEVADA** Carson City Douglas Eureka Lander Lincoln Lyon Mineral Pershing White Pine **NEW HAMPSHIRE** Carroll **NEW JERSEY** Hunterdon Mercer Monmouth Morris Somerset Sussex Warren **NEW MEXICO** Bernalillo Colfax Mora Rio Arriba San Miguel Santa Fe Taos **NEW YORK** Albany Allegany Broome Cattaraugus Cayuga Chautauque Chemung Chenango Columbia Cortland Delaware Dutchess Erie Genesee Greene Livingston Madison Onondaga Ontario Orange Otsego Putnam **CAROLINA** Alleghany Buncombe Cherokee Henderson Mitchell Rockingham Transylvania Watauga **DAKOTA** All

Counties **OHIO** Adams Allen Ashland Auglaize Belmont Butler Carroll Champaign Clark Clinton Columbiana Coshocton Crawford Darke Delaware Fairfield Fayette Franklin Greene Guernsey Hamilton Hancock H
Wert Warren Wayne Wyandot **PENNSYLVANIA** Adams Allegheny Armstrong Beaver Bedford Berks Blair Bradford Bucks Butler Cameron Carbon Centre Chester Clarion Clearfield Clinton Columbia Cumberland
ISLAND Kent Washington **S. CAROLINA** Greenville **. DAKOTA** Aurora Beadle Bon Homme Brookings Brown Brule Buffalo Campbell Charles
Mix Clark Clay Codington Corson Davison Day Deuel Douglas Edmunds Faulk Grant Hamlin Hand Hanson Hughes Hutchinson Hyde Jerard Kingsbury Lake Lincoln Lyman Marshall McCook McPherson Miner Minne
Vista Campbell Chesterfield Clarke Clifton Forge Covington Craig Cumberland Danville Dinwiddie Fairfax Falls
Church Fluvanna Frederick Fredericksburg Giles Goochland Harrisonburg Henry Highland Lee Lexington Louisa Martinsville Montgomery Nottoway Orange Page Patrick Pittsylvania Powhatan Pulaski Radford
Oreille Skamania Spokane Stevens **W.**
VIRGINIA Berkeley Brooke Grant Greenbrier Hampshire Hancock Hardy Jefferson Marshall Mercer Mineral Monongalia Monroe Morgan Ohio Pendleton Pocahontas Preston Summers Wetzel **WISCONSIN** Buffe
du Lac Grant Green Green Lakelowa Jefferson Lafayette Langlade Marathon Menominee Pepin Pierce Portage Richland Rock Shawano St.
Croix Vernon Walworth Washington Waukesha Waupaca Wood **WYOMING** Albany Big Horn Campbell Carbon Converse Crook Fremont Goshen Hot
Springs Johnson Laramie Lincoln Natrona Niobrara Park Sheridan Sublette Sweetwater Teton Uinta Washakie

- a. The EPA recommends that this county listing be supplemented with other available state and local data to further understand the radon potential of a Zone 1 area.

SECTION AF101 SCOPE

**SECTION AF102
DEFINITIONS****AF102.1 General.**

For the purpose of these requirements, the terms used shall be defined as follows:

DRAIN TILE LOOP. A continuous length of drain tile or perforated pipe extending around all or part of the internal or external perimeter of a *basement* or *crawl space* footing.

RADON GAS. A naturally occurring, chemically inert, radioactive gas that is not detectable by human senses. As a gas, it can move readily through particles of soil and rock, and can accumulate under the slabs and foundations of homes where it can easily enter into the living space through construction cracks and openings.

SOIL-GAS-RETARDER. A continuous membrane of 6-mil (0.15 mm) polyethylene or other equivalent material used to retard the flow of soil gases into a building.

SUBMEMBRANE DEPRESSURIZATION SYSTEM. A system designed to achieve lower submembrane air pressure relative to *crawl space* air pressure by use of a vent drawing air from beneath the soil-gas-retarder membrane.

SUBSLAB DEPRESSURIZATION SYSTEM (Active). A system designed to achieve lower subslab air pressure relative to indoor air pressure by use of a fan-powered vent drawing air from beneath the slab.

