40-8724

B. KOH & ASSOCIATES, INC.

Environmental Restoration
Radioactive Waste Management

Principal Office
10211 A South Dolfield Road
Owings Mills, Maryland 21117-3653
Telephone: (410) 356-6612
FAX: (410) 356-4213

New York Office
11 West Main Street
Springville, New York 14141-1012
Telephone: (716) 592-3431
FAX: (716) 592-3439

Friday, October 1, 1993

Mr. Tim Johnson
US Nuclear Regulatory Commission
Washington, DC 20555

Dear Tim:

Enclosed is a copy of the Radiological Evaluation Report prepared by Dr. Steven J. Aron, Jr., of RadSafety Consultants, Inc. I received this report from our attorneys, and I understand that I am free to pass it along to you for your use and information.

Sincerely yours,

Barry Koh, Ph.D.
President

BK/cmw

Enclosure

cc: M. J. Wetterhahn

WIAINRC-50

130033

NMSS 1/1

RADIOLOGICAL EVALUATION REPORT

By

RadSafety Consultants, Inc.

BACKGROUND

RadSafety Consultants, Inc. was contacted by Michael B. Gardner of the law firm Ulmer & Berne on May 27, 1993 to provide expert testimony regarding the presence of U-238 as depleted uranium (DU) contamination in off-site residential locations in the Bert Avenue area of the city of Newburgh Heights, Ohio.

On June 1, 1993, RadSafety Consultants, Inc. submitted a proposal to perform radiation safety surveys including wipe testing and soil sampling to determine the possible presence of source material U-238 in selected residential properties.

In response to a June 7, 1993 request from Mr. Gardner for a cost estimate to conduct the proposed work, a detailed quotation was sent on June 10, 1993. Authorization to begin the work was given on June 16, 1993.

SCOPE OF WORK

Originally, ten residential properties were selected for radiation safety surveys including wipe testing and soil sampling for the possible presence of depleted uranium. During the course of surveys of the various homes it was mutually agreed to limit the surveys to just the first five homes, but to include soil sampling of the Bert Avenue vacant lot and the property at 3969 East 29th Street. It was agreed that the reference property located at 7408 Renwood Drive would be used to provide background data for chimney samples.

SURVEY METHODOLOGY

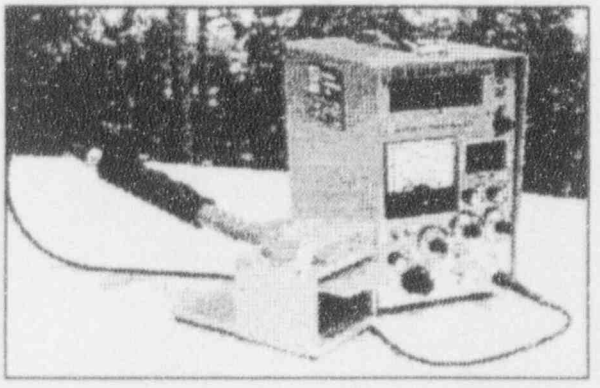
In order to determine the possible presence of depleted uranium in the selected residences, an alpha particle radiation detector coupled to a scaler/ratemeter (see Figure 1) was used to measure contamination (fixed & removable) of dusty/dirty surfaces where available in 20 representative locations of each home. On-site counting times were one minute each. In addition, a wipe sample was taken at each location and counted for ten minutes in the laboratory to determine the presence of removable contamination. Calibration for the testing of wipe samples was provided by using a U-238, NIST traceable calibration standard.

A calibrated ionization chamber was used to measure radiation exposure levels.

A 2"X 2" NaI(Tl) scintillation detector coupled to a scaler/ratemeter and an alpha, beta, gamma survey meter utilizing a pancake GM detector were used to scan the surface soil of selected properties.

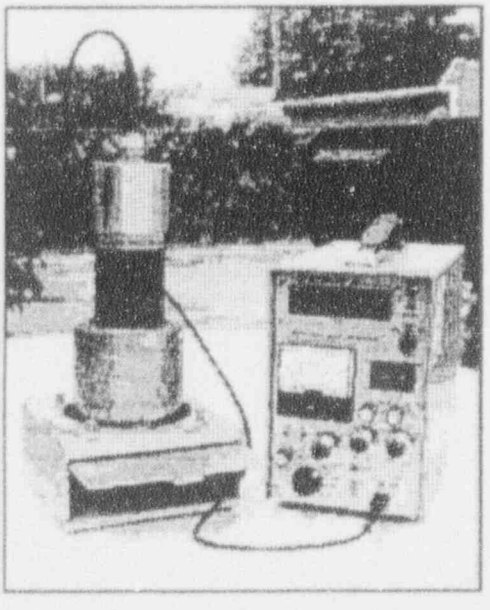
FIGURE 1: EQUIPMENT USED FOR SURVEYS AND COUNTING OF SAMPLES

Radiation Exposure Meter:
Victoreen Model 471
Ionization Chamber



Pancake Counting System:
Ludlum Model 220 Scaler/Ratemeter
with Ludlum Model 44-9 GM Pancake
Detector and Wipe Test Sample Holder

Alpha Particle Counting System:
Ludlum Model 2200 Scaler/Ratemeter
with Ludlum Model 43-1 Alpha Scintil-
lation Detector and Wipe Test Holder



Gamma Ray Counting System:
Ludlum Model 2200 Scaler/Ratemeter
With Model 44-11 Integral Line
Scintillator and Wipe Test Holder

Alpha, Beta, Gamma Survey Meter:
Ludlum Model 2 Meter with
Ludlum Model 44-9 Pancake Detector

A post-hole digger was used to obtain at least one soil sample from each property, preferably where an elevated radiation level was found or where contamination might be expected to be found, e.g. near a rain gutter downspout or a low spot on a property.

Solid samples were also collected from chimneys where possible in order to determine the presence of long term contamination that may have accumulated in the Bert Avenue area over years of possible exposure. It is known that there was at least one unauthorized release of radioactive material into the atmosphere by a company working with radioactive materials in the neighborhood. Three chimney samples were collected from homes in the area and one sample was collected from a reference chimney located outside the area for comparative purposes.

EQUIPMENT PARAMETERS

Lower limits of detection (LLD) for DU were 94 and 5 dpm/100 cm^2 respectively for one and ten minute counting intervals using the ZnS(Ag) alpha scintillation detector, 410 dpm/100 cm^2 for a one minute interval using the pancake GM detector and 0.6 pCi/gram for a one hour counting time using the NaI(Tl) detector. Soil and chimney samples were ~300 grams each.

LOCATIONS SURVEYED

Residences selected for wipe testing including chimney and soil sampling are as follows:

2811 Bert Avenue
2818 Bert Avenue
4004 East 27th Street
3969 East 26th Street
2802 Ross Avenue

Locations selected only for soil sampling are:

Bert Avenue Vacant Lot
3969 East 29th Street

Because of the excessive amount of radioactivity found on the Bert Avenue vacant lot, additional time was spent at this location to map out the extent of the contamination. There were thirteen soil samples collected from this property and about a dozen small baggie sized samples taken of various colorations of soil and various objects including nails, rocks, metal pieces etc. These were selected because they caused the geiger counter survey meter to peg on the most sensitive scale, i.e. 0.5 mR/hr.

SAFETY PROCEDURES

Radiation film badges were used to monitor exposure levels. Protective gloves and appropriate clothing were worn along with face masks during times of sampling. All samples were sealed in plastic bags. Exposure levels were all less than 2 mR/hr.

RESULTS

A. Surface Contamination

A Radiation Protection Survey Report for individual homeowners has been prepared for each of the above properties and is appended to this main report. Results are summarized in Table 1.

The results for the combination of fixed and removable surface contamination for all homes ranged from <94 to 159 alpha dpm/100 cm^2. These values are less than the regulatory limit of 15,000 alpha dpm/100 cm^2 maximum surface activity for depleted uranium in a 100 cm^2 area.

The results for removable surface contamination as determined by measurements of wipe samples taken in all homes show a range of <5 to 34 alpha dpm/100 cm^2. These are all less than the corresponding regulatory limit of 1000 alpha dpm/100 cm^2 for removable surface activity.

As a result of the above, laboratory testing of wipe samples and on-site testing of surfaces within the homes both show that surfaces are not contaminated above regulatory limits applicable for depleted uranium.

B. Soil & Chimney Samples

Results are included in the individual Radiation Protection Survey Reports for homeowners and are summarized in Table 2. It shows that the concentration of uranium in soil and chimney samples ranges from 0.6 to 1283 picoCuries per gram.

In general, all of the chimney samples appear to have elevated concentrations of radioactivity relative to background and the reference chimney.

Three of the soil samples were also found to have elevated radiation levels compared to levels found for surrounding soil on the same property. Two of these elevated radioactivity samples were discovered on occupied properties at 2811 Bert Avenue and 3969 East 29th Street and one on the Bert Avenue vacant lot. The first two appear to have radioactivity concentrations which exceed 0.6 picoCuries per gram normally found for U-238 in soil. The Bert Avenue sample's radioactivity concentration is over 2,000 times the value normally found for U-238 in soil and exceeds 36 times the NRC's U-238 unrestricted use release limit.

Since there was no special sample preparation other than placing about 300 grams of material in a suitable container and because of equipment limitations, results measured by RadSafety Consultants, Inc. for soil and chimney samples are only semi-quantitative and are subject to particle size, bulk density and percent moisture effects. The uncertainties stated for soil and chimney sample measurements by RadSafety Consultants are those due to counting statistics.

To obtain a more accurate analysis, three of the chimney samples and two of the soil samples were sent to the TMA Eberline laboratory for gamma isotopic and isotopic uranium analysis.

TABLE 1: SUMMARY OF SURFACE CONTAMINATION TESTS OF HOMES IN THE BERT AVENUE AREA OF NEWBURGH HEIGHTS, OHIO				
Residence	Surface Contamination Ranges (dpm/100 cm2)			
	Fixed & Removable	Limit	Removable	Limit
2811 Bert Avenue	<94 - 128	15000	<5 - 25	1000
2818 Bert Avenue	<94 - 180	15000	<5 - 30	1000
4004 East 27th St.	<94	15000	<5 - 13	1000
3969 East 26th St.	<94 - 137	15000	<5 - 18	1000
2802 Ross Avenue	<94 - 159	15000	<5 - 34	1000

TABLE 2: SUMMARY OF SOIL & CHIMNEY SAMPLE TESTING OF RESIDENTIAL LOCATIONS IN THE BERT AVENUE AREA OF NEWBURGH HEIGHTS, OHIO				
Sample	Location	Activity* Measured By:		Regulatory Limit*
		RadSafety Consultants	TMA Eberline†	
Soil	2811 Bert Avenue	7.8 ± .9	---	35
Soil	2818 Bert Avenue	3.4 ± .8	---	35
Soil	4004 East 27th Street	1.6 ± .7	---	35
Soil	3969 East 26th Street	1.8 ± .7	---	35
Soil	2802 Ross Avenue	0.6 ± .6	---	35
Soil	3969 East 29th Street	7.1 ± .9	---	35
Soil	Bert Ave. Vacant Lt(Hi)	173.6 ± 2.1	1283 ± 108	35
Soil	Bert Ave. Vacant Lt(Lo)	---	2.31 ± .43	35
Chimney	2811 Bert Avenue	1.6 ± .7	1.38 ± .18	35
Chimney	2818 Bert Avenue	1.1 ± .6	---	35
Chimney	4004 East 27th Street	1.4 ± .7	1.50 ± .18	35
Chimney	7408 Renwood Drive(Ref)	0.6 ± .6	0.88 ± .13	35

* = picoCuries/gram; † = U-238

Because of time limitations, the percentage of surface soil scanned on each property was approximately 10%. Nevertheless, locations of elevated soil radioactivity were easily found on the various properties. A grid layout showing locations of elevated soil radioactivity is seen in Figure 2.

The concentration of radioactivity in the soil on the Bert Avenue vacant lot far exceeds the unrestricted use release limit of 35 picoCuries/gram for uranium in soils, i.e. the property should not have been released for unrestricted use. Accordingly, the owners of this property have been informed about this situation and were asked not to permit children playing on the property and in general to restrict its use. A letter is being prepared to inform the Nuclear Regulatory Commission and the Ohio Department of Health, Radiological Health Program Unit of the finding.

