1994_

PILOT DAYCARE STUDY

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ABSTRACT

There has been an increased interest in testing school environments for radon concentrations within the state of New Jersey. Unfortunately very little testing data has been gathered on the exposure of preschool children to radon within the daycare environment. Since a large number of childcare facilities are housed in basements the risk to the younger child is magnified, because radon concentrations are usually highest in the lower floors. Also some young children may spend an extended time at these centers which increases their exposure beyond that expected for school aged children. Taking these facts under consideration, the Radon Staff believes the testing of preschool facilities should be a priority throughout the state.

In January 1993, the Hunterdon County Health Officer called the radon office to propose a jointly sponsored study. The study would test all licensed daycare facilities within Hunterdon County.

A joint letter was sent to the forty licensed daycare centers within Hunterdon County, along with permission to test forms. Out of twenty-two centers that agreed to test, ten facilities had levels high enough to consider remediation.

INTRODUCTION

On January 13, 1993 John Beckley, the Hunterdon County Health Officer, contacted the DEP Radon Program regarding a proposed testing project. Mr. Beckley had read an article in the Conference of Radiation Control Program Directors (CRCPD) Newsbriefs concerning testing of daycare centers in North Dakota. The study was conducted by Mr. Arlen Jacobson of the North Dakota Health Department.

The radon staff met with John Beckley on March 4,1993 to discuss the possibility of a jointly sponsored pilot study of daycare radon levels in Hunterdon County. It was decided to initiate a study to test all licensed childcare facilities within Hunterdon County that would volunteer to participate. The Bureau of Environmental Radiation agreed to provide charcoal canisters for initial and confirmatory testing of participating centers, and to have the Bureau of Radiological and Inorganic Analytical Services Laboratory (BRIAS) analyze the canisters. The Hunterdon County Health Department accepted responsibility for deploying the canisters at each facility and returning them to the laboratory for counting.

A joint letter was drafted and sent to licensed centers, along with permission to test forms (see Attachment #1). Of the 40 licensed centers receiving letters, 22 agreed to test. Testing was to be performed in all areas (rooms) occupied by children.

MATERIALS AND METHOD

The initial testing was conducted in facilities during the period of December 3rd - 6th for all daycare centers except for Facility #14 which was conducted on December 21st - 23rd, 1993 and facility # 22 which was conducted February 4th - 7th 1994.

The Hunterdon County Health Department's staff deployed the canisters on Friday afternoon and retrieved them on Monday morning attempting to have as little traffic as possible, and to have them exposed while centers were closed for the weekend. All rooms (areas) were tested where children spent any time during the day. The canisters were then delivered to the BRIAS Laboratory for counting. Initial testing results of radon in air concentrations in picocuries per liter (pCi/L) are listed in Table 1.

Confirmatory testing was performed on all daycare centers which initially tested above the Environmental Protection Agency's (EPA) 4.0 pCi/l action level in one or more rooms within that facility. Results of confirmatory testing are contained in Table # 2. One electret ion chamber was deployed at each facility as an added tool to ensure reliability of the data before requesting remediation be considered. The comparison of the charcoal canister data with the electret information is reported in Table # 3.

On March 14, 1994 the Division of Youth and Family Services in the Department of Human Services notified us that letters had been sent to all licensed daycare providers concerning the availability of grant money for remediation, under Childcare Improvement Grants (Attachment #2).

Sherry Becker, of the Hunterdon County Health Department forwarded a letter to all centers where initial and confirmatory averaged results were above the 4.0 pCi/L action level (see Attachment #3), encouraging them to attend the regionally scheduled technical assistance conference.

CONCLUSIONS

The pilot daycare study indicated the need for further testing throughout the state, since 45% of facilities tested required some form of remediation to lower radon concentrations. Although Hunterdon County is considered a high potential area, our experience with radon levels in residential buildings shows there are elevated levels found everywhere in the state, even in low radon potentials areas. Therefore, the staff recommended the study be expanded throughout the entire state by notifying all licensed daycare facilities of the dangers of radon exposure and the need to test.

The Department has been focusing on encouraging testing of school environments for radon concentrations within the state. The daycare pilot study has been the only study concentrating its efforts on testing the environment of the preschool child. Since a large number of these childcare facilities are housed in basements the risks to these children can be magnified, because radon concentration is usually highest in the lower floors. Also, some young children may spend eight to ten hours a day, twelve months a year within the daycare environment. This extended time within most childcare surroundings increases the young child's exposure beyond that expected for school aged children. Taking these facts into consideration, the Radon Staff believes the testing of preschool facilities should be a priority throughout the state.