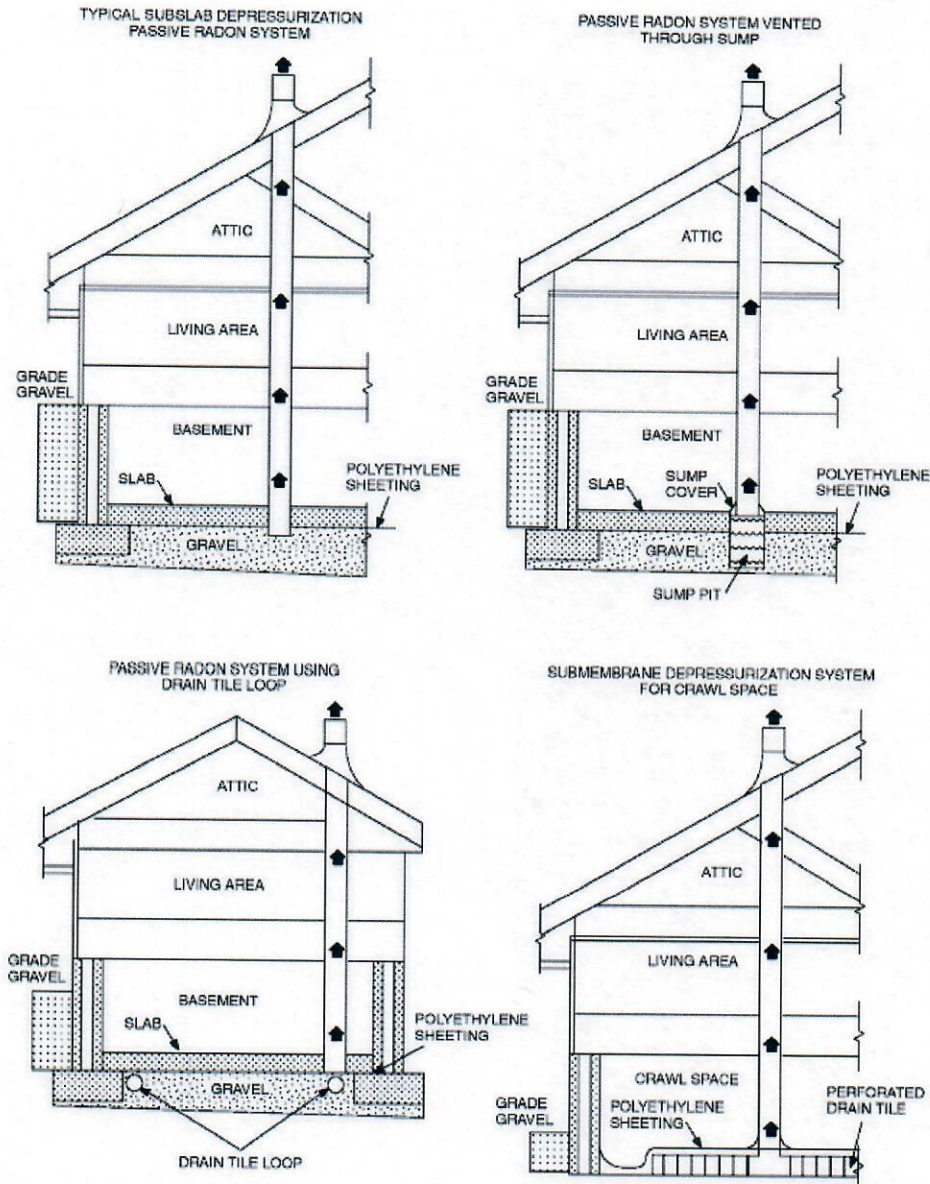
SUBSLAB DEPRESSURIZATION SYSTEM (Passive). A system designed to achieve lower subslab air pressure relative to indoor air pressure by use of a vent pipe routed through the *conditioned space* of a building and connecting the subslab area with outdoor air, thereby relying on the convective flow of air upward in the vent to draw air from beneath the slab.