C. Outside Analysis

Five samples were sent to the TMA Eberline laboratory in Albuquerque, New Mexico for gamma isotopic and isotopic uranium analysis. Three of these are chimney samples from 2811 Bert Avenue, 4004 East 27th Street and the reference chimney at 7408 Renwood Drive. These samples have been identified only as sample numbers 1, 2, and 3 respectively to the TMA Eberline laboratory. The other two are high and low radioactivity soil samples from the Bert Avenue vacant lot which have been identified only as sample numbers 4 and 5 respectively to TMA Eberline.

Results for the five samples are quantitative and very accurate since they have been analyzed several times by gamma ray spectrometry and by alpha particle spectrometry. The samples were prepared for alpha particle analysis by using a total acid dissolution technique as opposed to a normal leaching method. Concentrations for U-238 are included in Table 2 and total radioactive analyses are appended at the end of this report.

RECOMMENDATIONS

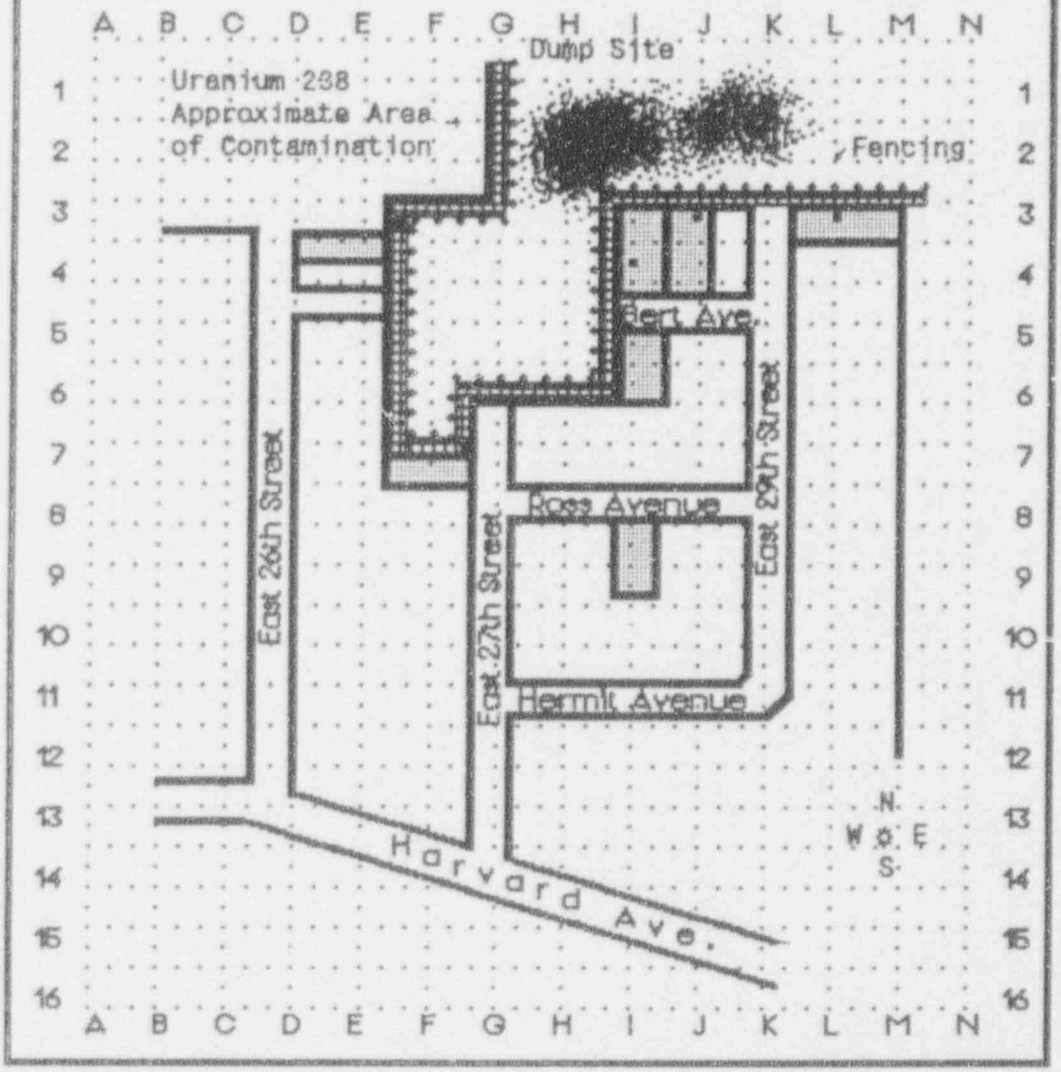
Because the soil samples from 2811 Bert Avenue and 3969 East 29th Street were quite readily found to have radiation levels exceeding those found for surrounding soil, it's recommended both samples be sent for gamma isotopic and isotopic uranium analysis.

It's recommended that a more thorough survey be performed for just the land at the 2818 Bert Avenue location because of its close proximity to other contaminated locations.

Elevated radiation levels a few times background were found to come from bricks which had been placed in the ground at 3969 East 28th Street, 3969 East 29th Street and covered with soil at the back (North side) of the Bert Avenue vacant lot. It's not necessary to remove these bricks provided children don't play (skin contact) on them or with them.

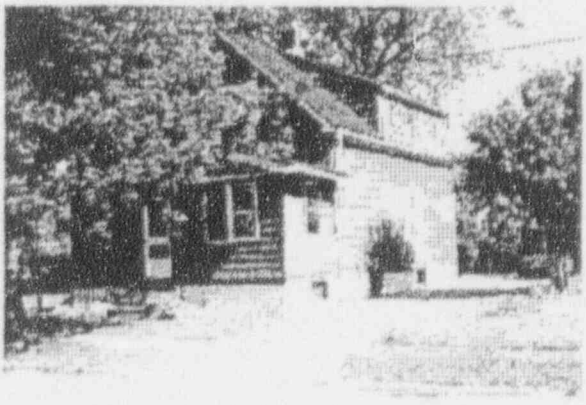
Children should not be permitted to play on the Bert Avenue vacant lot and in general the use of the lot should be restricted. It's recommended that notifications be sent to inform regulatory agencies of the high radioactivity finding.

FIGURE 2: GRID MAP SHOWING LOCATIONS OF PROPERTIES SURVEYED AND LOCATIONS OF ELEVATED SOIL RADIOACTIVITY



Location	Grid Coordinates
2811 Bert Avenue	J3
2818 Bert Avenue	I5
4004 East 27th Street	F7
3969 East 26th Street	E3
2802 Ross Avenue	I8
3969 East 29th Street	L3
Vacant Lot, Bert Ave.	I4

RADIATION PROTECTION SURVEY REPORT



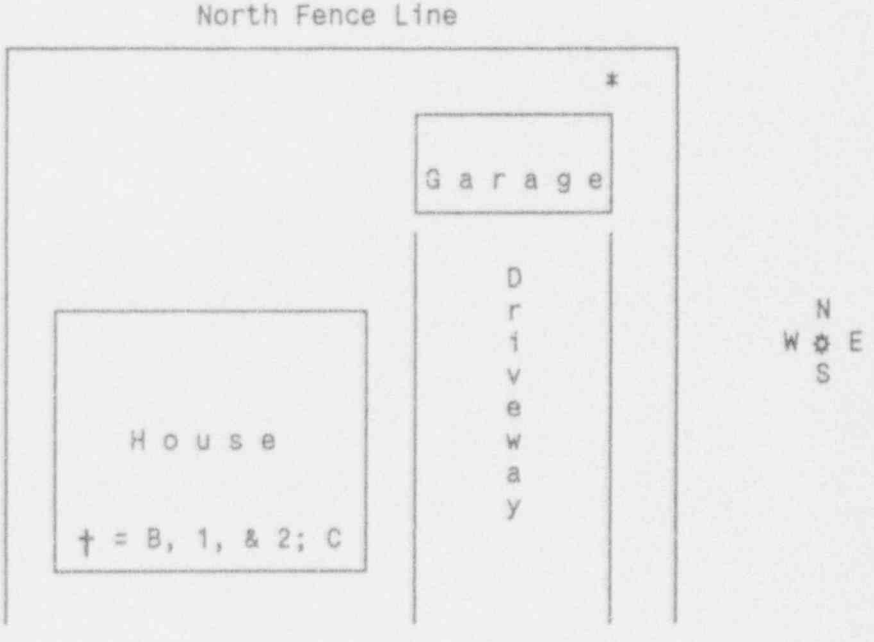
Location: Jose Padilla Residence
2811 Bert Avenue
Newburgh Heights, Ohio 44105

Date of Survey: June 22, 1993

Reason for Survey: Suspected Radiological Contaminants (Uranium)

Assigned Sampling Code (for wipes and soil samples): "A"

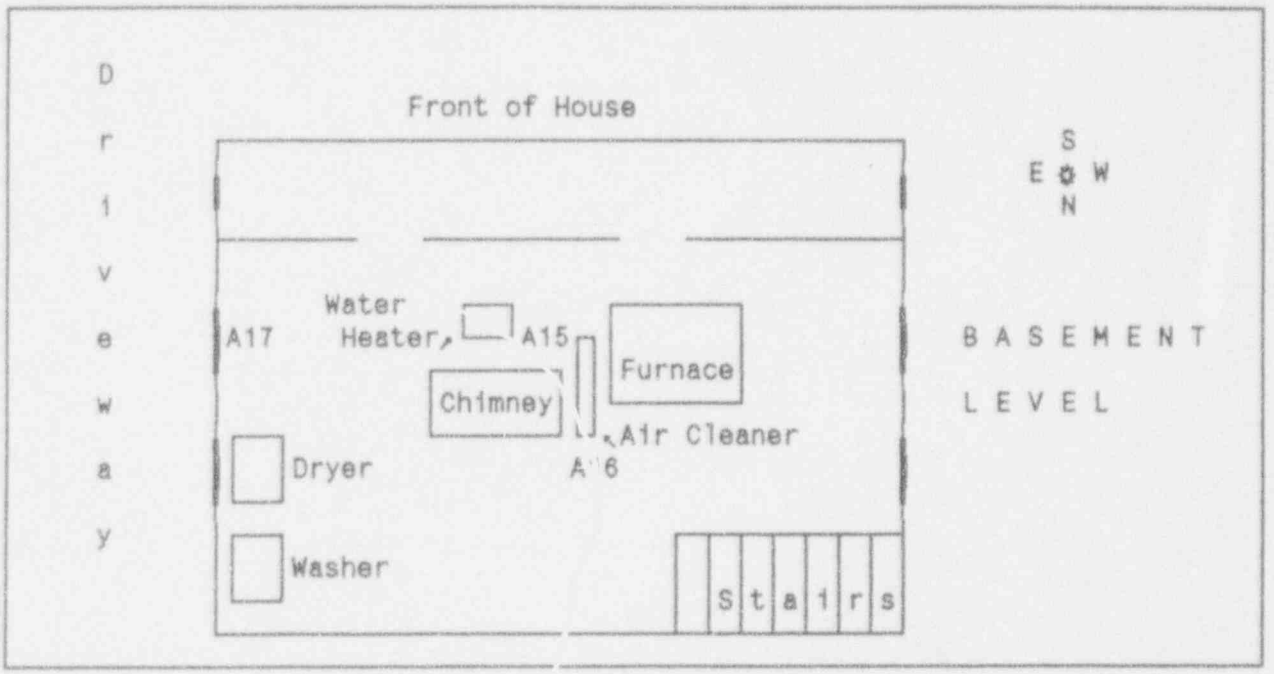
Sketch of Property:



Location: Jose Padilla Residence
2811 Bert Avenue
Newburgh Heights, Ohio 44105

Floor Level: Basement

Area Sketch:



WIPE TESTING:

Sample ID	Wipe Location	ALPHA(α) SURFACE CONTAMINATION (dpm/100cm²) Fixed and Removable α(measured)	Fixed and Removable Limit	Removable α(measured)	Removable Limit
A15	Chimney Material	<94	15000	7	1000
A16	Top of Air Cleaner	<94	15000	<5	1000
A17	Window Sill	<94	15000	6	1000

