

**1971**

**GROUNDWATER TESTING SAMPLES**

**08/14/91**

**DOE-1258-91  
DOE-FSO/CITIZEN  
12  
LETTER**



**Department of Energy**

**Fernald Site Office**  
P.O. Box 398705  
Cincinnati, Ohio 45239-8705  
(513) 738-6319

1971

**AUG 14 1991**

**DOE-1258-91**

Mr. Russell G. Beckner  
[REDACTED]

Dear Mr. Beckner:

This letter, along with the enclosed information packet, provides results of testing performed on groundwater samples collected from Department of Energy (DOE) wells located on your property. These monitoring wells were installed by the DOE in support of the Remedial Investigation and Feasibility Study (RI/FS), currently underway at the Feed Materials Production Center (FMPC) and were never intended to provide drinking water. This study is being conducted according to guidance and procedures of the U. S. Environmental Protection Agency and under the oversight of the USEPA and the Ohio EPA.

**SUMMARY**

DOE contractors sample one well (#1040) on your property as a monitoring well. Westinghouse Materials Company of Ohio sampled this well on October 18, 1990. This sample was submitted for both radiological and chemical analysis.

The off-site laboratories have not yet returned the radiological results to the FMPC. All radiological laboratories across the U. S. are backlogged with samples to analyze. We are finding that it can take in excess of eight months to get radiological analytical results. We will provide you with the radiological results as soon as we get them.

The chemical results have been returned and are enclosed for your review. All results from the chemical analysis are either non-detectable, compare acceptably with any available standard or guideline value, or are typical groundwater values.

The attachments to this letter provide detailed information on the groundwater test results. Enclosure A provides a listing of the laboratory analysis results reported on the groundwater samples collected from your property. To assist you in understanding the relative significance of the amount of any substance found in the water sample, these reported concentrations are grouped according to regulatory agency standards, guidelines, or health advisories. In each case, the standard, guideline, or health advisory is provided for comparison to the reported concentration in the water sample. Enclosure B provides you with background information on these standards, guidelines, and health advisories, along with other information which may help you in understanding the test results. Enclosure C contains copies of the reports received by the DOE from the laboratory which analyzed the groundwater sample(s) collected from your property.

R. Beckner

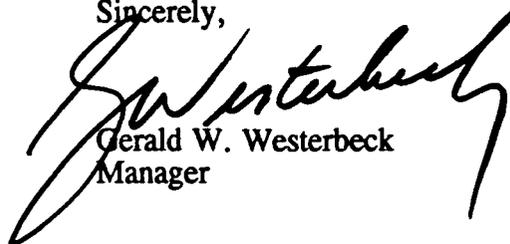
-2-

Many compounds were tested for but not detected. These undetectable substances can be identified by the "less-than" sign (<) to the left of the numeric column.

*PERSONS TO CONTACT*

If you have any questions, please contact DOE representative Wally Quaider at (513) 738-6160. Also, Mr. Rich Bendula of the Ohio Environmental Protection Agency (OEPA) has offered to respond to any questions you may have concerning the sampling or the amount of any substance found in the water samples. Mr. Bendula can be reached at (513) 449-6357. Ms. Marcie Matthews of the Radiological Health Program of the Ohio Department of Health has offered to address any radiological issues. She can be reached at (800) 523-4439 or (614) 644-2727.

Sincerely,



Gerald W. Westerbeck  
Manager

cc:

FSO:Quaider  
OEPA:Bendula  
ODH:Matthews

Enclosures: As stated

1971

bcc:

D. J. Carr  
S. W. Coyle  
C. A. McCord, USEPA/V  
G. E. Mitchell, OEPA/Dayton  
J. E. Harmon  
S. M. Wolinsky, ASI  
L. K. Rogers, REMP  
M. R. Croswait, PEIC

Central Files  
EM Files

**ENCLOSURE A****SUMMARY OF SAMPLE RESULTS**

This enclosure provides a listing of only those substances which were detected by laboratory analysis. Where available, a drinking water standard, guideline, or health advisory associated with that substance is also provided. *Please refer to the cover letter and Enclosures B and C for additional information.*