SECTION AF101 SCOPE

**SECTION AF103
REQUIREMENTS**

AF103.1 General.

The following construction techniques are intended to resist radon entry and prepare the building for post-construction radon mitigation, if necessary (see Figure AF103.1). These techniques are required in areas where designated by the jurisdiction.



**FIGURE AF103.1
RADON-RESISTANT CONSTRUCTION DETAILS FOR FOUR FOUNDATION TYPES**

AF103.2 Subfloor preparation.

A layer of gas-permeable material shall be placed under all concrete slabs and other floor systems that directly contact the ground and are within the walls of the living spaces of the building, to facilitate future installation of a subslab

depressurization system, if needed. The gas-permeable layer shall consist of one of the following:

1. A uniform layer of clean aggregate, not less than 4 inches (102 mm) thick. The aggregate shall consist of material that will pass through a 2-inch (51 mm) sieve and be retained by a $\frac{1}{4}$ -inch (6.4 mm) sieve.
2. A uniform layer of sand (native or fill), not less than 4 inches (102 mm) thick, overlain by a layer or strips of geotextile drainage matting designed to allow the lateral flow of soil gases.
3. Other materials, systems or floor designs with demonstrated capability to permit depressurization across the entire subfloor area.

AF103.3 Soil-gas-retarder.

A minimum 6-mil (0.15 mm) [or 3-mil (0.075 mm) cross-laminated] polyethylene or equivalent flexible sheeting material shall be placed on top of the gas-permeable layer prior to casting the slab or placing the floor assembly to serve as a soil-gas-retarder by bridging any cracks that develop in the slab or floor assembly, and to prevent concrete from entering the void spaces in the aggregate base material. The sheeting shall cover the entire floor area with separate sections of sheeting lapped not less than 12 inches (305 mm). The sheeting shall fit closely around any pipe, wire or other penetrations of the material. Punctures or tears in the material shall be sealed or covered with additional sheeting.

AF103.4 Entry routes.

Potential radon entry routes shall be closed in accordance with [Sections AF103.4.1 through AF103.4.10](#).

AF103.4.1 Floor openings.

Openings around bathtubs, showers, water closets, pipes, wires or other objects that penetrate concrete slabs, or other floor assemblies, shall be filled with a polyurethane caulk or equivalent sealant applied in accordance with the manufacturer's recommendations.

AF103.4.2 Concrete joints.

Control joints, isolation joints, construction joints, and any other joints in concrete slabs or between slabs and foundation walls shall be sealed with a caulk or sealant. Gaps and joints shall be cleared of loose material and filled with polyurethane caulk or other elastomeric sealant applied in accordance with the manufacturer's recommendations.

AF103.4.3 Condensate drains.

Condensate drains shall be trapped or routed through nonperforated pipe to daylight.

AF103.4.4 Sumps.

Sump pits open to soil or serving as the termination point for subslab or exterior drain tile loops shall be covered with a gasketed or otherwise sealed lid. Sumps used as the suction point in a subslab depressurization system shall have a lid designed to accommodate the vent pipe. Sumps used as a floor drain shall have a lid equipped with a trapped inlet.

AF103.4.5 Foundation walls.

Hollow block masonry foundation walls shall be constructed with either a continuous course of *solid masonry*, one course of masonry grouted solid, or a solid concrete beam at or above finished ground surface to prevent the passage of air from the interior of the wall into the living space. Where a brick veneer or other masonry ledge is installed, the course immediately below that ledge shall be sealed. Joints, cracks or other openings around all penetrations of both exterior and interior surfaces of masonry block or wood foundation walls below the ground surface shall be filled with polyurethane caulk or equivalent sealant. Penetrations of concrete walls shall be filled.

AF103.4.6 Dampproofing.

The exterior surfaces of portions of concrete and masonry block walls below the ground surface shall be dampproofed in accordance with [Section R406](#).

AF103.4.7 Air-handling units.

Air-handling units in crawl spaces shall be sealed to prevent air from being drawn into the unit.

Exception: Units with gasketed seams or units that are otherwise sealed by the manufacturer to prevent leakage.

AF103.4.8 Ducts.