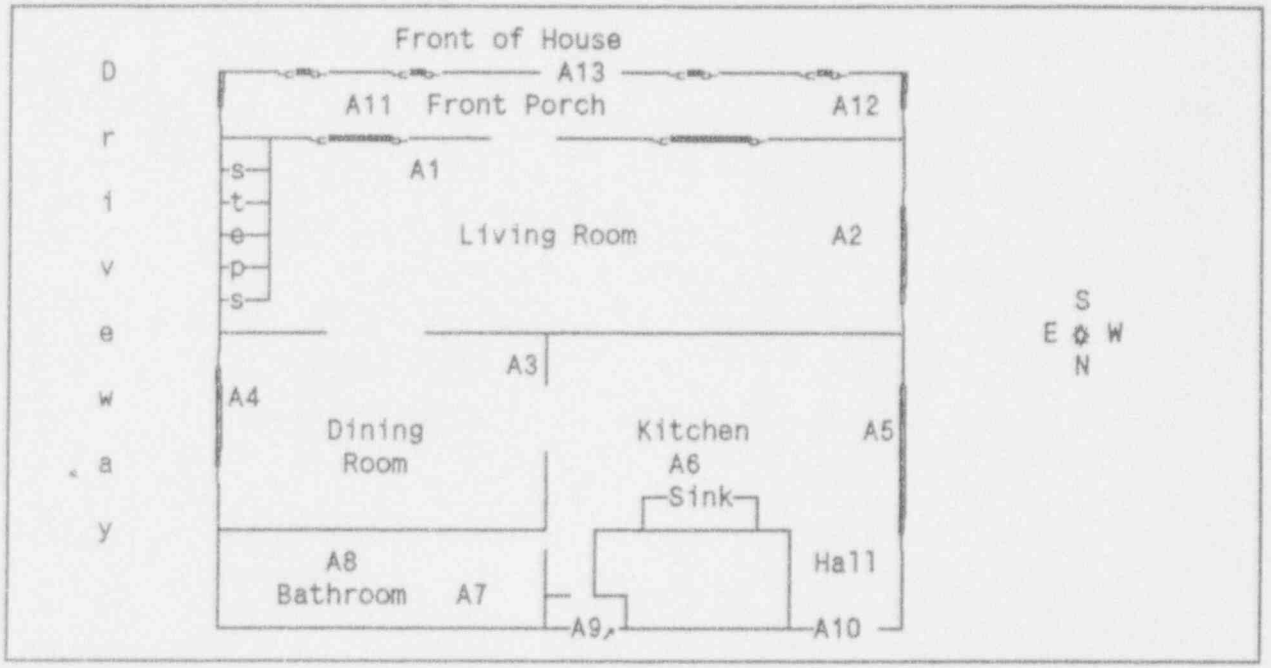
SOLID SAMPLE TESTING:

Sample ID	Measured Activity (picoCuries/gm)	Regulatory Limit (picoCuries/gm)
Chimney A	1.6 ± .7	35
Soil A	7.8 ± .9	35

Location: Jose Padilla Residence
2811 Bert Avenue
Newburgh Heights, Ohio 44105

Floor Level: 1st Floor

Area Sketch:



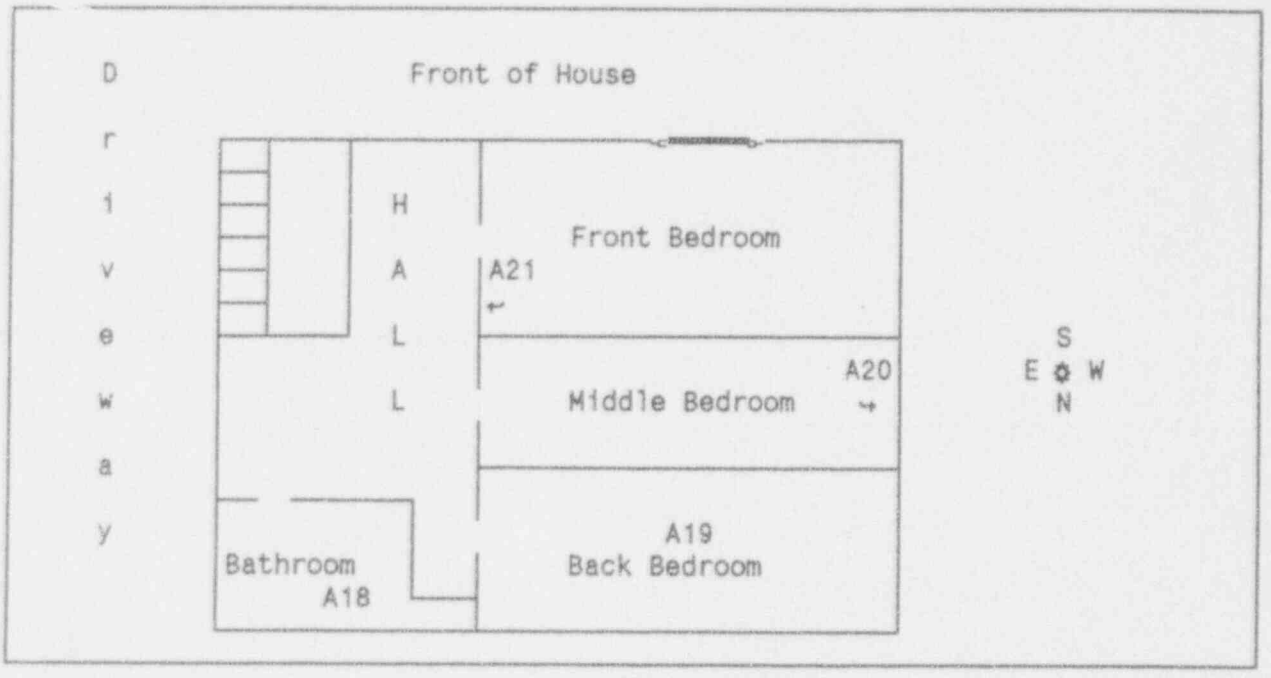
WIPE TESTING:

Sample ID	Location	ALPHA(α) SURFACE CONTAMINATION (dpm/100cm²) Fixed and Removable α(measured)	Fixed and Removable Limit	Removable α(measured)	Removable Limit
A1	Living Rm Floor Vent	<94	15000	<5	1000
A2	Living Rm Window	<94	15000	7	1000
A3	Heating Vent	<94	15000	<5	1000
A4	Dining Rm Window	<94	15000	5	1000
A5	Kitchen Window Sill	<94	15000	<5	1000
A6	Under Kitchen Sink	<94	15000	8	1000
A7	Bathroom Bathtub	<94	15000	<5	1000
A8	Bathroom Sink	<94	15000	<5	1000
A9	Closet Upper Wall	<94	15000	<5	1000
A10	Back Hall Threshold	<94	15000	<5	1000
A11	Porch Window Sill	<94	15000	17	1000
A12	Porch Window Sill	<94	15000	11	1000
A13	Entrance Threshold	<94	15000	10	1000
A14	Bathroom Window Sill	<94	15000	8	1000

Location: Jose Padilla Residence
2811 Bert Avenue
Newburgh Heights, Ohio 44105

Floor Level: 2nd Floor

Area Sketch:



WIPE TESTING:

Sample ID	Location	ALPHA(α) SURFACE CONTAMINATION (dpm/100cm²) Fixed and Removable α(measured)	Fixed and Removable Limit	Removable α(measured)	Removable Limit
A18	Bathroom Sink	128	15000	<5	1000
A19	Back Bedroom Floor	<94	15000	15	1000
A20	Crawl Space	<94	15000	<5	1000
A21	Front Bedroom Vent	<94	15000	25	1000

RESULTS:

Based on all surfaces tested in the house, there was no fixed or removable alpha contamination found to exceed regulatory limits applicable for depleted uranium.

Radiation exposure rates in air were all found to be nominally at background.

Chimney sample analysis shows a slightly elevated radioactivity concentration level, but it does not exceed the regulatory limit. Analysis by an outside laboratory confirms the chimney sample has a radioactivity concentration which is elevated relative to that of a reference chimney located outside the city of Newburgh Heights.

Analysis of the soil sample shows that it easily exceeds radiation levels found for surrounding soil on this property and should be more accurately analyzed by an outside laboratory.

COMMENTS:

Because of time and cost limitations, only about 10% of the surface soil on this property was actually scanned.

Soil and chimney samples were generally analyzed on a semi-quantitative basis in order to reduce costs. However, a selective sample of material removed from the chimney was sent as sample #1 for quantitative analysis by an outside laboratory.

RECOMMENDATIONS:

Because the soil sample was measured to have a radiation level which exceeded levels found for surrounding soil, it's recommended the soil sample for this property be sent out for gamma isotopic and isotopic uranium analysis.

ACKNOWLEDGEMENTS:

Radiation surveys, wipe tests and sampling were performed by Steven J. Aron Jr., Ph.D. of RadSafety Consultants, Inc. under an agreement with the law firm of Ulmer & Berne.

Steven J. Aron Jr., Ph.D. is a Qualified Radiation Expert in the State of Ohio as determined by its Public Health Council pursuant to rule 3701-70-05 of the Ohio Administrative Code.

RADIATION PROTECTION SURVEY REPORT

Location: Mr. & Mrs. Lester Fryer
2818 Bert Avenue
Newburgh Heights, Ohio 44105

Date of Survey: June 22, 1993

Reason for Survey: Suspected Radiological Contaminants (Uranium)

Assigned Sampling Code (for wipes and soil samples): "B"

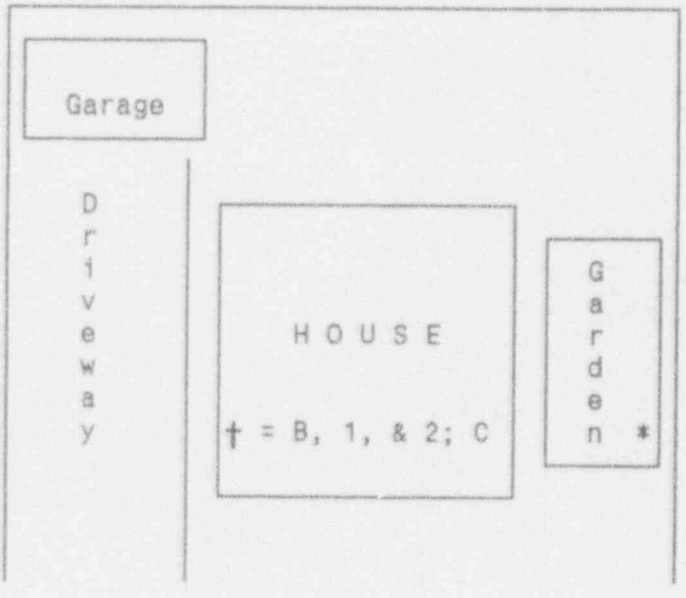
Sketch of Property:

Sampling Legend
* = location where soil sample was taken.

† = locations where wipes were taken.

B = Basement
1 = 1st Floor
2 = 2nd Floor

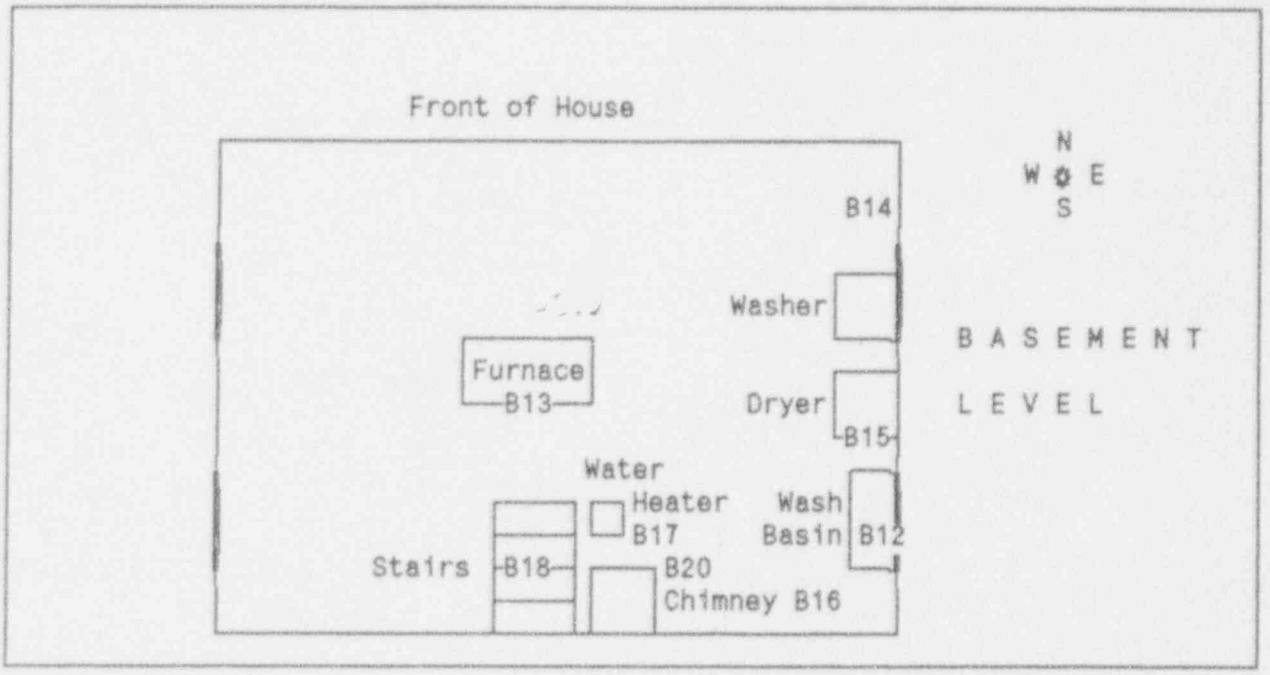
C = Chimney sample taken.