The project manager drafted a letter to all licensed childcare facilities within the state (see Attachment #4). Contained within the correspondence was the importance of testing and remediation of their facilities, if indicated, statistics from the pilot study, and radon information line 1-800-648-0394 to request our free information packet. This packet includes a list of certified measurement and mitigation businesses.

The letters (2542) to licensed childcare facilities were mailed July 8, 1994, and on July 13, 1994 the Department issued a press release. As of July 15, 1994 fifty requests were received over the toll free line for information packets.

The purpose of the press release was to educate parents that they must inquire whether their child's daycare facility has been tested for radon, and to focus attention on unlicensed centers to make them aware of the need to test their facilities.

TABLE 1

Facility	Location	Radon (pCi/L)
# 1	Basement Red Oak Rm	2.2
	1st fl. Umberella Rm	1.7
	1st fl. Black Oak	1.1
	1st fl. White Oak Rm	0.4
# 2	1st fl. studio	6.8
	1st sm. rm. studio	6.9
	1st fl. Main Rm	9.0
	1stfl. Circle Rm	8.4
# 3	"0" basement kinder.	2.4
	"0" Health Office	1.8
	"0" rm #010	1.0
	"0" rm #009	1.5
	"0" pre-kinder.	1.3
	"0" rm #017	1.7
	"0" rm #021	1.2
	"O" rm #025	0.3
	Basement #024	0.4
	" " #023	2.1
	" " #026	0.4
	" " #031	1.0
	" " #028	1.5
	" " #027	0.7
	1st fl. #106	0.3
	" " #107	0.4
# 4	1st fl. middle	5.1
	" " little left rm	2.6
	" " Isolation rm	4.9
	" " Pit rm.	6.2
	1st. fl. skylight rm.	5.9
# 5	1st fl. main	29.0
# 6	1st fl. nursery	0.8
	" " quiet rm.	2.1
	" " all purpose	1.3
# 7	Basement nursery	2.9
# 8	1st fl. classrm. #16	0.3
	" " #15	0.4
# 9	1st fl. school rm.	5.0
	2nd.fl. gym	1.7
# 10	Basement rm. A	8.4
	" rm. B	21.0

Facility	Location	Radon (pCi/L)
# 11	0 basement	0.8
	1st fl. classrm #1	0.9
	1st fl. classrm #2	0.3
	1st fl. classrm #3	0.3
# 12	1st fl. Pre "K"	2.5
	1st fl. Block rm.	2.9
	1st fl. Art rm.	3.0
	1st fl. Puzzle rm.	2.8
# 13	"O" basm. Nature TV	4.7
	" " Gail's rm.	4.5
	" " Kay's	4.5
	" " Lisa's	3.9
	"O" basm. nap rm.	9.5
	"0" basm. Puzzle	4.3
# 14	1st fl. basm. Blue Rm	3.5
	1st fl. basm. Yellow rm.	5.3
	1st fl. Green rm.	5.9
	1st fl. Double rm.	3.4
# 15	"0" basm. Block rm.	15.0
	"0" basm. Art rm.	11.0
	"0" basm. Rainbow rm.	20.0
# 16	1st fl. Classrm "A"	0.4
	" " Classrm "B"	1.0
# 17	"0" basement	3.7
	1st.fl. Auditorium	2.3
	" " Fine Motor Class	1.7
	" " Circle Rm.	1.8
# 18	1st fl. Rm #8	3.1
	" " rm #4	2.0
	" " rm #6	2.5
	" " Fellowship	1.5
# 19	0 Basement left half	3.6
	" " right half	5.0
# 20	1st fl. Sanctuary	2.7
	1st fl. Nursery	1.9
# 21	1st fl. Play rm.	6.4
	1st fl. Class rm. "A"	1.6
# 22	1st fl. room 1	2.3
	1st fl. nursery	0.7
	1st fl. room 4	2.2
	1st fl. room 5	3.1
	1st fl. room 6	1.3