**FMPC Groundwater Sample Summary  
Substances Detected by Laboratory Analysis**

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*Mr. Russell G. Beckner*

*Well Id Number 1040  
Date Collected 10-18-90*

*Substances regulated under USEPA Safe Drinking Water Act. (Please see Enclosure B regarding Primary Standards).*

<u>Substance</u>	<u>Reported Concentration In Water</u>	<u>Standard</u>
Fluoride	0.40 mg/L	4 mg/L

*Substances for which guidelines are promulgated by USEPA Safe Drinking Water Act. (Please see Enclosure B regarding Secondary Standards).*

<u>Substance</u>	<u>Reported Concentration In Water</u>	<u>Guideline</u>
Chloride	48.00 mg/L	250 mg/L
Sulfate	8.00 mg/L	250 mg/L
Total dissolved solids	387.00 mg/L	500 mg/L

*Substances which are not specifically regulated, but for which some Health Advisory information is available. (Please see Enclosure B).*

<u>Substance</u>	<u>Reported Concentration In Water</u>	<u>Health Advisory (Child/Adult)</u>
Alkalinity at CaCO <sub>3</sub> (Total)	299.00 mg/L	None
Conductivity	684.00 $\mu$ mhos/cm	None
Nitrogen, Ammonia Direct	4.16 mg/L	None
Phosphorus	0.28 mg/L	None
Total Organic Carbons	3.00 mg/L	None
pH	7.30	None

»» This symbol identifies any substance found in quantities equal to or exceeding published guidance.

- pCi/L Picocurie per liter: a metric unit used for measuring radioactivity in a liter of water
- $\mu$ g/L Microgram per liter: a metric unit used for describing the concentration of a substance dissolved or suspended in a liter of water; equivalent to one part per billion
- mg/L Milligram per liter: a unit of measurement; 1 milligram per liter is equal to 1,000 micrograms per liter; equivalent to one part per million
- \* Please see explanation contained in Enclosure B under Primary Standards section.
- $\mu$ mhos/cm Micro reciprocal ohms per centimeter; unit of measurement indicating the electrical conductivity of water and preliminary indicator of possible need for further testing

**ENCLOSURE B****FACT SHEET**

This enclosure provides explanations to assist in understanding some of the terms used and references quoted in this information packet. *Please refer to the cover letter and Enclosures A and C for additional information.*

## Fact Sheet

*The information presented here is to aid in the understanding of the preceding data pages in Enclosure A and copies of the laboratory reports following in Enclosure C.*

**I. United States Environmental Protection Agency Safe Drinking Water Act**  
**Source: 40 CFR (Code of Federal Regulations), Part 141-National Primary Drinking Water Regulations**

**A. Primary Drinking Water Standards**

*The Primary Drinking Water Standard values are referred to as maximum contaminant levels (MCLs). The term MCLs means the maximum permissible level of a contaminant in drinking water which is delivered to the customers of a public water system.*

**1. Radium-226 and Radium-228**

*The maximum contaminant level for radium-226 and radium-228 is designed to be the total of both isotopes of radium. Therefore, the lab results for these two substances are added together and then compared to the MCL of 5 pCi/L.*

**2. Gross Alpha Activity**

*The gross alpha MCL value does not include alpha contributions from radon or uranium. Therefore, an elevated gross alpha result in these reports is only an indicator of a possible need for more detailed testing because the gross alpha result here includes alpha contributions from all radiological sources.*

**3. Gross Beta Activity**

*Although the actual Primary Drinking Water standard is four millirem of man-made beta particles per year, the value of 15 picocuries per liter (pCi/L) is used here because this is a more appropriate value for comparison with the gross beta analytical data. The 15 pCi/L guideline value is the action guide used by the Ohio Department of Health, Radiological Health Program for gross beta in drinking water. Just as with the gross alpha results, an elevated gross beta result would indicate the need for more detailed testing before any conclusions could be made.*