Location: Mr. & Mrs. Lester Fryer
2818 Bert Avenue
Newburgh Heights, Ohio 44105

Floor Level: Basement

Area Sketch:



WIPE TESTING:

Sample ID	Wipe Location	ALPHA(α) SURFACE CONTAMINATION (dpm/100cm²) Fixed and Removable α(measured)	Fixed and Removable Limit	Removable α(measured)	Removable Limit
B12	Basin Window Ledge	<94	15000	5	1000
B13	Behind FurnaceFilter	<94	15000	12	1000
B14	Top of Old Stove	<94	15000	24	1000
B15	Basin Floor Drain	<94	15000	25	1000
B16	Top of Storage Shelf	<94	15000	14	1000
B17	Top of Water Heater	<94	15000	10	1000
B18	3rd Step From Bottom	<94	15000	<5	1000
B19	Furnace Filter	<94	15000	11	1000
B20	Floor by Chimney	<94	15000	22	1000

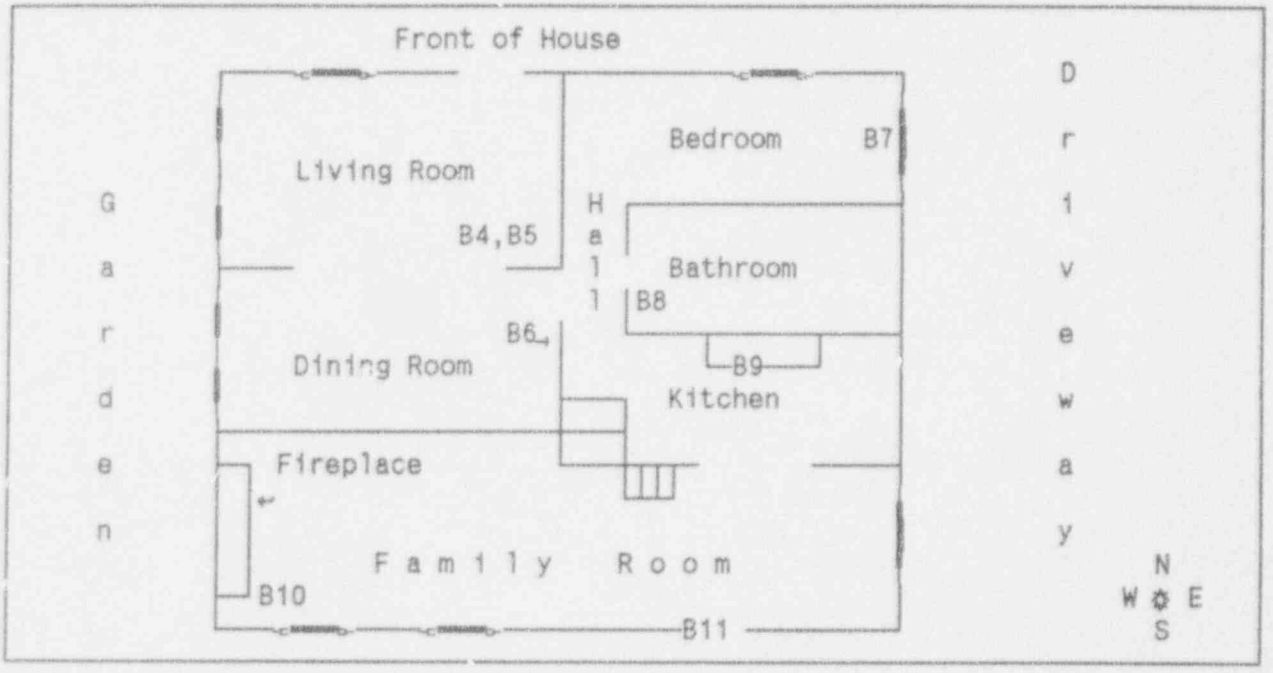
SOLID SAMPLE TESTING:

Sample ID	Measured Activity (picoCuries/gm)	Regulatory Limit (picoCuries/gm)
Chimney B	1.1 ± .6	35
Soil B	3.4 ± .8	35

Location: Mr. & Mrs. Lester Fryer
2818 Bert Avenue
Newburgh Heights, Ohio 44105

Floor Level: 1st Floor

Area Sketch:



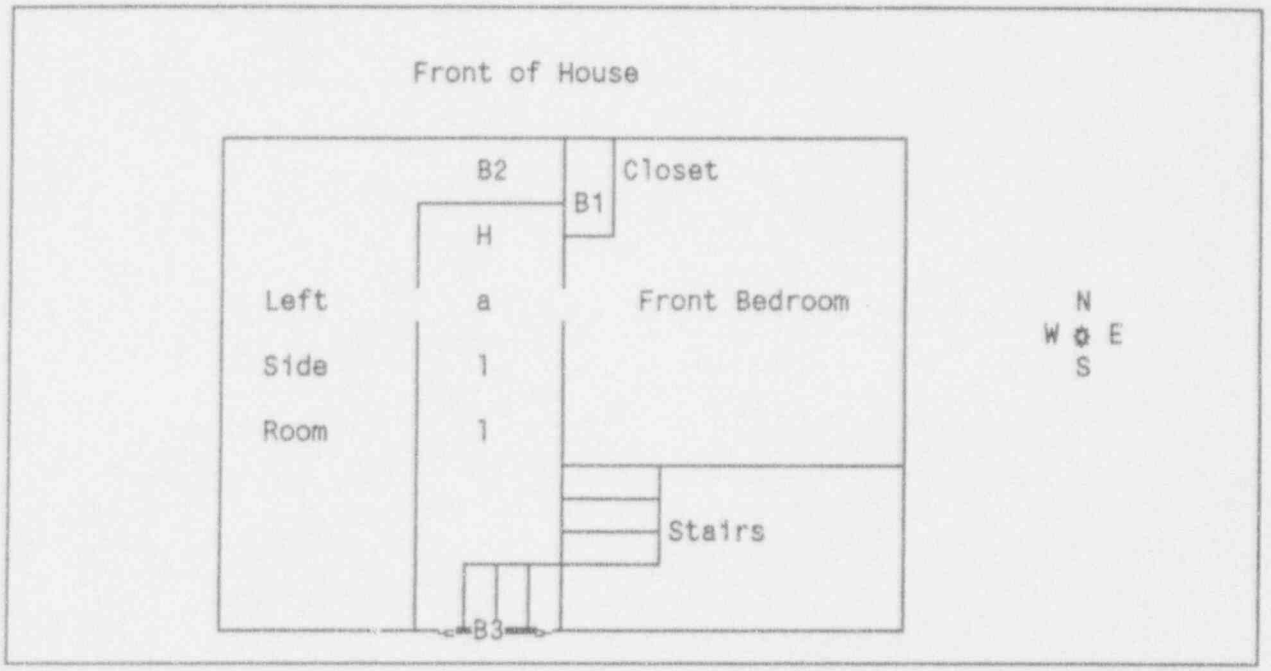
WIPE TESTING:

Sample ID	Location	ALPHA(α) SURFACE CONTAMINATION (dpm/100cm²) Fixed and Removable α(measured)	Limit	Removable α(measured)	Limit
B4	Living Rm Vent(insde	<94	15000	25	1000
B5	Living Rm Vent(back)	<94	15000	30	1000
B6	Dining Light Switch	<94	15000	15	1000
B7	Right Bedroom Window	<94	15000	30	1000
B8	Bathroom Vent	<94	15000	6	1000
B9	Under Kitchen Sink	<94	15000	7	1000
B10	Fireplace, Left Side	<94	15000	8	1000
B11	Back Door Threshold	180	15000	26	1000

Location: Mr. & Mrs. Lester Fryer
2818 Bert Avenue
Newburgh Heights, Ohio 44105

Floor Level: 2nd Floor

Area Sketch:



WIPE TESTING:

Sample ID	Location	ALPHA(α) SURFACE CONTAMINATION (dpm/100cm²) Fixed and Removable α(measured)	Fixed and Removable Limit	Removable α(measured)	Removable Limit
B1	Closet Floor	<94	15000	22	1000
B2	Top of Furniture	<94	15000	17	1000
B3	Hall Window Sill	144	15000	20	1000

RESULTS:

Based on all surfaces tested in the house, there was no fixed or removable alpha contamination found to exceed regulatory limits applicable for depleted uranium.

Radiation exposure rates in air were all found to be nominally at background.

Chimney sample analysis shows a slightly elevated radioactivity concentration level, but it does not appear to exceed the regulatory limit.

Analysis of the soil sample shows that it appears to be slightly elevated relative to a normal background value of 0.6 picoCuries/gram of uranium in soil, but does not appear to exceed the regulatory limit of 35 picoCuries/gram for depleted uranium.

COMMENTS:

Because of time and cost limitations, only about 10% of the surface soil on this property was actually scanned.

Soil and chimney samples were generally analyzed on a semi-quantitative basis in order to reduce costs. Since the semi-quantitative results showed that neither the soil nor the chimney sample for this property appeared likely to exceed regulatory limits, none were sent for quantitative analysis by an outside laboratory.

RECOMMENDATIONS:

Because of the close proximity of this property to other contaminated locations, a more thorough survey of just the land is recommended.

ACKNOWLEDGEMENTS:

Radiation surveys, wipe tests and sampling were performed by Steven J. Aron Jr., Ph.D. of RadSafety Consultants, Inc. under an agreement with the law firm of Ulmer & Berne.

Steven J. Aron Jr., Ph.D. is a Qualified Radiation Expert in the State of Ohio as determined by its Public Health Council pursuant to rule 3701-70-05 of the Ohio Administrative Code.

RADIATION PROTECTION SURVEY REPORT

Location: Cheryl & Mike Kalnasy
4004 East 27th Street
Newburgh Heights, Ohio 44105

Date of Survey: June 23, 1993

Reason for Survey: Suspected Radiological Contaminants (Uranium)

Assigned Sampling Code (for wipes and soil samples): "C"

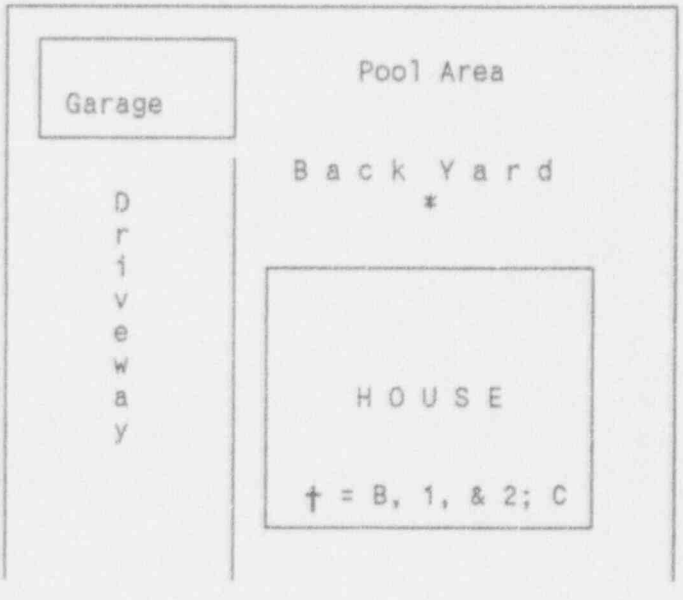
Sketch of Property:

Sampling Legend
* = location where soil sample was taken.

† = locations where wipes were taken.

B = Basement
1 = 1st Floor
2 = 2nd Floor

C = Chimney sample taken.

