Radon warning: Think before you caulk

Weatherizing may increase lung cancer risk

For over a decade, Americans have waged a cold war. Carrying the banner of energy conservation, we have hunted down leaky windows and loose doors. We have weatherstripped and caulked until our homes are tight as snare drums.

But evidence is mounting that our airtight homes may be more like prisons than secure fortresses. We may be bottling ourselves up with a witches’ brew of indoor toxic pollutants.

“Making an average home moderately energy-efficient could more than double the risk of lung cancer from exposure to radon gas. Because of the large population potentially exposed, there is tremendous need for more study to understand the risks involved,” says Michael R. Brambley, Ph.D., assistant professor in the departments of Engineering and Policy and Mechanical Engineering.

“Tightening homes increases the concentration of pollutants that originate indoors,” he explains. Activities like smoking, cooking and operating unvented kerosene heaters are major contributors. But radon gas — a dangerous and insidious pollutant — comes from the building itself and from the ground on which it is built.

“People really haven’t heard about radon, but it is a major carcinogen and leads the list of the nation’s indoor pollutant problems,” says Naomi Harley, Ph.D., professor of environmental medicine at New York University School of Medicine. The Environmental Protection Agency (EPA) estimates radon causes between 10,000 and 20,000 deaths in the United States per year, making it second only to cigarette smoke as a cause of lung cancer.

Some recent studies put the annual toll as high as 30,000 deaths.

But evidence is mounting that exposure to radon involves some risk, a report recently released by the Government Accounting Office (GAO). The GAO thoroughly estimates the risk of lung cancer to range from 0.001 to 0.02 WL (working level) between 100 and 1000 working levels (WL).

Radon daughters. These daughters are not made of sugar and spice; they are radioactive and deadly, and they attach quickly to airborne particles and dust.

Larger dust particles carrying their radioactive cargo settle on the floor and furnishings. Smaller particles are inhaled and lodge in the upper respiratory tract, where they are more easily cleared with mucous. Only the smallest particles travel deep within the lung where they are retained for long periods of time. The daughters have half-lives ranging from 26.8 minutes to about a ten-thousandth of a second. Thus they decay inside the respiratory system, releasing alpha-radiation that is absorbed by the lining of the lung. “This is the region where many lung cancers tend to originate,” Brambley explains.

Outdoors, radon diffuses into the atmosphere. But radon from soil underneath a home sneaks into living spaces through cracked foundations, pipe entries or seams in concrete block.

Evidence indicates most U.S. homes have airborne radon levels between 0.001 and 0.02 WL (working level — a measurement of radioactivity concentration). Although any exposure to radon involves some risk, a
The success rate and experiences of black students on predominantly white college campuses were probed during a film and panel presentation sponsored by Woman's Club. The panel members, who all are affiliated with WU, are: Patrick B. Hill, president of the Association of Black Students; Victor H. Farwell, assistant dean of the College of Arts and Sciences; Linda B. Salmon, dean of the College of Arts and Sciences; Teta Banks-Stovall, an instructor in the African and Afro-American Studies Program; and James W. Davis, vice chancellor. Adrienne L. Glortz, associate director of student activities at the University, will moderate the panel. The activity is sponsored by the WU Office of Student Affairs. For more information, call the student affairs office at 889-5040.

Exiled Chilean novelist to read from her work March 3

Novelist Isabel Allende will give a reading and commentary at 11 a.m. Wednesday, March 5, in Graham Chapel. The reading, part of the Assembly Series, is free and open to the public. Allende is the author of The House of the Spirits, published in the United States last year. The novel tells a family's history over three generations and, at the same time, describes the history of an unnamed South American nation much like the author's native Chile.

The central characters in The House of the Spirits are modeled on Allende's grandparents, in whose home she was raised. Although the book is fiction, it was inspired by Allende's own experiences. She is the niece of assassinated Chilean President Salvador Allende. A few months after her uncle was killed in a 1973 military coup, Allende and her husband left Chile for Venezuela, where they now live in exile.

She recently has completed a second book, tentatively titled Love and Shadow. The book, which is being translated into English for publication, is based on the true story of 15 bodies found in an unmarked mine, victims of political persecution.

Sponsors for the lecture are the Assembly Series, the Department of Romance Languages and Literatures, Student Union and Latin American Studies.

For more information, call 889-4620.