**4. Total Trihalomethanes**

*The total trihalomethanes MCL value of 0.1 mg/L (100 µg/L) is designed to be compared to the sum of the bromodichloromethane, bromoform, chloroform, and dibromochloromethane results. Therefore, the results from these four compounds on the data pages are summed before they are compared to the standard.*

## Fact Sheet

**B. Secondary Drinking Water Standards**

*Source: Criteria and Standards Division, Office of Drinking Water, U.S. Environmental Protection Agency, Fact Sheet, Drinking Water Regulations Under the Safe Drinking Water Act, May 1990*

*The Secondary Drinking Water Standards values are referred to as secondary maximum contaminant levels (SMCLs). SMCLs are Federally non-enforceable and propose limits for contaminants in drinking water which may affect the public's acceptance of drinking water (e.g. taste and odor). The states may establish higher or lower levels provided that public health and welfare are not adversely affected.*

*Some analysis was done on both filtered and nonfiltered samples for metal content. The filtered samples may be identified by the term "Disssd." following the listed metal. Performing both filtered and nonfiltered analysis gives an indication of dissolved metals relative to total metals present in the sample.*

**II. United States Environmental Protection Agency Drinking Water Health Advisories**

*Source: U.S. Environmental Protection Agency, December 1989. Risk Assessment Guidance for Superfund Volume 1, Human Health Evaluation Manual (Part A) Interim Final Office of Emergency and Remedial Response. Washington, D.C. EPA/540/1-89/002*

*The EPA's Office of Drinking Water has nonregulatory guidance available known as Drinking Water Health Advisories. Health Advisory values for contaminants in drinking water are concentrations at which adverse health effects would not be expected to occur. The Health Advisory values are based upon data describing noncarcinogenic effects only but do include a margin of safety to protect sensitive members of the public. The "Child" advisory assumes a 22 pound child that consumes one liter of water per day. The "Adult" advisory assumes a 154 pound adult that consumes 2 liters of water per day.*

*Substances that were detected but that have no standard or guideline values available are listed under this heading with "None" under the Health Advisory Column.*

**III. United States Department of Energy Order 5400.5, "Radiation Protection of the Public and the Environment"**

*Source: U.S. Department of Energy Order 5400.5, February 8, 1990. "Radiation Protection of the Public and the Environment." Office of Environment, Safety and Health, Washington, D.C.*

*This order protects the public and the environment against undue risk from radiation resulting from the operations of the DOE and/or their contractors. The order used radiation protection dose standards recommended by the International Commission on Radiological Protection (ICRP). In 1977, the ICRP recommended a system of dose limitations that has been adopted and implemented by virtually all countries with nuclear programs. The guidelines presented on the data pages in Enclosure A are taken from values presented in the order.*

**A.** *The proposed limit for radionuclides in groundwater is 4 mrem/yr and is found*

*in draft EPA regulation 40 CFR 193 (Environmental Radiation Protection Standards for the Management and Land Disposal of Low-Level Radioactive Wastes). This would be approximately 30 micrograms per liter for uranium if uranium were the only radionuclide found in the groundwater.*

**IV. Laboratory Detection Limits**

*Source: U.S. Environmental Protection Agency, December 1989. Risk Assessment Guidance for Superfund Volume 1, Human Health Evaluation Manual (Part A) Interim Final Office of Emergency and Remedial Response. Washington, D.C. EPA/540/1-89/002*

*Detection limits are the numeric values at which a laboratory sets its equipment to begin measuring the concentration present of the substance under consideration.*

*As you examine the actual laboratory reports in Enclosure C, you will frequently see the "less than" symbol (<) to the left of numeric values. The numeric value is the lowest amount that can be reliably determined by the method being used. The "less than" symbol indicates that the substance was not detected in amounts greater than or equal to the numeric value (detection limit).*

**ENCLOSURE C****COMPLETE LABORATORY DATA PACKAGE**

This enclosure provides complete copies of the actual data received from the analytical laboratories. As only the data for your samples are included here and many more samples may have been included in any given group sent to a laboratory, the page numbering will not be sequential. *Please refer to the cover letter and Enclosures A and B for additional information.*



NATIONAL ENVIRONMENTAL TESTING, INC.