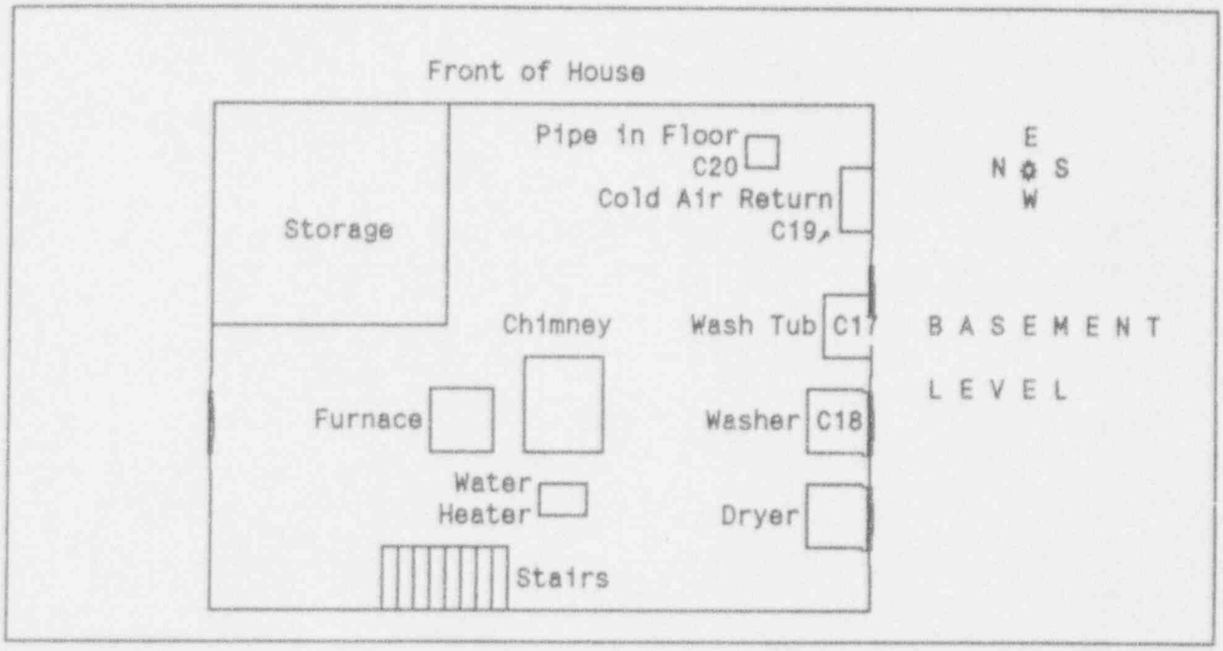


W
S N
E

Location: Cheryl & Mike Kalnasy
4004 East 27th Street
Newburgh Heights, Ohio 44105

Floor Level: Basement

Area Sketch:



WIPE TESTING:

Sample ID	Wipe Location	ALPHA(α) SURFACE CONTAMINATION (dpm/100cm²) Fixed and Removable α(measured)	Fixed and Removable Limit	Removable α(measured)	Removable Limit
C17	Drain Under Wash Tub	<94	15000	5	1000
C18	Window Ledge	<94	15000	10	1000
C19	Under Cold AirReturn	<94	15000	8	1000
C20	Pipe in Floor	<94	15000	11	1000

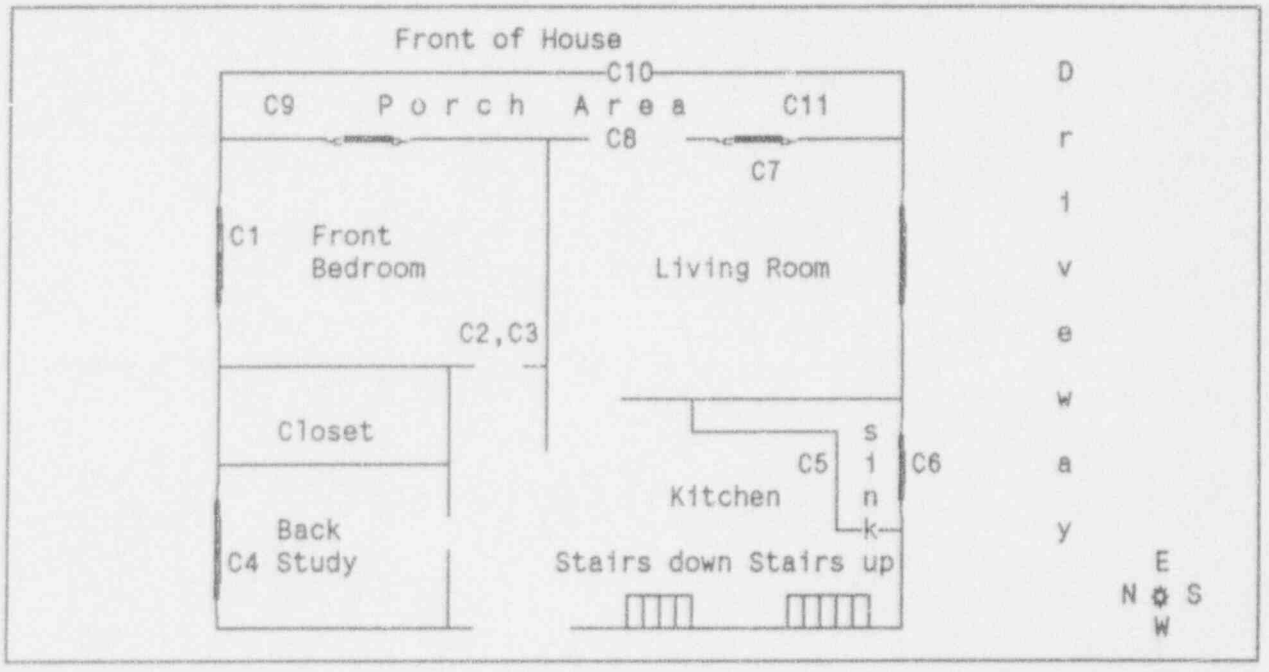
SOLID SAMPLE TESTING:

Sample ID	Measured Activity (picoCuries/gm)	Regulatory Limit (picoCuries/gm)
Chimney C	1.4 ± .7	35
Soil C	1.6 ± .7	35

Location: Cheryl & Mike Kalnasy
4004 East 27th Street
Newburgh Heights, Ohio 44105

Floor Level: 1st Floor

Area Sketch:



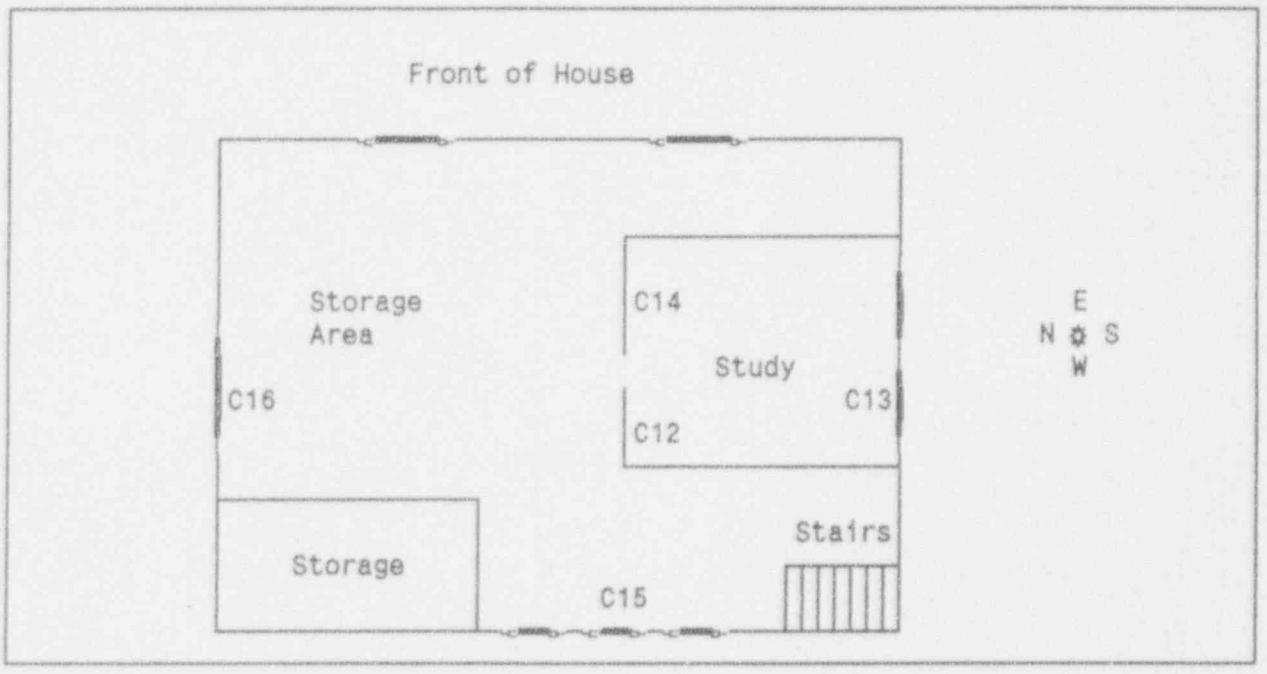
WIPE TESTING:

Sample ID	Location	ALPHA(α) SURFACE CONTAMINATION (dpm/100cm²) Fixed and Removable α(measured)	Fixed and Removable Limit	Removable α(measured)	Removable Limit
C1	Bedroom Window Sill	<94	15000	<5	1000
C2	Inside Bedroom Vent	<94	15000	<5	1000
C3	Back of Vent Cover	<94	15000	8	1000
C4	WindowSill BackStudy	<94	15000	7	1000
C5	Kitchen Sink Bk Wall	<94	15000	9	1000
C6	Kitchen Window Sill	<94	15000	13	1000
C7	Front Window Sill	<94	15000	5	1000
C8	Front Door Threshold	<94	15000	<5	1000
C9	Front Porch Ceiling	-	15000	5	1000
C10	Front Porch Steps	-	15000	6	1000
C11	Front Porch Floor	-	15000	8	1000

Location: Cheryl & Mike Kalnasy
4004 East 27th Street
Newburgh Heights, Ohio 44105

Floor Level: 2nd Floor

Area Sketch:



WIPE TESTING:

Sample ID	Location	ALPHA(α) SURFACE CONTAMINATION (dpm/100cm²) Fixed and Removable α(measured)	Fixed and Removable Limit	Removable α(measured)	Removable Limit
C12	Vent in Study	<94	15000	<5	1000
C13	Right Window Sill	-	15000	<5	1000
C14	Wall Surface	<94	15000	9	1000
C15	Middle Window Sill	<94	15000	<5	1000
C16	Window Ledge	<94	15000	5	1000

RESULTS:

Based on all surfaces tested in the house, there was no fixed or removable alpha contamination found to exceed regulatory limits applicable for depleted uranium.

Radiation exposure rates in air were all found to be nominally at background.

Chimney sample analysis shows a slightly elevated radioactivity concentration level, but it does not appear to exceed the regulatory limit. Analysis by an outside laboratory confirms the chimney to have an elevated concentration of radioactivity relative to that found for a reference chimney located outside the city of Newburgh Heights.

Analysis of the soil sample shows that it appears to be slightly elevated relative to a normal background value of 0.6 picoCuries/gram of uranium in soil, but does not appear to exceed the regulatory limit of 35 picoCuries/gram for depleted uranium.

COMMENTS:

Because of time and cost limitations, only about 10% of the surface soil on this property was actually scanned.

Soil and chimney samples were generally analyzed on a semi-quantitative basis in order to reduce costs. However, a selective sample of material removed from the chimney was sent as sample #2 for quantitative analysis by an outside laboratory.

RECOMMENDATIONS:

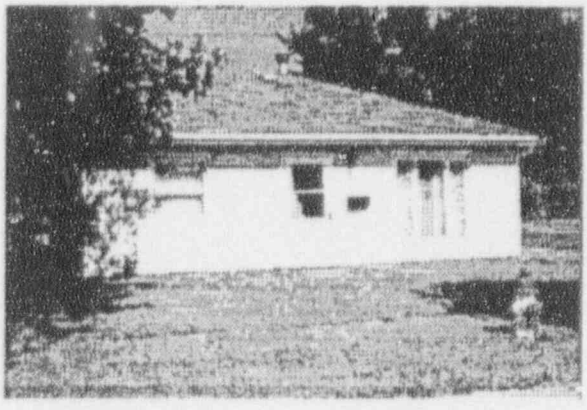
No recommendations are necessary at this time.

ACKNOWLEDGEMENTS:

Radiation surveys, wipe tests and sampling were performed by Steven J. Aron Jr., Ph.D. of RadSafety Consultants, Inc. under an agreement with the law firm of Ulmer & Berne.

