

Approved January 29, 1987
Date

MINUTES OF THE HOUSE COMMITTEE ON ENERGY AND NATURAL RESOURCES

The meeting was called to order by Representative Ron Fox at
Chairperson

3:30 ~~a.m.~~ p.m. on January 20, 1987 in room 526-S of the Capitol.

All members were present except:

Representative Barr (excused)
Representative Roe (excused)

Committee staff present:

Ramon Powers, Research Department
Theresa Kiernan, Revisor of Statutes' Office
Betty Ellison, Committee Secretary

Conferees appearing before the committee:

Chairman Fox began the meeting with several announcements. The minutes of January 13 had been distributed and he noted that committee policy was that if no objections to minutes had been received within 24 hours of distribution, they would be considered approved.

Ramon Powers of the Research Department gave a brief review of the following proposals studied by the Interim Special Committee on Energy and Natural Resources:

Proposal No. 6 - Municipal annexation of Electric Service Territory

Proposal No. 7 - Mined Land Conservation and Reclamation and Promotion of Kansas Coal

Proposal No. 8 - Water quality and the State Water Plan

Proposal No. 9 - PCB's in Kansas

Proposal No. 10- State Water Plan

Copies of the Radon Subcommittee Report were distributed (Attachment 1) and staff gave an overview of that report.

The meeting was adjourned at 4:35 p.m.

The next meeting of the House Committee on Energy and Natural Resources will be held at 3:30 p.m. on January 21, 1987 in Room 526-S.

December 17, 1986

SUBCOMMITTEE REPORT

TO: Legislative Coordinating Council

FROM: The Subcommittee on Radon of the
Special Committee on Energy
and Natural Resources

RE: RADON IN KANSAS*

The Subcommittee was directed to review the radon problem in Kansas and assess the radon testing proposed by the Kansas Department of Health and Environment (KDHE).

Background

Radon is a radioactive gas produced by the decay of radium, which, in turn, evolved through the decay of uranium. As radium and uranium are common elements in most rocks and soil, radon is being constantly emitted from the surface of the earth. As a gas, radon moves easily through small spaces and between particles of soil and rock.

* Drafts of a bill and concurrent resolution are attached to this report.

Of greatest concern to human exposure are the radon decay products, since throughout the decay process, the radioactive particles attach to dust and other elements in the atmosphere and are inhaled. Alpha particles produced by decay of the radon decay products can strike cells in the lungs and damage them. It is known that this damage can lead to the formation of cancerous cells. Therefore, the potential risk from radon is mainly through the development of lung cancer from exposure to the short-lived decay products.

Estimates of the risk of lung cancer due to radon exposure are based on studies of miners who work in underground mines where uranium is prevalent. The mine workers developed lung cancer at a higher rate than the general populations; therefore, it has been argued that long-term exposure to large concentrations of radon decay products is associated with an increased incidence of lung cancer.

Radon has a half-life of 3.5 days which means that one-half of any group of radon atoms will have decayed into atoms of other elements within that period of time. After radon escapes from the earth's surface, it is dispersed into the atmosphere. Radon concentrates in homes when the colorless, odorless, radioactive gas is trapped by the closed structure. Radon may enter buildings through any cracks, holes, or openings in the

floors or basement walls, and may be transported by water in which it has been dissolved.

During periods of pleasant weather, the windows and doors of houses are often open which allows radon to disperse into the atmosphere; however, during the winter or periods of bad weather when houses remain closed, radon concentrations can increase significantly. Radon concentrations in homes can vary greatly from season to season and even from day to day. Barometric pressure also has an affect on radon concentrations in buildings. According to some sources, the weatherization and construction of houses to conserve energy has greatly increased the potential health risks from indoor radon.