West German pianist to give recital

West German pianist Edith Picht-Axenfeld will give a free recital at 8 p.m. Wednesday, March 5, in Graham Chapel. The recital is sponsored by the Goethe Institute St. Louis and the University's music department. This is Picht-Axenfeld's first appearance in St. Louis. In the recital, Picht-Axenfeld will play Joseph Haydn's Variations in F Minor; Ludwig von Beethoven's Sonata A Major, Op. 101; Heinz Hol linger's "Elis" (Three Night Pieces); Frederic Chopin's Ballade F Minor, Op. 52; and Baricole F-sharp Major, Op. 60; and Claude Debussy's Images II.

Following the recital, a reception will be held at the Stix International House, 6470 Forsyth Blvd. Picht-Axenfeld also will teach a master class at 11 a.m. Tuesday, March 4, in Blewett Hall, Room 103. The 72-year-old pianist began to play the piano at the age of five. In 1937, she won the International Chopin Competition in Warsaw, Poland. Since then, she has given recitals and concerts in at least 140 cities in 32 countries. This year, she is touring the United States.

Picht-Axenfeld has given piano and harpsichord recitals in Europe, Israel, the United States, Japan, Korea, Mexico, and Asia. She has recorded for Philips, Deutsche Grammophon, Victor International, Erato and Camerata.

For more information, call 889-5581.
Roger DesRosiers, dean of the School of Fine Arts, and Kim Strommen, associate dean, have been ap- pointed to an advisory committee to study and recommend criteria and policies regarding art in public places in St. Louis. The committee will re- port to the St. Louis Regional Cul- tural and Performing Arts Develop- ment Commission. DesRosiers is a painter, Strommen specializes in environmental art.

Steve Edwards, Student Life car- toonist and a junior majoring in illu- stration at the School of Fine Arts, won first place in the cartooning category in national competition sponsored jointly by the College Press Alliance and College Media Advisers. The award, presented, this winter in New York, is given for "Feeetwood," Edwards' twice-weekly comic strip in Student Life. The cartoonist also was featured in the Octo- ber 1985 issue of Amplens, a na- tional magazine on campus pub- lications. "If I make a car- toon, subtle, the readers will pay at- tention," Edwards says. "If it's provocative, they'll think. If it's origin- ally, they'll remember. And if it's funny, they'll come back.

Joel Leon, Ph.D., assistant professor in the school of social work and director of the school's Training Pro- gram in Geriatric Case Practice, will serve as editor and co-author of a six-book training series for SAGE Publishers. The Geri- atric Case Practice Series Training will focus on the clinical, administra- tive and personal/professional skills and knowledge needed by prac- titioners who work with the elderly and their families. Material for the volumes will come from the school's gerontological training program.


Bernard D. Reams Jr., Ph.D., professor of law and director of the Freund Law Library, had his dissertation, titled "Research Interactions Between the Law and Higher Educa- tion," selected for the 1984-85 Distinguished Dissertation Award by Kansas City Astronomical Society, honoring the honor society in education. The award will be presented in Denver, Colo., on April 4, 1986.

Libby Reuter, director of Bixby Gallery in the School of Fine Arts, is assistant to St. Louis Gallery Association. The group, composed of 55 gallery managers, plans to publish a gallery guide three times a year and coordinate gallery walks and educational tours.

Stanley E. Thawley, M.D., associate professor of otoaryngology, recently guest edited the November 1985 is- sue of The Medical Clinics of North America, published by the W.B. Saunders Co. The issue was titled "Sleep Apnea Disorders."

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The Washington University Record will help spread the good news. Contributions regarding faculty and staff scholarly or professional ac- tivities are gladly accepted and encouraged. Send a brief note with your full name, highest title and department along with a description of your noteworthy contribution.

Radon—continued from p. 1

situate an unacceptable risk has not been established. EPA officials con- cede, however, that levels about 0.02 generally are considered unsafe. Indoor radon strength depends on a building's structure and geo- graphic location. The biggest problem is the soil itself, although building components also emit the radon. concrete block, basement cracks and any component made of material from the earth's crust.

Little is known about effective ways to reduce excessive indoor ra- don concentration. "Sealing cracks and leaks in the basement will help," Brambley says. But other measures, such as basement exhaust systems, have mixed results. "Reducing indoor radon concentration is a com- plex problem, and research on reme- diation methods is still in the early stages," he points out.

The concentration of radon are greater in regions where the soil has a higher mineral content than organic content. "I'm not the only one who's pulling for the radon to sink," Brambley says. "It will exist for a while, but there's no proof it's causing cancer."

Another area that has received attention, the Reading Prong, extends northeast from Reading in central Pennsylvania into New York. Low- grade uranium deposits underlying the area have resulted in radon mea- surements as high as 15 WL — the highest known level in the nation. EPA estimates continuous exposure to that level carries the same risk as smoking 150 packs of cigarettes per day.