Steven J. Aron Jr., Ph.D. is a Qualified Radiation Expert in the State of Ohio as determined by its Public Health Council pursuant to rule 3701-70-05 of the Ohio Administrative Code.

RADIATION PROTECTION SURVEY REPORT



Location: Ira & Shirley Keener
3969 East 26th Street
Newburgh Heights, Ohio 44105

Date of Survey: June 23, 1993

Reason for Survey: Suspected Radiological Contaminants (Uranium)

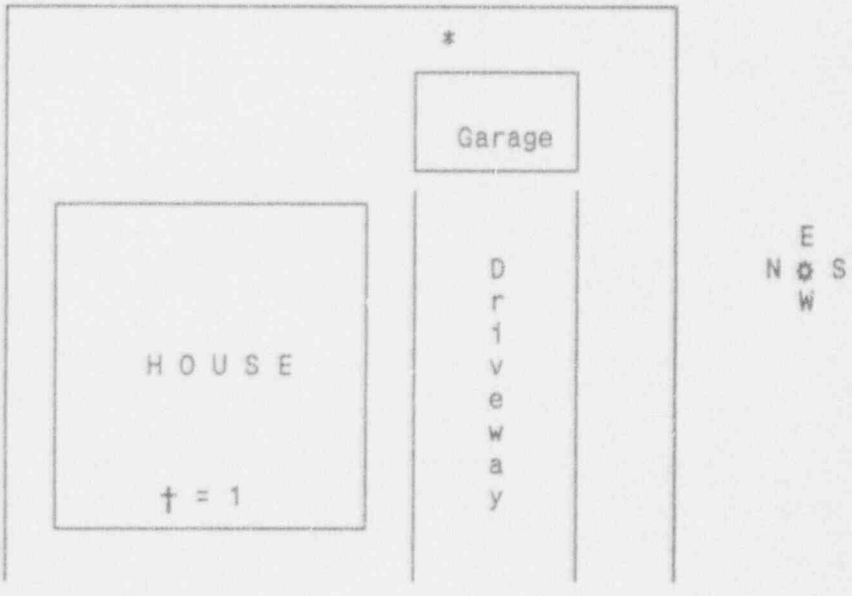
Assigned Sampling Code (for wipes and soil samples): "D"

Sketch of Property:

Sampling Legend
* = location where soil sample was taken.

† = locations where wipes were taken.

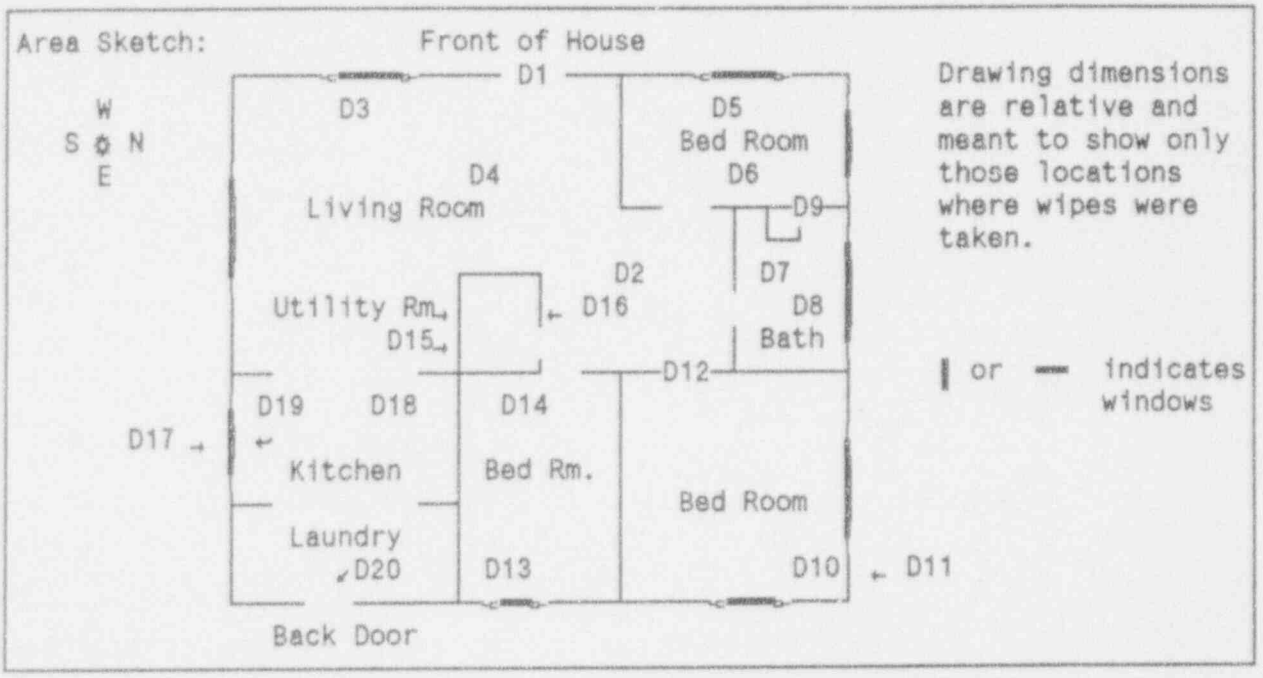
No Basement
1 = 1st Floor
No 2nd Floor
No Chimney



Location: Mr. & Mrs. Ira Keener
3969 East 26th Street
Newburgh Heights, Ohio 44105

Floor Level: 1st (Residence has no basement or 2nd floor)

Area Sketch:



WIPE TESTING:

Sample ID	Location	ALPHA(α) SURFACE CONTAMINATION (dpm/100cm²) Fixed and Removable α(measured)	Fixed and Removable Limit	Removable α(measured)	Removable Limit
D1	Front Door Threshold	<94	15000	<5	1000
D2	Ceiling Heating Vent	<94	15000	<5	1000
D3	Window Sill	<94	15000	7	1000
D4	Carpet by Front Door	<94	15000	<5	1000
D5	Window Sill	<94	15000	8	1000
D6	Baseboard by Closet	<94	15000	12	1000
D7	Bath Room Sink	<94	15000	11	1000
D8	Window Sill	<94	15000	<5	1000
D9	Bath Room Trap	137	15000	5	1000
D10	Window Sill	<94	15000	<5	1000
D11	Back Bedroom Corner	<94	15000	15	1000
D12	Bedroom Carpet	<94	15000	<5	1000
D13	Window Sill	<94	15000	7	1000
D14	Baseboard by Closet	<94	15000	17	1000
D15	Top of Water Heater	<94	15000	6	1000
D16	Furnace	<94	15000	18	1000
D17	Kitchen Window Sill	<94	15000	<5	1000
D18	Stove Heating Vent	<94	15000	13	1000
D19	Kitchen Sink Trap	<94	15000	16	1000
D20	Back Door Threshold	<94	15000	10	1000

SOLID SAMPLE TESTING:

Sample ID	Measured Activity (picoCuries/gm)	Regulatory Limit (picoCuries/gm)
Soil D	1.8 ± .7	35

RESULTS:

Based on all surfaces tested in the house, there was no fixed or removable alpha contamination found to exceed regulatory limits applicable for depleted uranium.

Radiation exposure rates in air were all found to be nominally at background.

Analysis of the soil sample shows that it appears to be elevated relative to a normal background value of 0.6 picoCuries/gram of uranium in soil, but does not appear to exceed the regulatory limit of 35 picoCuries/gram for depleted uranium.

COMMENTS:

Because of time and cost limitations, only about 10% of the surface soil on this property was actually scanned.

Only soil sampling was possible for this property. One sample was analyzed semi-quantitatively in order to reduce costs. Since the semi-quantitative result showed that the soil sample did not appear likely to exceed the regulatory limit for depleted uranium, it was not sent for quantitative analysis by an outside laboratory.

A number of bricks were found in the ground along the southern edge of the driveway which show radiation levels about two to three times background, but do not appear to exceed any regulatory limit.

RECOMMENDATIONS:

It is not necessary to remove the bricks exhibiting the slightly elevated radiation levels as long as children don't play on them (skin contact) or with them, otherwise it's recommended they be removed.

ACKNOWLEDGEMENTS:

Radiation surveys, wipe tests and sampling were performed by Steven J. Aron Jr., Ph.D. of RadSafety Consultants, Inc. under an agreement with the law firm of Ulmer & Berne.

Steven J. Aron Jr., Ph.D. is a Qualified Radiation Expert in the State of Ohio as determined by its Public Health Council pursuant to rule 3701-70-05 of the Ohio Administrative Code.

RADIATION PROTECTION SURVEY REPORT

Location: Sally & Theodore Perez
2802 Ross Avenue
Newburgh Heights, Ohio 44105

Date of Survey: June 24, 1993

Reason for Survey: Suspected Radiological Contaminants (Uranium)

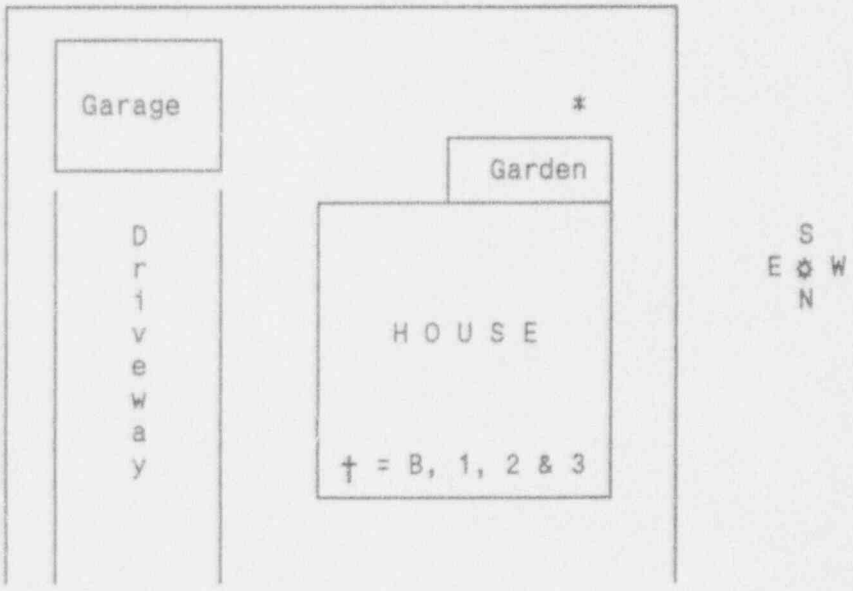
Assigned Sampling Code (for wipes and soil samples): "E"

Sketch of Property:

Sampling Legend
* = location where soil sample was taken.

† = locations where wipes were taken.

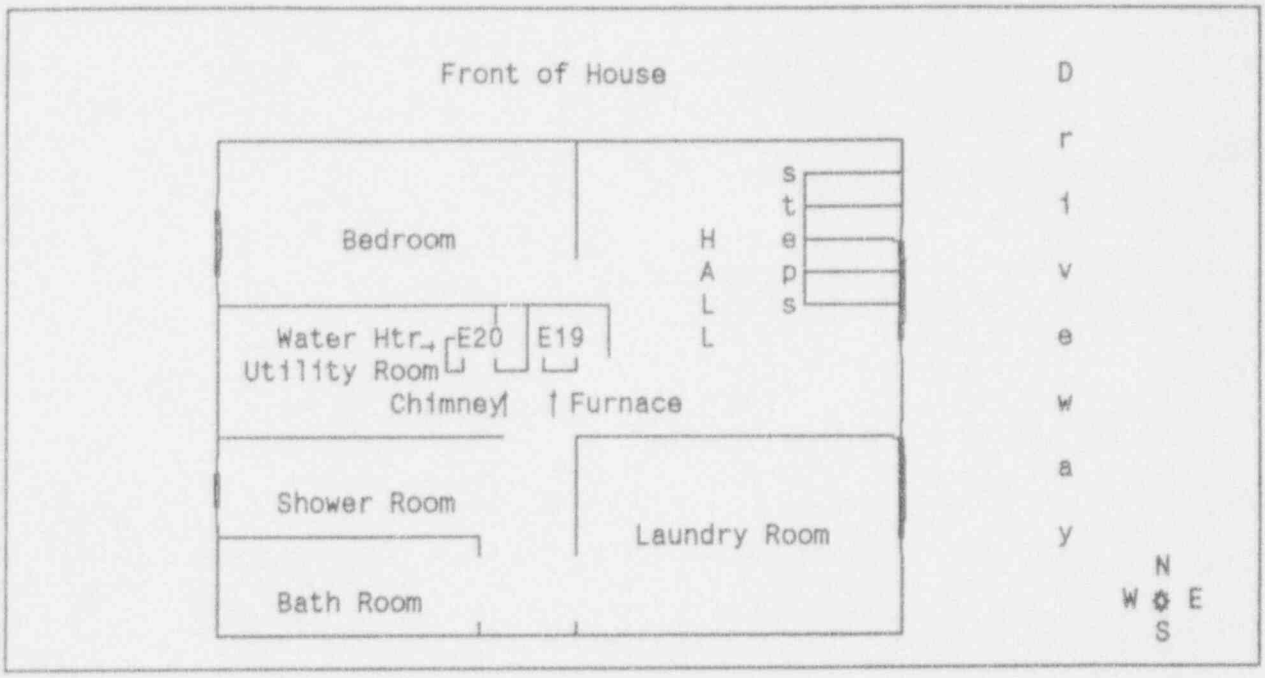
B = Basement
1 = 1st Floor
2 = 2nd Floor
3 = Attic