Radon concentrations are measured in pico curies per liter (pCi/l). One pCi/l of radon in the air is equal to 2.2 radioactive alpha particles emitted per minute per liter of air. Concentrations of radon decay products are measured in Working Levels (WL). One WL is defined as that concentration which has a certain potential alpha energy release per liter of air. In houses, one pCi/l of indoor radon is assumed to result in 0.005 WL under typical conditions in a building. The Environmental Protection Agency (EPA) has suggested that additional measurements be performed to determine the annual average radon level in homes and public buildings where

radon levels have been measured at greater than 4 pCi/l or radon decay products greater than 0.02 WL.

The EPA has estimated that there are between 5,000 and 20,000 deaths per year in the United States due to lung cancer caused by the exposure of indoor radon.

Radon and radon decay products can be measured in a number of ways. A sample can be collected over a brief period (grab sample) and the measurement can be made in a relatively short time. Activated charcoal, usually contained in a small canister, is often used in the grab samples to measure radon concentrations in homes. Since radon levels vary over time, long-term measurement systems, such as the alpha track detector, measure levels during periods as long as one year. Various private companies sell radon measurement kits and the EPA is engaged in a sampling program (to be discussed later). A list of companies in the United States which have successfully demonstrated satisfactory measurement capabilities has been published by the EPA.

There are two approaches to reducing radon exposure in homes. First, measures can be taken to prevent radon from entering a building by sealing cracks and openings in the floors and foundations. Second, radon can be removed from the structure by ventilating places where radon enters the building such as sumps or drain

systems, or basements generally, or by facilitating increased air exchange.

Radon in Kansas

There has been increasing public concern in Kansas about the potential threat to human health from radon concentrations in private homes. That concern was intensified when an EPA map was reproduced in the newspapers indicating that areas along the eastern border of Kansas were likely to have high radon concentrations.

The EPA asserts that the radon issue is to be handled by the states. In Kansas, the Department of Health and Environment is the agency presently engaged in evaluating the radon problem in the state. KDHE does not have the resources to undertake an extensive radon survey. To date the agency has received data on approximately 130 tests of homes from the University of Pittsburgh's (Pa.) Radon Project and private testers. The mean of all 40 tests performed in Kansas by the University Pittsburgh was 4.58 pCi/l. A private tester recorded a mean of 5.9 for four houses in Fairway, 4.8 for 17 houses in Leawood, 8.1 for 19 houses in Lenexa, 6.1 for four houses in Mission, 4.2 for 20 houses in Overland Park, and 14.9 for eight homes in Shawnee.

More extensive sampling by EPA and KDHE is to be undertaken in late 1986 or early 1987 to more fully examine the nature and magnitude of indoor radon in Kansas homes. Kansas was selected by EPA as one of ten states in which this additional testing will take place. Three thousand charcoal canisters will be provided for use in the state. There is presently some debate about the sampling technique to be used. In addition, KDHE has requested that \$394,000 in federal Petroleum Overcharge Restitution Program (PORP) funds, administered by the State Corporation Commission, be used to provide 5,000 additional canisters for testing areas with a high probability of having radon concentrations in excess of the levels recommended by EPA. If properly structured, the KDHE request for PORP funds for radon testing will likely be approved by the U.S. Department of Energy, which has oversight of such funding.

Subcommittee Activities

The Subcommittee held meetings, including public hearings, in Overland Park, Topeka, and Pittsburg. Presentations were made by the following: the Director of Air and Toxics Division, U.S. Environmental Protection Agency, Region 7, Kansas City, Kansas; the Director of the Division of the Environment, Kansas Department of

Health and Environment; the Director of the Johnson County Pollution Control Department; an Associate Professor of Preventive Medicine, the University of Kansas Medical Center; the State Geologist and staff of the Kansas Geological Survey; the Director of the State Cancer Registry, the University of Kansas Medical Center; several professors of nuclear engineering from Kansas State University; and the Attorney General.

The State Geologist and staff of the Kansas Geological Survey described the presence of uranium, the parent of radon and radium, in the rock formations within the near-surface environment in Kansas. The Survey, which is working on a geological characterization for radon in Kansas for KDHE, has developed a map of the state identifying the most probable high risk areas (Strata 1), the areas of probable moderate risk (Strata 2), and the remaining areas of no major risk, or about which no relevant information is available (Strata 3).