TABLE 2

Facility	Location	Radon (pCi/L)
# 2	1st fl. studio	5.3
	1st fl. sm.rm.	5.4
	1st fl. main	4.2
	1st fl. circle rm.	4.9
# 4	1st fl. little left rm.	9.0
	1st fl. skylight rm.	7.7
	1st fl. middle front	7.4
	1st fl. back left rm.	9.1
	1st fl. isolation rm.	8.4
	1st fl. pit rm.	6.8
# 5	1st fl. main	23.5
# 9	1st fl. preschool rm.	3.2
	2nd fl. gym	1.5
# 10	0 fl. basement B	16.0
	0 fl. basement A	5.2
# 14	1st fl. blue rm.	4.4
	1st fl. double rm.	3.6
	1st fl. yellow rm.	4.8
	1st fl. green rm.	6.6
# 15	0 fl. basement block rm.	8.6
	0 fl. bsmt. art rm.	7.0
	0 fl. bsmt. rainbow rm.	7.2
# 19	0 fl. bsmt. right half	4.3
	0 fl. bsmt. left half	3.2
# 21	1st fl. play rm.	3.1
	1st fl. rm. D	0.8
	1st fl. rm. A	1.5

TABLE 3

Facility	Location	Canister pCi/L	Electret pCi/L
# 2	1st.fl main rm.	4.2 ± 0.8	3.8
# 4	1st.fl.pitroom	6.8 ± 0.8	6.0
# 5	1st.fl main rm.	23.5 ± 2.0[a]	29.4[a]
# 9	1st.fl preschool rm.	3.2 ± 0.5	2.0
# 10	basement rm.B	16.0 ± 2.0	16.8
# 14	1st.fl.yellow rm.	4.8 ± 0.7	5.2[a]
# 15	bm.rainbow rm.	7.2 ± 1.0	6.0
# 19	bm. rt.half	4.3 ± 0.7	2.7
# 21	1st.fl.playroom	3.1 ± 0.6	2.0

[a] duplicate data averaged

ATTACHMENT I

HUNTERDON COUNTY HEALTH DEPARTMENT

REGISTRATION FORM
CHILD CARE FACILITY RADON TESTING PROGRAM
FALL, 1993

(PLEASE RETURN IN ENVELOPE PROVIDED)

NAME OF FACILITY _____

NAME OF OWNER/ADMINISTRATOR _____

LOCATION _____

MAILING ADDRESS (IF DIFFERENT FROM ABOVE) _____

_____

TYPE OF BUILDING:

_____ Renovated single family home
_____ Church basement/first floor space
_____ Structure built as child care facility
_____ Other _____

Number of rooms occupied by children (not counting kitchen area, restrooms or foyer) _____

Approximate number of children enrolled in facility _____

Has facility been previously remediated for radon? _____yes _____no

AUTHORIZING SIGNATURE _____ DATE _____

ATTACHMENT #2

LEGAL ADVERTISEMENT

Jersey Department of Human Services, Division of Youth and Families - Notice of Availability of Child Care Center Facility Improvement Grants.

Take nouce that the Division of Youth and Family Services is requesting proposals to complete one-time repairs or minor renovations to, or to purchase equipment, for new or existing child care facilities. Available funds are intended to enable facilities subject to licensing by the Division to comply with physical facility regulations and applicable state and local building, fire and health codes. Notice of this will be published on or about March 21, 1994, in the *New Jersey Register*.

Prospective operators and operators of licensed child care centers within the State who are interested in applying for these funds may obtain a copy of the Request For Proposals by contacting the appropriate person in the DYFS Regional Office or by attending one of the regionally scheduled technical assistance (bidders) conferences, as indicated below.

- For projects located in Hunterdon, Mercer, Monmouth, Ocean, and Somerset Counties (e.g., DYFS Central Service Delivery Region), a technical assistance conference has been scheduled for:

Date:	March 24, 1994
Time:	1:30 pm
Location:	DYFS Central Regional Office 50 East State Street, 5th Floor, Room 536, Trenton, NJ
Contact Person:	Oksana Koziak, Regional Planner
Telephone:	(609) 777-2000

- For projects located in Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, and Salem Counties (e.g., DYFS Southern Service Delivery Region), a technical assistance conference has been scheduled for:

Date:	March 25, 1994
Time:	10:00 am
Location:	DYFS Southern Regional Office 392 North White Horse Pike Hammonton, NJ
Contact Person:	William Michener, Administrative Analyst
Telephone:	(609) 567-0010

- For projects located in Essex, Middlesex, and Union Counties (e.g., DYFS Metropolitan Service Delivery Region), a technical assistance conference has been scheduled for:

Date:	March 28, 1994
Time:	2:00 pm
Location:	DYFS Metropolitan Regional Office 153 Halsey Street 3rd Floor Community Room Newark, NJ
Contact Person:	Joseph Makowski, Regional Planner
Telephone:	(201) 648-4100

- For projects located in Bergen, Hudson, Morris, Passaic, Sussex, and Warren Counties (e.g., DYFS Northern Service Delivery Region), a technical assistance conference has been scheduled for:

Date:	March 30, 1994
Time:	10:00 am
Location:	County of Passaic Administration Building 317 Pennsylvania Avenue, Room 101 Paterson, NJ
Contact Person:	John Michalski, Regional Planner
Telephone:	(201) 977-4000

ATTACHMENT # 3

Hunterdon County

...W BECKLEY, M.P.H.
Director/Health Officer

COUNTY COMPLEX
ROUTE 12

Mailing Address

ADMINISTRATION BUILDING
71 MAIN STREET
FLEMINGTON, N.J. 08822

Fax (908) 782-7810
Phone (908) 788-1361

DEPARTMENT OF HEALTH

February 23, 1994

The NJDEPE has completed the analysis of the confirmatory radon testing performed in your facility on February 4-7. The results of your test should be sent to the facility owner in the near future.

If the average test result of the initial and confirmatory test phases is above the action level of pCi/L, remediation is strongly advised to reduce the level of radon exposure. To assist you with the remediation expense, the Division of Youth and Family Services (DYFS) has federal grant money that can be used for this purpose.

All licensed daycare centers will be receiving a mailing from DYFS concerning the availability of federal grant money. Radon remediation would come under the category of "Daycare Improvement Grants". The grant money is dispensed on a first come first serve basis; therefore, it is imperative that all interested facilities apply for funding in a timely manner.

To assist you with the process, the Hunterdon County Health Department will provide you with the names of three (3) radon remediation firms who will provide you with a free remediation estimate. You must send in the estimates with the application. Please contact me with your intentions on the remediation process as soon as possible at 908-788-1351.

Very truly yours,

Sherry Becker

Sherry Becker
Sanitary Inspector

SB:pv

jugtown

State of New Jersey
Department of Environmental Protection
Division of Environmental Safety, Health and Analytical Programs
Radon Section
CN 415
Trenton, NJ 08625-0415
Telephone (609) 987-6396 or 1-(800) 648-0394
Fax (609) 987-6386

CHRISTINE TODD WHITMAN
Governor

ROBERT C. SHINN, JR.
Commissioner

July 8, 1994

Dear Child Care Provider,

The Radon Program, within the New Jersey Department of Environmental Protection (DEP), is engaged in an effort to educate daycare providers on the importance of testing facilities for radon. The potential health risks from elevated levels of naturally occurring radon have been found to be a problem of national scope. As you may be aware, radon is a radioactive gas. As radon gas moves up through the soil, it can enter structures and become entrapped, building up to potentially dangerous concentrations. There have been studies that show that prolonged exposure to elevated concentrations of radon can cause damage to sensitive lung tissue that may eventually lead to lung cancer.

Very little testing data has been gathered on the exposure of preschool children to radon within the daycare environment. The Radon Program, in partnership with the Hunterdon County Department of Health, recently completed a Pilot Daycare Study. Out of 22 daycare centers participating in the study, 10 of them (45%) had levels above the United States Environmental Protection Agency's guideline of 4 picocuries per liter (pCi/L). Although Hunterdon County is considered a relatively high radon potential area, our experience with radon levels in New Jersey residences shows elevated levels can be found anywhere in the state, even in low radon potential areas.

The only way to find out if your building has elevated concentrations of radon is to test it under closed building conditions. We recommend that all daycare facilities in New Jersey perform radon testing to ensure a safe environment for the children and the daycare staff. We want to emphasize that your participation in this testing program is voluntary and is not a condition of your center's State license to operate issued by the Division of Youth and Family Services (DYFS). The DYFS Bureau of Licensing is cooperating with the DEP by helping to disseminate information about the radon testing program.

For additional information on testing please call our toll free radon information line at 1-800-648-0394 to request our free information packet. This packet includes a list of certified measurement and mitigation businesses.

Sincerely,

Bob Stern

Bob Stern, Chief
Bureau of Environmental Radiation

c: J.Patrick Byrne, Assistant Director for
Licensing and Management Services, DYFS

Richard Crane, Chief
Bureau of Licensing, DYFS