Location: Sally & Theodore Perez
2802 Ross Avenue
Newburgh Heights, Ohio 44105

Floor Level: Basement

Area Sketch:



WIPE TESTING:

Sample ID	Location	ALPHA(α) SURFACE CONTAMINATION (dpm/100cm²) Fixed and Removable α(measured)	Fixed and Removable Limit	Removable α(measured)	Removable Limit
E19	Old Furnace Filter	<94	15000	18	1000
E20	Top of Water Heater	<94	15000	26	1000

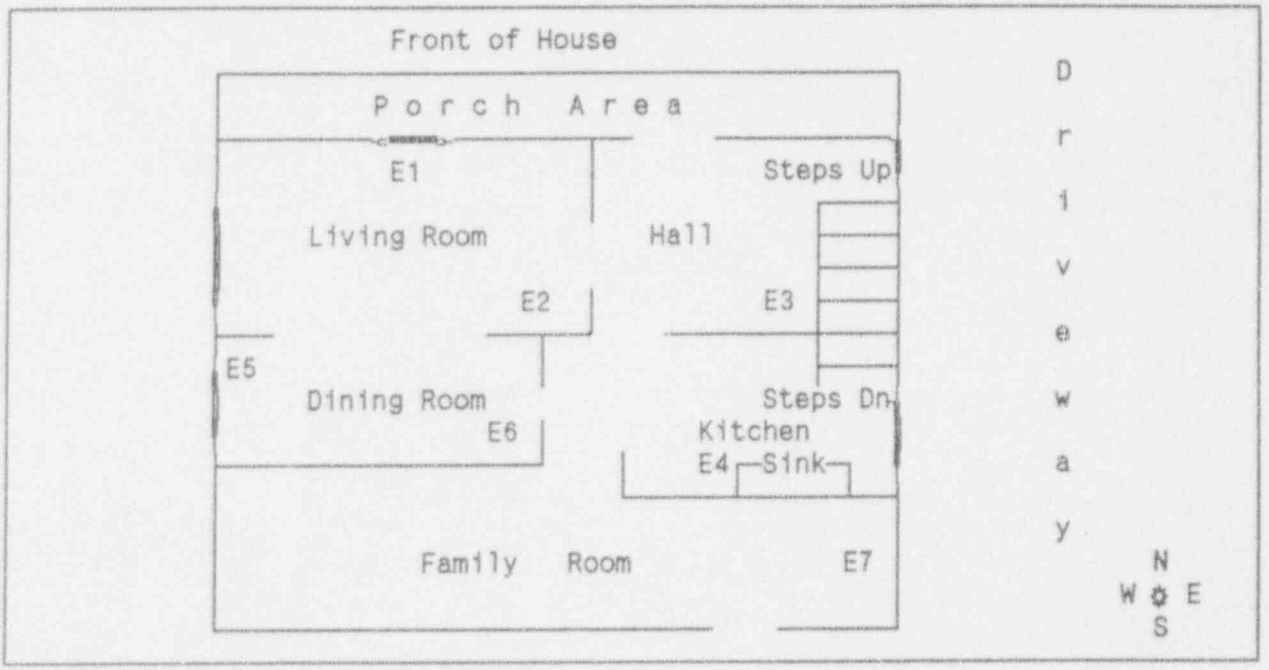
SOLID SAMPLE TESTING:

Sample ID	Measured Activity (picoCuries/gm)	Regulatory Limit (picoCuries/gm)
Soil E	0.6 ± .6	35

Location: Sally & Theodore Perez
2802 Ross Avenue
Newburgh Heights, Ohio 44105

Floor Level: 1st Floor

Area Sketch:



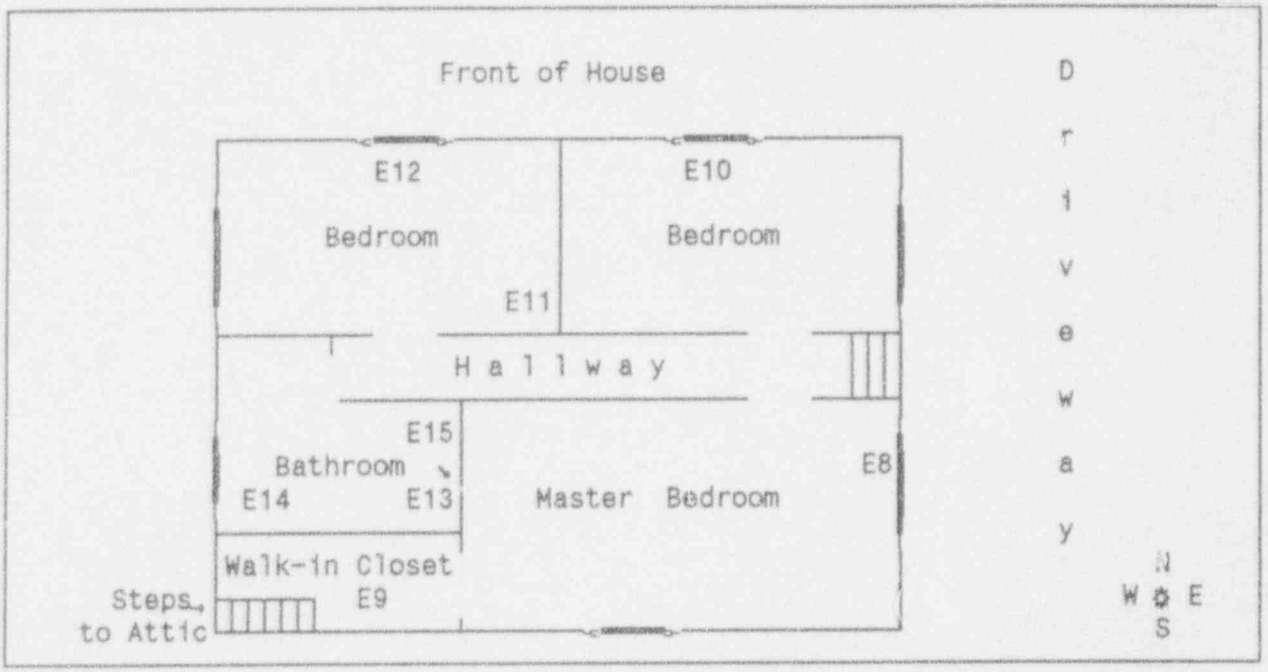
WIPE TESTING:

Sample ID	Location	ALPHA(α) SURFACE CONTAMINATION (dpm/100cm²) Fixed and Removable α(measured)	Fixed and Removable Limit	Removable α(measured)	Removable Limit
E1	Window Sill	<94	15000	7	1000
E2	Living Rm/Hall Vent	<94	15000	<5	1000
E3	Hall Cold Air Return	<94	15000	22	1000
E4	Kitchen Sink	<94	15000	20	1000
E5	Window Sill DiningRm	123	15000	29	1000
E6	Dining Room Vent	<94	15000	<5	1000
E7	Family Room Radiator	<94	15000	<5	1000

Location: Sally & Theodore Perez
2802 Ross Avenue
Newburgh Heights, Ohio 44105

Floor Level: 2nd Floor

Area Sketch:



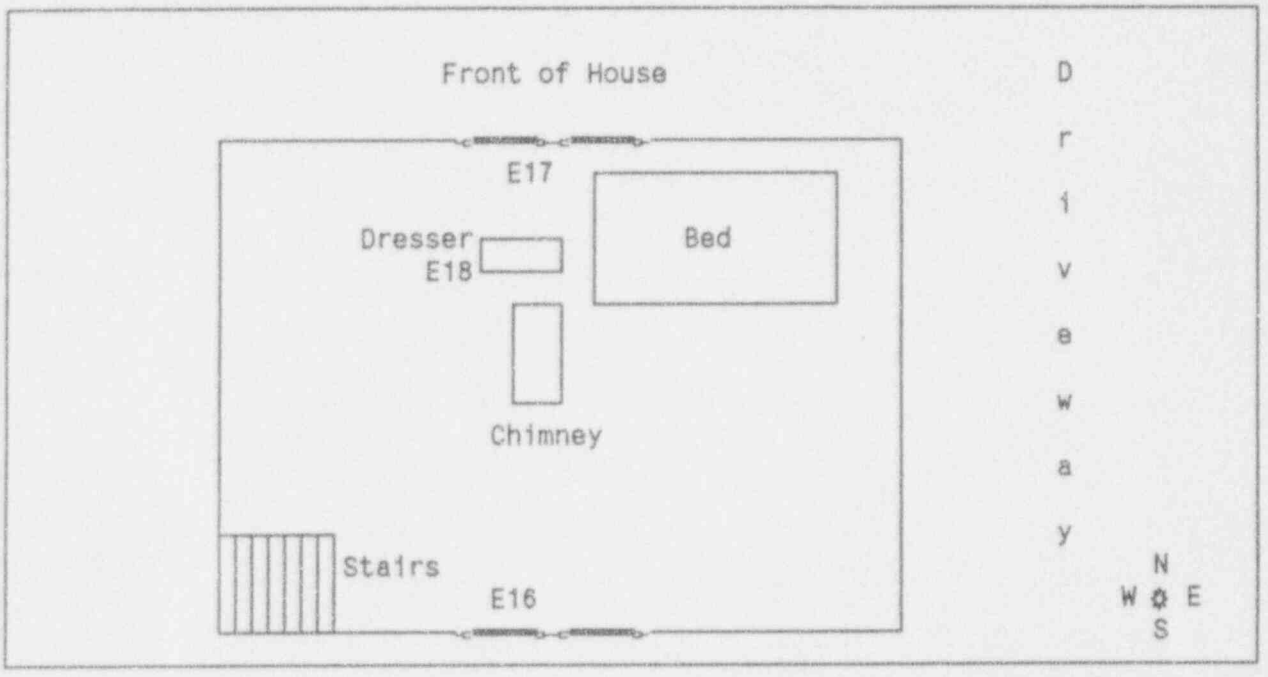
WIPE TESTING:

Sample ID	Location	ALPHA(α) SURFACE CONTAMINATION (dpm/100cm²) Fixed and Removable α(measured)	Fixed and Removable Limit	Removable α(measured)	Removable Limit
E8	Window Sill	-	15000	10	1000
E9	Closet Floor	<94	15000	5	1000
E10	Window Sill	159	15000	34	1000
E11	Vent by Doorway	<94	15000	8	1000
E12	Window Sill	<94	15000	17	1000
E13	Bath Tub Drain	<94	15000	11	1000
E14	Bathroom Sink Trap	<94	15000	6	1000
E15	Vent by Bath Tub	<94	15000	15	1000

Location: Sally & Theodore Perez
2802 Ross Avenue
Newburgh Heights, Ohio 44105

Floor Level: 3rd Floor/Attic

Area Sketch:



WIPE TESTING:

Sample ID	Location	ALPHA(α) SURFACE CONTAMINATION (dpm/100cm²) Fixed and Removable α(measured)	Fixed and Removable Limit	Removable α(measured)	Removable Limit
E16	Window Sill by Steps	<94	15000	21	1000
E17	Left Window Sill	<94	15000	32	1000
E18	On Top of Dresser	<94	15000	5	1000

RESULTS:

Based on all surfaces tested in the house, there was no fixed or removable alpha contamination found to exceed regulatory limits applicable for depleted uranium.

Radiation exposure rates in air were all found to be nominally at background.

Analysis of the soil sample shows that it appears to be equal to background at a value of 0.6 picoCuries/gram of uranium in soil.

COMMENTS:

Because of time and cost limitations, only about 10% of the surface soil on this property was actually scanned.