Because of extensive limestone deposits, many Missouri homes may have low radon readings, but exten- sive monitoring has not been done throughout the state. Even adjoining homes can vary widely in radon con- centration, Brambley explains, be- cause the rate at which radon enters a building depends partly on the indi- vidual structure. Basement cracks, general building leakiness and air systems surrounding the home all affect this rate.

While daily homes of yester- year kept a continuous supply of outdoor air ventilating living spaces, today's energy-efficient homes trap radon in- side by reducing exchange of indoor air with outside air.

An average non-weatherized home, says Brambley, may have an air exchange rate of about 0.5 ACH (air change per hour): an amount of outside air equivalent to 70 to 100 percent of the total inside volume infiltrates the house each hour. With moderate weatherization, this rate can be reduced to about 0.5 ACH.

But reducing an average home's air exchange rate by half, Brambley cautions, can increase the risk of lung cancer from radon exposure by 115 percent. Making an average house very tight (0.25 ACH) increases risk by 69 percent. The usual level of risk, however, depends on the radon source strength in an indi- vidual home.

Brambley stresses the need for more research on the risks associated with radon. "Making a home tighter, for example, might increase inside air pressure. That in turn could reduce the rate at which radon enters the building. In that case our estimates may not be very good."

"It's my guess that the rate of radon infiltration is partly pressure-driven, although it is not clear to what degree. "It's my guess that the rate of radon infiltration is partly pressure-driven, although it is not clear to what degree."

"On the other hand it is impor- tant to note that we used the lowest estimates of cancer risk per unit of exposure that we could find in the literature. Using the higher estimates of risk, the number of cancer deaths per million could conceivably be five times as great as our estimates."

"We wanted to say that if we find a problem using the lowest esti- mates of risk, there is definitely a problem," Brambley says. "Person- ally, I would think very carefully be- fore I substantially reduced the rate of air exchange in my home because of the possibility of increasing my risk of getting lung cancer as a result."
**CALENDAR**

**Thursday, March 6**
7:30 p.m. WU Woman's Club Poetry Reading. "An Evening of Poetry Reading with Music," Carter Prevou, WU prof. of English. Women's Blgd. Lounge. Admission is $2 for club members and their guests. Reservations are requested by Sun., March 2. To make reservations, call Corren Mottet at 645-2022 or Phyllis Weidenbaum at 727-8950.

**Friday, March 7**
6 and 8:30 p.m. WU Association Travel Film Lecture Series. "O Canada." Ken Richter, filmmaker. Graham Chapel. For ticket info., call 889-5122.

**Saturday, March 8**
11 a.m. University College Saturday Seminar, "Telling Right From Wrong: Morality and Prostitution." Women's Blgd. Lounge.

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**PERFORMANCES**

**Thursday, Feb. 27**
8 p.m. Inter-University Christian Fellowship Pianoforte Recital. "In 1543, a 24-year event bringing the message of the biblical prophet forward into the 20th century." Edison Theatre. Tickets are $2.50 in advance at Edison box office and $3 at the door.

**Saturday, March 8**
8 p.m. Edison Theatre Presents Anna Russell, the "crowned princess of musical parody." General admission $15; WU faculty, staff and senior citizens, $10, and students, $7. For more info., call 889-6543.

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**EXHIBITIONS**

**"Photos by Number: Interplanetary Space Photography."** Images obtained through NASA's Regional Processing Lab at WU. Through March 9. Gallery of Art, lower gal-lery. 10 a.m.-5 p.m. weekdays, 1-5 p.m. weekends. For more info., call 889-4523.

**"19th-century Art From the Permanent Collection."** Through April 13. Gallery of Art, upper gallery. 10 a.m.-5 p.m. weekdays, 1-5 p.m. weekends. For more info., call 889-4523.


**MISCELLANEA**

**Friday, Feb. 28**
7:30 p.m. WU Man's Club Duke Ellington Lecture. "Journey to the Center of Creative Thinking." WU auditorium. For information, call 889-6543.

**Saturday, March 8**
8 p.m. Dept. of Music Senior Honors Recital with Diane White. WU bachelor of arts candidate in music. Steinberg Auditorium.

**Sunday, March 2**
3 p.m. WU Chamber Winds Concert. Mississippi Valley Symphony Society, sponsored by the Goethe Institute of St. Louis. Graham Chapel.

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**LECTURES**

**Thursday, Feb. 27**
2:30 p.m. Dept. of Mechanical Engineering Colloquium, "The Application of Adaptive Mesh Refinement to the Analysis of Plate Structures." Mark E. Botkin, research engineer, engineering mechanics dept., General Motors Research Laboratories, Warren, Mich. 100 Eades II.


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