In addition, the Survey reviewed a sampling design for radon gas measurements in Kansas. The Survey recommends that sampling be done to gather information on the background level of radon independent of data gathered concerning within-house concentrations and that random sampling should be done to determine the "hot spots" which would be sampled in a second stage. It was

strongly recommended that the sampling be undertaken by trained field investigators.

KDHE staff reviewed the testing that had already taken place in the state and the proposed testing by both the EPA and the Department over the next few months. The Subcommittee learned that the current staffing level is not sufficient to monitor and test radon, given the agency's other responsibilities, such as the Central Interstate Low-Level Radioactive Waste Compact, emergency preparedness, and Wolf Creek environmental monitoring.

The associate professor from the University of Kansas Medical Center described his epidemiological research in southeast Kansas, which included some radon testing, and expressed concern about radioactivity in the water supply in Baxter Springs, Kansas.

The Director of the State Cancer Registry at the University of Kansas Medical Center expressed the view that extrapolating lung cancer fatalities from fatalities of European miners who worked in mines with radon concentrations a hundred times higher than those found in private dwellings, would be a leap of faith. He stated that to undertake a study to prove the connection between radon and lung cancer would be so costly that it will never be done.

Three professors at Kansas State University described their work relating to radon, including research on instrumentation to test radon, the collection of air (and radon) samples at KSU, and estimates of costs of measures to reduce radon concentrations in houses.

The Attorney General told the Subcommittee that the Consumer Protection Act would protect Kansans from deceptive business practices involving the purchase of radon testing kits. He noted that the Legislature could consider licensing radon testers.

Conclusions and Recommendations

The Subcommittee endorses the actions by KDHE in response to the public health concern relating to radon. The testing of homes that will soon be undertaken by EPA and KDHE should provide some indication of the nature and extent of any radon problem in Kansas; however, further testing undoubtedly will be needed to further isolate problem areas and determine what homeowners should do to minimize any risk associated with exposure to radon.

The Subcommittee concludes that there is no evidence, at this time, to justify adoption by the state of any extraordinary measures to deal with the radon issue. Careful and systematic study and testing should be conducted to ensure that the public's health will be protected.

It is the Subcommittee's view that the results of the EPA/KDHE testing should be reviewed first by the Legislature before further testing is approved. In addition, it is recommended that the standing Committees on Energy and Natural Resources should continue to monitor the radon issue.

The Subcommittee recommends the introduction, by a standing committee, of the attached concurrent resolution which recommends that the Secretary of the Department of Health and Environment create an Advisory Committee on Radon, consisting of the Director of the State Cancer Registry, the Director of the Center of Environmental and Occupational Health at the University of Kansas Medical Center, and a representative from each of the following: the Kansas Geological Survey, the Nuclear Engineering Department at Kansas State University, and the Homebuilders Association of Kansas. The Secretary could assign to the Committee other individuals or representatives of other organizations deemed useful in studying the radon issue. The Secretary,

after consultation with the Advisory Committee, is requested to report to the Legislature before March 15, 1987, concerning the agency's activities related to radon, particularly those concerned with the EPA/KDHE testing program.

Finally, the Subcommittee recommends introduction, by a standing committee, of the attached bill draft that provides for the certification of testers for the presence of indoor radon contamination. It is the opinion of the Subcommittee members, however, that the necessity for such legislation is not clear at this time. Nonetheless, with the advent of the EPA/KDHE testing program, the Subcommittee notes that there will likely be increased concern about radon and the desire to have homes tested. As public concern increases, there may be a need to guarantee that radon testing is conducted by qualified individuals.

Respectfully submitted,

_____, 1986

Rep. Ron Fox, Chairperson
Subcommittee on Radon of
the Special Committee
on Energy and Natural
Resources

Senator Phil Martin

Senator Merrill Werts

FF86-293/RP