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ANALYTICAL REPORT

William Hayes  
WESTINGHOUSE MATERIALS  
COMPANY OF OHIO  
P.O. Box 398704  
Cincinnati OH 45239

11-28-90

Sample No.: 54516

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Sample Description: #1040-D90-1,3-7

Date Taken: 10-18-90 1051

Date Received: 10-19-90

Alkalinity, Total (CaCO3)	299.	mg/L
Chloride	48.	mg/L
Conductivity	684.	umhos/cm
Cyanide, Total	<0.005	mg/L
Fluoride, Distilled	0.40	mg/L
Nitrogen, Ammonia Direct	4.16	mg/L
Nitrogen, Nitrate+Nitrite	<0.02	mg/L
pH	7.30	S.U.
Phenols	<0.005	mg/L
Phosphorus, Total	0.28	mg/L
Total Dissolved Solids	387.	mg/L
Sulfate	8.	mg/L
Total Organic Carbon (TOC)	3.	mg/L
Total Organic Halogens	<10.	ug/L Cl-

  
John Andrejelo  
Project Manager



1971

ANALYTICAL REPORT

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PAGE 8

Sample Description: #1040-D90-1,3-7

Date Taken: 10-18-90 1051

Date Received: 10-19-90

VOLATILE COMPOUNDS

METHOD 8240-AQUEOUS

Acetone	<2.	ug/L
Benzene	<1.	ug/L
Bromodichloromethane	<1.	ug/L
Bromoform	<1.	ug/L
Bromomethane	<1.	ug/L
Carbon disulfide	<1.	ug/L
Carbon tetrachloride	<1.	ug/L
Chlorobenzene	<1.	ug/L
Chloroethane	<1.	ug/L
2-Chloroethyl vinyl ether	<10.	ug/L
Chloroform	<1.	ug/L
Chloromethane	<1.	ug/L
Dibromochloromethane	<1.	ug/L
1,1-Dichloroethane	<1.	ug/L
1,2-Dichloroethane	<1.	ug/L
1,1-Dichloroethene	<1.	ug/L
trans-1,2-Dichloroethene	<1.	ug/L
1,2-Dichloroethene (Total)	<1.	ug/L
1,2-Dichloropropane	<1.	ug/L
cis-1,3-Dichloropropene	<1.	ug/L
trans-1,3-Dichloropropene	<1.	ug/L
Ethyl benzene	<1.	ug/L
2-Hexanone	<2.	ug/L
Methylene chloride	<1.	ug/L
Methyl ethyl ketone	<2.	ug/L
4-Methyl-2-pentanone	<2.	ug/L
Styrene	<1.	ug/L
1,1,2,2-Tetrachloroethane	<1.	ug/L
Tetrachloroethene	<1.	ug/L
Toluene	<1.	ug/L
1,1,1-Trichloroethane	<1.	ug/L
1,1,2-Trichloroethane	<1.	ug/L
Trichloroethene	<1.	ug/L

  
John Andrejcio  
Project Manager



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ANALYTICAL REPORT

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11-28-90

Sample No.: 54516

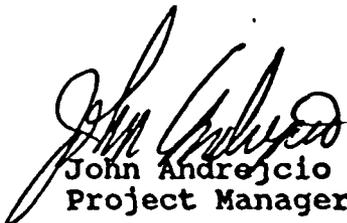
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Sample Description: #1040-D90-1,3-7

Date Taken: 10-18-90 1051

Date Received: 10-19-90

Vinyl acetate	<2.	ug/L
Vinyl chloride	<1.	ug/L
Xylenes, Total	<1.	ug/L
Surrogate: d4-1,2-DCE	96	Percent
Surrogate: d8-Toluene	103	Percent
Surrogate: BFB	101	Percent

  
John Andrejcio  
Project Manager