Ductwork passing through or beneath a slab shall be of seamless material unless the air-handling system is designed to maintain continuous positive pressure within such ducting. Joints in such ductwork shall be sealed to prevent air leakage.

Ductwork located in crawl spaces shall have seams and joints sealed by closure systems in accordance with Section M1601.4.1.

AF103.4.9 Crawl space floors.

Openings around all penetrations through floors above crawl spaces shall be caulked or otherwise filled to prevent air leakage.

AF103.4.10 Crawl space access.

Access doors and other openings or penetrations between basements and adjoining crawl spaces shall be closed, gasketed or otherwise filled to prevent air leakage.

AF103.5 Passive submembrane depressurization system.

In buildings with *crawl space* foundations, the following components of a passive submembrane depressurization system shall be installed during construction.

Exception: Buildings in which an *approved* mechanical *crawl space* ventilation system or other equivalent system is installed.

AF103.5.1 Ventilation.

Crawl spaces shall be provided with vents to the exterior of the building. The minimum net area of ventilation openings shall comply with Section R408.1.

AF103.5.2 Soil-gas-retarder.

The soil in crawl spaces shall be covered with a continuous layer of minimum 6-mil (0.15 mm) polyethylene soil-gas-retarder. The ground cover shall be lapped not less than 12 inches (305 mm) at joints and shall extend to all foundation walls enclosing the *crawl space* area.

AF103.5.3 Vent pipe.

A plumbing tee or other *approved* connection shall be inserted horizontally beneath the sheeting and connected to a 3- or 4-inch-diameter (76 or 102 mm) fitting with a vertical vent pipe installed through the sheeting. The vent pipe shall be extended up through the building floors, and terminate not less than 12 inches (305 mm) above the roof in a location not less than 10 feet (3048 mm) away from any window or other opening into the *conditioned spaces* of the building that is less than 2 feet (610 mm) below the exhaust point, and 10 feet (3048 mm) from any window or other opening in adjoining or adjacent buildings.

AF103.6 Passive subslab depressurization system.

In *basement* or slab-on-grade buildings, the following components of a passive subslab depressurization system shall be installed during construction.

AF103.6.1 Vent pipe.

A minimum 3-inch-diameter (76 mm) ABS, PVC or equivalent gastight pipe shall be embedded vertically into the subslab aggregate or other permeable material before the slab is cast. A "T" fitting or equivalent method shall be used to ensure that the pipe opening remains within the subslab permeable material. Alternatively, the 3-inch (76 mm) pipe shall be inserted directly into an interior perimeter drain tile loop or through a sealed sump cover where the sump is exposed to the subslab aggregate or connected to it through a drainage system.

The pipe shall be extended up through the building floors, and terminate not less than 12 inches (305 mm) above the surface of the roof in a location not less than 10 feet (3048 mm) away from any window or other opening into the *conditioned spaces* of the building that is less than 2 feet (610 mm) below the exhaust point, and 10 feet (3048 mm) from any window or other opening in adjoining or adjacent buildings.

AF103.6.2 Multiple vent pipes.

In buildings where interior footings or other barriers separate the subslab aggregate or other gas-permeable material, each area shall be fitted with an individual vent pipe. Vent pipes shall connect to a single vent that terminates above the roof or each individual vent pipe shall terminate separately above the roof.

AF103.7 Vent pipe drainage.

Components of the radon vent pipe system shall be installed to provide positive drainage to the ground beneath the slab or soil-gas-retarder.

AF103.8 Vent pipe accessibility.

Radon vent pipes shall be accessible for future fan installation through an attic or other area outside the *habitable space*.

Exception: The radon vent pipe need not be accessible in an attic space where an *approved* roof-top electrical supply

is provided for future use.

AF103.9 Vent pipe identification.

Exposed and visible interior radon vent pipes shall be identified with not less than one *label* on each floor and in accessible *attics*. The *label* shall read: "Radon Reduction System."

AF103.10 Combination foundations.

Combination *basement/crawl space* or *slab-on-grade/crawl space* foundations shall have separate radon vent pipes installed in each type of foundation area. Each radon vent pipe shall terminate above the roof or shall be connected to a single vent that terminates above the roof.