It was not possible to obtain a chimney sample for this property. One soil sample was taken, however, and analyzed semi-quantitatively in order to reduce costs. Since the semi-quantitative result showed that the soil sample was approximately equal to background and not likely to exceed the regulatory limit for depleted uranium, it was not sent for more expensive quantitative analysis by an outside laboratory.

RECOMMENDATIONS:

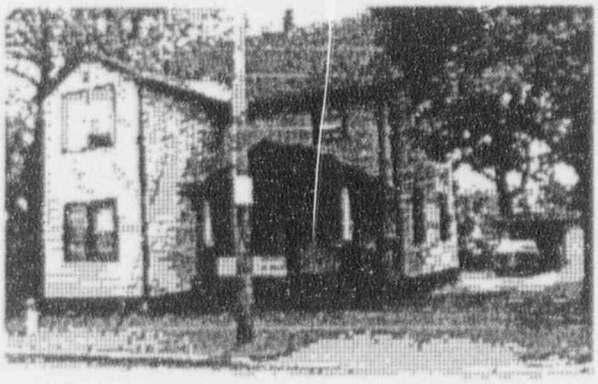
No recommendations are necessary at this time.

ACKNOWLEDGEMENTS:

Radiation surveys, wipe tests and sampling were performed by Steven J. Aron Jr., Ph.D. of RadSafety Consultants, Inc. under an agreement with the law firm of Ulmer & Berne.

Steven J. Aron Jr., Ph.D. is a Qualified Radiation Expert in the State of Ohio as determined by its Public Health Council pursuant to rule 3701-70-05 of the Ohio Administrative Code.

RADIATION PROTECTION SURVEY REPORT



Location: Beverly & Danny Emrisko
3969 East 29th Street
Newburgh Heights, Ohio 44105

Date of Survey: July 1, 1993

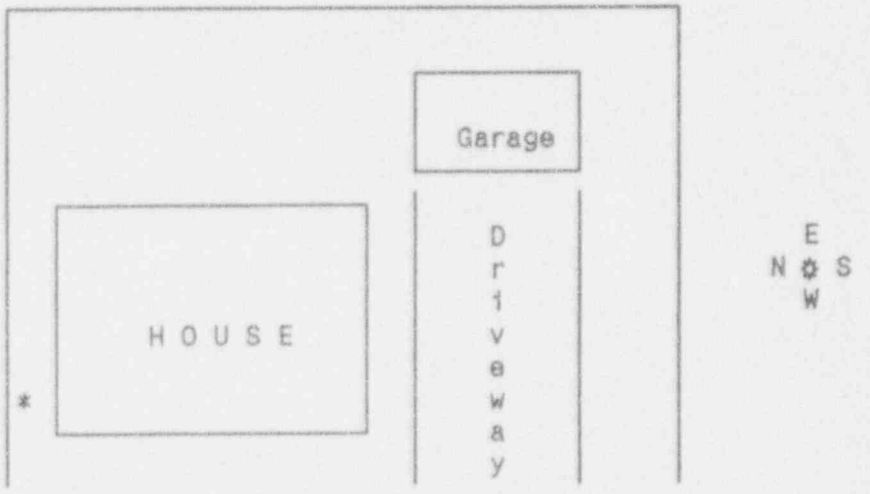
Reason for Survey: Suspected Radiological Contaminants (Uranium)

Assigned Sampling Code (for wipes and soil samples): "F"

Sketch of Property:

Sampling Legend
* = location where soil sample was taken.

There were no wipe samples taken at this location.



SOLID SAMPLE TESTING:

Sample ID	Measured Activity (picoCuries/gm)	Regulatory Limit (picoCuries/gm)
Soil F	7.1 ± .9	35

RESULTS:

The survey meter responses locating the soil sample taken on this property showed very definite readings of radioactivity elevated above background values found for other locations on the same property. Semi-quantitative analysis of the sample indicates the concentration equals about ten times background, but does not exceed the regulatory limit for depleted uranium.

COMMENTS:

Pending results of surveys for homes which were already tested, no surveys were requested for the inside of the house on this property.

Approximately 50% of the surface soil was scanned with emphasis on surfaces on the northern boundary of the property where contamination is known to exist.

Several bricks were found in the ground on the North side of the garage which produced radiation levels of approximately two to three times background, but do not appear to exceed any regulatory limit.

RECOMMENDATIONS:

It's recommended that the soil sample for this property be sent to an outside laboratory for quantitative analysis.

It's not necessary to remove the bricks exhibiting elevated radiation levels several times background as long as it's not possible for children to play on them (skin contact) or with them, otherwise it's recommended they be removed.

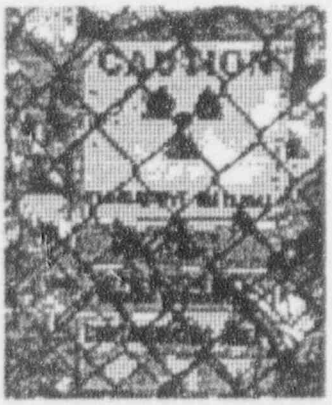
ACKNOWLEDGEMENTS:

Radiation surveys, wipe tests and sampling were performed by Steven J. Aron Jr., Ph.D. of RadSafety Consultants, Inc. under an agreement with the law firm of Ulmer & Berne.

Steven J. Aron Jr., Ph.D. is a Qualified Radiation Expert in the State of Ohio as determined by its Public Health Council pursuant to rule 3701-70-05 of the Ohio Administrative Code.

RADIATION PROTECTION SURVEY REPORT

Sign on West Fence



Sign on North Fence

Location: Vacant Lot (Fryer property)
West of 2811 Bert Avenue
Newburgh Heights, Ohio 44105

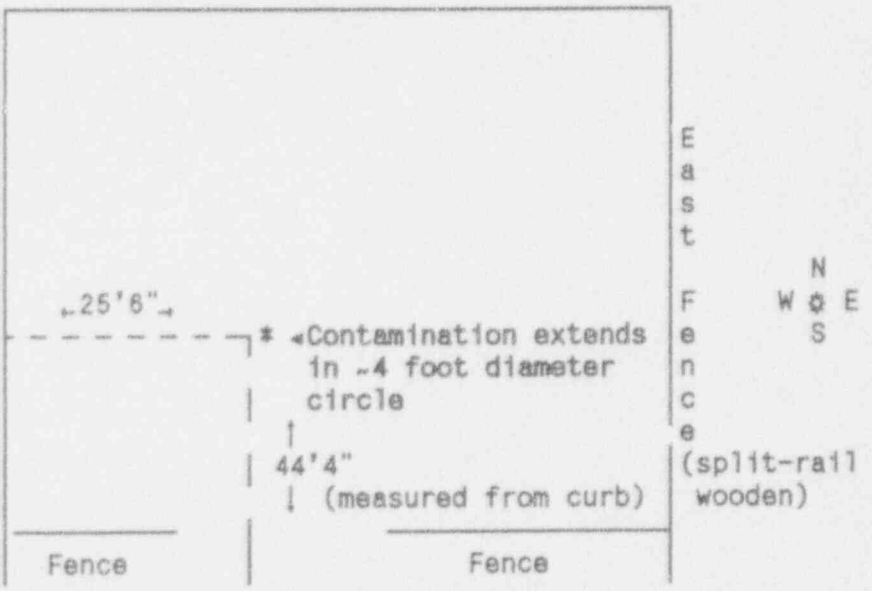
Date of Survey: June 28, 1993

Reason for Survey: Suspected Radiological Contaminants (Uranium)

Assigned Sampling Code (for wipes and soil samples): "X"

Sketch of Property:

Sampling Legend
* = location where soil samples were taken.



SOLID SAMPLE TESTING:

Sample ID	Measured Activity (picoCuries/gm)	Regulatory Limit (picoCuries/gm)
Soil X	173.6 ± 2.1	35

RESULTS:

A location of elevated radioactivity many times background was discovered on this property at approximately 44 feet from the curb and 25 feet from the West fence.

Multiple soil sampling shows that radioactivity in this location extends to at least a 4 foot diameter spot and includes soil from the surface down to about a foot.

Quantitative analysis of one of the most active samples indicates a concentration of 1283 picoCuries/gram. This far exceeds the unrestricted use release limit of 35 picoCuries/gram for depleted uranium in soil. A low activity sample taken from a different location on the same property was found to contain 2.31 picoCuries/gram. These analyses were made by an outside laboratory.

As a result of the high activity, the owners were informed of the finding and asked not to let children play on the property and to restrict its use.

Toward the northern end of the property another area of lesser radioactivity was found to be caused by a layer of radioactive bricks covered with soil.

COMMENTS:

The soil in the high radioactivity location is laced with broken bricks, rusty metal objects and various colorations of dirt. As a result it was very difficult to sample this location and to determine the full extent of the radioactivity.

The property owners said that at one time the basement of a house was in about the same location as the area of high radioactivity before the house was bulldozed over the side of the hill. This took place before they bought the property. Fill material from somewhere was used for the hole left by the basement. It's uncertain whether or not the fill contained radioactively contaminated materials.

RECOMMENDATIONS:

Children should not be permitted to play in the dirt on this property and use of the property should be restricted since quantitative analytical results show concentrations of radioactivity exceed 2000 times background levels and 36 times the NRC's regulatory level for unrestricted use.

ACKNOWLEDGEMENTS:

Radiation surveys, wipe tests and sampling were performed by Steven J. Aron Jr., Ph.D. of RadSafety Consultants, Inc. under an agreement with the law firm of Ulmer & Berne.

Steven J. Aron Jr., Ph.D. is a Qualified Radiation Expert in the State of Ohio as determined by its Public Health Council pursuant to rule 3701-70-05 of the Ohio Administrative Code.

ALBUQUERQUE LABORATORY

CUSTOMER Radsafety consultants
ATTENTION Steve Aron Jr. Ph.D.
ADDRESS 7408 Ranwood Dr.
CITY Parma Ohio 44129
W.O. NO. 93-07-065

REPORT OF ANALYSIS

Soil-Isotopic Uranium by [illegible]
TYPE OF ANALYSIS

07/07/93
SAMPLES RECEIVED

Customer Identification	Date Collected	Type of Analysis	Normal Position pCi/g(dry)	On Side Position pCi/g(dry)	Inverted Position pCi/g(dry)
#1	07/03/93	K40	<2.2		
		U234	<15		
		U235	<0.22		
		U238	<2.2		
#2	07/03/93	K40	4.7±1.9		
		U234	<15		
		U235	0.14±0.12		
		U238	<2.4		
#3	07/03/93	K40	2.3±2.0		
		U234	<12		
		U235	<0.10		
		U238	<1.7		
#4*	07/03/93	K40	4.5±1.8	4.8±1.6	2.4±1.2
		U234	<44	<38	<42
		U235	11.93±0.43	8.72±0.31	11.30±0.38
		U238	325±10	278±10	342±10
#5	07/03/93	K40	14.2±2.2		
		U234	<16		
		U235	<0.19		
		U238	<2.2		

☐ REPORTED VIA TELEPHONE ☐ FAX

TMA Eberline
Therm. Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 348-3461

APPROVED BY Cliff Gravel, Data Analyst DATE

ALBUQUERQUE LABORATORY

CUSTOMER Radsafety Consultants
ATTENTION Steve Aron Jr. Ph.D.
ADDRESS 7408 Renwood Dr.
CITY Parma Ohio 44129
W.O. NO. 93-07-065

REPORT OF ANALYSIS

Soil-Isotopic Uranium By Alpha Spectrometry — 07/07/93
TYPE OF ANALYSIS — SAMPLES RECEIVED

Customer Identification	Date Collected	Type of Analysis	pCi/g(dry)	Duplicate pCi/g(dry)
#1	07/03/93	U234	1.19±0.16	
		U235	0.03±0.02	
		U238	1.38±0.18	
#2	07/03/93	U234	2.90±0.29	
		U235	0.04±0.02	
		U238	1.50±0.18	
#3	07/03/93	U234	0.87±0.13	
		U235	0.03±0.02	
		U238	0.88±0.13	
#4	07/03/93	U234	226±26	327±76
		U235	17.3±5.5	31.5±22.4
		U238	1283±108	1294±173
#5	07/03/93	U234	1.89±0.37	1.33±0.17
		U235	0.10±0.07	0.04±0.02
		U238	2.31±0.43	1.70±0.20
Spike 5.31±0.39		U238	5.73±0.52	

Note: Soil samples were analyzed by the complete acid dissolution technique.

☐ REPORTED VIA TELEPHONE ☐ FAX

TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461

APPROVED BY Cliff Gravel, Data Analyst DATE