AF103.11 Building depressurization.

Joints in air ducts and plenums in unconditioned spaces shall meet the requirements of [Section M1601](#). Thermal envelope air infiltration requirements shall comply with the energy conservation provisions in [Chapter 11](#). Fireblocking shall meet the requirements contained in [Section R302.11](#).

AF103.12 Power source.

To provide for future installation of an active submembrane or subslab depressurization system, an electrical circuit terminated in an *approved* box shall be installed during construction in the attic or other anticipated location of vent pipe fans. An electrical supply shall be accessible in anticipated locations of system failure alarms.

Does Your Home Have a Radon Problem?

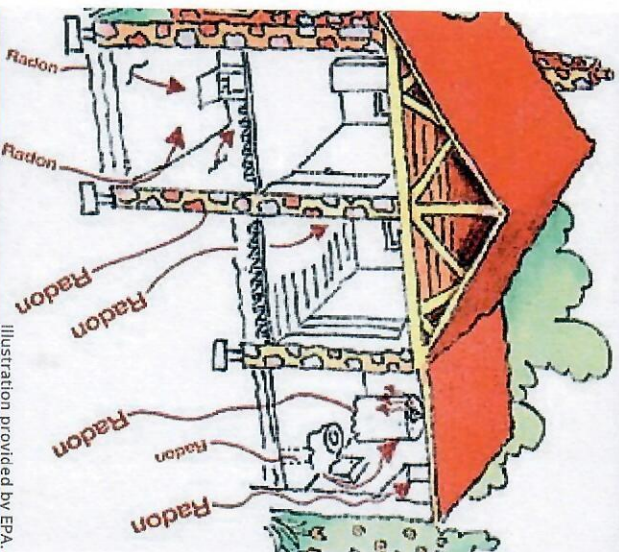


Illustration provided by EPA.

South Carolina Department of Health and Environmental Control



For More Information:

S.C. DHEC

Radon Helpline: (800) 768-0362
 Radon Web site: www.scdhec.gov/radon
 Email: radon@dhec.sc.gov

Environmental Protection Agency (EPA)

Radon Hotline: (800) SOS-RADON (767-7236)
 Radon Web site: www.epa.gov/radon

For certified contractors contact:

National Radon Proficiency Program

www.aarst-nrpp.com

or

National Radon Safety Board

www.nrsb.org

a. Assumes constant lifetime exposure in homes at these levels.
 b. Estimates are subject to uncertainties as discussed in Chapter V111 of the risk assessment.
 c. Note: Biological Effects of Ionizing Radiation (BEIR) VI Report did not specify excess relative risks for current smokers.

Radon Level ^a	Never Smokers	Current Smokers ^b	General Population
20	36 out of 1,000	26 out of 100	11 out of 100
10	18 out of 1,000	15 out of 100	56 out of 1,000
8	15 out of 1,000	12 out of 100	45 out of 1,000
4	73 out of 10,000	62 out of 1,000	23 out of 1,000
2	37 out of 10,000	32 out of 1,000	12 out of 1,000
1.25	23 out of 10,000	20 out of 1,000	73 out of 10,000
.4	73 out of 100,000	64 out of 10,000	23 out of 10,000

Lifetime Risk of Lung Cancer in Homes^b from Radon Exposure in Homes^a

Table provided by EPA.

WARNING: SURGEON GENERAL'S

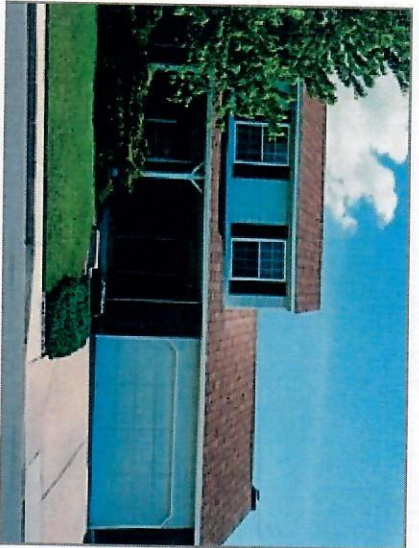
Radon Causes Lung Cancer. You Should Test Your Home.

The U.S. Surgeon General recommends that your home be tested for radon. Radon is the second leading cause of lung cancer. If you have never smoked, radon is the number one cause of lung cancer. Radon is an invisible radioactive gas that seeps into your home from underground, and the only way you can tell if you have dangerous levels of radon in your home is to test for it. Radon problems can be easily fixed. For testing information, call or visit:

1-800-SOS-RADON www.epa.gov/radon



CR-006953 12/18



Radon Facts

- Radon is a cancer-causing, natural, radioactive gas.
- Radon causes more than 20,000 lung cancer deaths each year in the U.S.
- Radon is the leading cause of lung cancer in non-smokers and the second leading cause of lung cancer in smokers.
- Radon can be found all over the U.S., including South Carolina.
- Radon levels as high as 70.0 pCi/L and higher have been found in South Carolina.
- Nearly one out of every 15 homes in the U.S. is estimated to have elevated radon levels.

Radon Risks

Radon is a natural, radioactive gas. It forms when uranium breaks down in soil, rock and water. You can't see, smell or taste radon. It gets into the air you breathe indoors, primarily from soil under your home and other buildings.

Radon can get into any type of building (homes, offices and schools), which can cause high indoor radon levels. However, you are most likely to get your greatest exposure at home since that is where you spend most of your time.

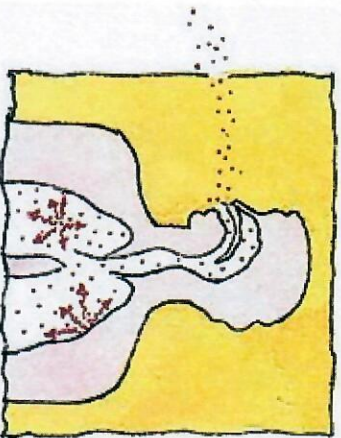
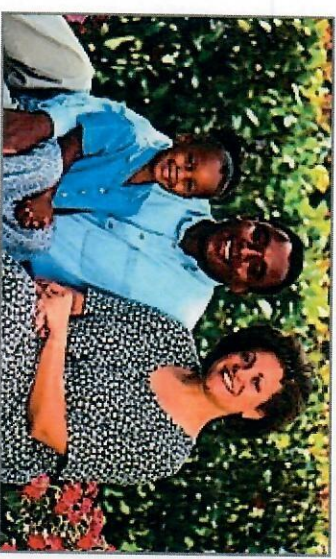


Illustration provided by EPA.

Radon is a risk because it decays into radioactive particles that can get trapped in your lungs when you breathe. These particles break down and release small bursts of energy that can damage lung tissue and lead to lung cancer. Your chances of getting lung cancer from radon depend mostly on how much radon is in your home, the amount of time you spend in your home, and if you smoke or have ever smoked.

The Environmental Protection Agency (EPA) has an action level of 4 Pico Curies per liter (pCi/L). This means you should install radon reduction systems in your home if the radon level is 4 pCi/L or higher. Radon reduction systems are installed by qualified professionals and are not very expensive. In fact, some systems can reduce radon levels in your home by up to 99 percent. Levels below 4 pCi/L also can pose a health risk and in many cases can be reduced. You can reduce your risk of lung cancer by lowering your radon levels.

What You Can Do



The only way to know if you have a radon problem is to test your home. Testing for radon is easy, inexpensive and only takes a few minutes.

Radon test kits can be purchased from the National Radon Program at 1-800-767-7236 or www.sosradon.org, or a certified radon tester can be hired. A limited quantity of **FREE** test kits are available from DHEC each year. To request one, fill out the test kit request form found at www.scdhec.gov/radon. The South Carolina Radon Program does not provide radon test kits for real estate transactions.

For further information send an email to radon@dhec.sc.gov or call the S.C. Radon Helpline at (800) 768-0362.

Protect Your Family

**Have Your Home Tested
For Radon Today!**