Water

10-2-85

This survey was a result of approx. 77 homeowners becoming concerned about their wells. These wells were mainly located in the Bradbury community across from the site chosen for the future MRS (Mass Radiation Storage) which is supposed to be a temporary storage for nuclear waste. This group was concerned that their wells might become contaminated and requested and independent (other that DOE) agency come in and test our wells for levels of radiation. Two people (a geologist and person over state lab) came to conduct this study. At present they will only do a sample of the wells. They will chose those representative of different locations.

P012646

STATE OF TENNESSEE
DEPARTMENT OF HEALTH AND ENVIRONMENT
CORDELL HULL BUILDING
NASHVILLE, TENNESSEE 37219-5402

February 14, 1986

Dear Bradbury and Poplar Springs Residents:

Enclosed are the results for the well samples that I collected in the Bradbury and Poplar Springs Area. Your individual sample number is [redacted].

None of the levels of radioactivity found in these samples were in excess of the normal range of background for groundwater. The samples which had gross alpha results greater than 15 pCi/l are being further analyzed for uranium and radium content. These results will be reported as soon as they are available.

The sample results are expressed in picocuries per liter (pCi/l). A picocurie is a measure of radioactive decay. The uncertainty associated with each result is indicated by a +/- sign. For example, 5 +/- 2 is 5 pCi/l with an uncertainty of 2 pCi/l. This uncertainty results from the random nature of radioactive decay and the limitations of the counting equipment being used. Any result reported as a negative number should be interpreted as NAD, no activity detected. In some cases, the uncertainty is extremely large in comparison to the reported result. These results should also be interpreted as no activity detected.

Your samples were analyzed for gross alpha, gross beta, and gamma activity. Gross alpha and gross beta analyses determine the presence of radioactive elements which decay by releasing alpha particles or beta particles, respectively. These two analyses determine the presence of radioactivity, but do not determine which specific elements are present. Many of the elements which emit alpha or beta particles also release gamma energy. In these cases, gamma analysis can often be used to determine which specific elements are present in a sample. The well samples were also analyzed for tritium, a form of radioactive hydrogen, which cannot be seen by alpha, beta or gamma analyses. No tritium was found in any of these samples.

Bradbury and Poplar Springs Well Samples

Sample Number	Date Collected	Results (pCi/l)				Type of Analysis
EAS-25	11/13/85	16.8	+/-	8.73		Alpha
		16.58	+/-	3.27		Beta
		20.26	+/-	8.54	Cs-137	Gamma
		NAD				Tritium
EAS-26	11/13/85	-1.80	+/-	2.48		Alpha
		4.28	+/-	2.73		Beta
		NAD				Gamma
		NAD				Tritium
EAS-27	11/13/85	1	+/-	4		Alpha
		1	+/-	2		Beta
		NAD				Gamma
		NAD				Tritium
EAS-28	11/13/85	1	+/-	2		Alpha
		1	+/-	2		Beta
		NAD				Gamma
		NAD				Tritium
EAS-29	11/13/85	1	+/-	2		Alpha
		1	+/-	3		Beta
		NAD				Gamma
		NAD				Tritium
EAS-30	11/13/85	5.02	+/-	3.80		Alpha
		0.66	+/-	2.84		Beta
		3.5	+/-	2.5	Cs-137	Gamma
		NAD				Tritium
EAS-31	11/13/85	5	+/-	4		Alpha
		3	+/-	3		Beta
		45.6	+/-	21.8	Pb-212	Gamma
		19	+/-	18	Cs-137	Gamma
		12.5	+/-	15.7	Co-60	Gamma
		237.8	+/-	175.9	K-40	Gamma
		NAD				Tritium

Said they were surprised to see

NAD-No Activity Detected
pCi/l-picocurie per liter
K-40 potassium-40
Pb-212 lead-212
Cs-137 cesium-137
Co-60 cobalt-60

Bradbury and Poplar Springs Well Samples

Sample Number	Date Collected	Results (pCi/l)			Type of Analysis
EAS-32	11/13/85	0	+/-	2	Alpha
		5	+/-	3	Beta
		NAD			Gamma
		NAD			Tritium
EAS-33	11/13/85	13	+/-	6	Alpha
		8	+/-	3	Beta
		NAD			Gamma
		NAD			Tritium
EAS-34	11/13/85	3	+/-	3	Alpha
		4	+/-	3	Beta
		NAD			Gamma
		NAD			Tritium
EAS-35	11/13/85	3	+/-	4	Alpha
		2	+/-	3	Beta
		NAD			Gamma
		NAD			Tritium
EAS-36	11/13/85	0	+/-	2	Alpha
		1	+/-	2	Beta
		NAD			Gamma
		NAD			Tritium
EAS-37	11/13/85	2	+/-	4	Alpha
		3	+/-	3	Beta
		NAD			Gamma
		NAD			Tritium
EAS-38	11/13/85	4	+/-	4	Alpha
		6	+/-	3	Beta
		NAD			Gamma
		NAD			Tritium
EAS-39	11/13/85	2	+/-	7	Alpha
		2	+/-	3	Beta
		NAD			Gamma
		NAD			Tritium

NAD-No Activity Detected
pCi/l-picocurie per liter
K-40 potassium-40
Pb-212 lead-212
Cs-137 cesium-137
Co-60 cobalt-60

Bradbury and Poplar Springs Well Samples

Sample Number	Date Collected	Results (pCi/l)			Type of Analysis
EAS-48	11/13/85	13.18	+/-	2.89	Alpha
		16.48	+/-	2.87	Beta
		NAD			Gamma
		NAD			Tritium
EAS-49	11/13/85	-1	+/-	12	Alpha
		1	+/-	3	Beta
		NAD			Gamma
		NAD			Tritium
EAS-50	11/13/85	-1	+/-	4	Alpha
		1	+/-	3	Beta
		NAD			Gamma
		NAD			Tritium
EAS-51	11/21/85	6.90	+/-	5.24	Alpha
		10.0	+/-	3.0	Beta
		NAD			Gamma
		NAD			Tritium
EAS-52	11/21/85	-2	+/-	3	Alpha
		1	+/-	3	Beta
		NAD			Gamma
		NAD			Tritium
EAS-53	11/21/85	-4	+/-	4	Alpha
		3	+/-	3	Beta
		NAD			Gamma
		NAD			Tritium

NAD-No Activity Detected
pCi/l-picocurie per liter
K-40 potassium-40
Pb-212 lead-212
Cs-137 cesium-137
Co-60 cobalt-60

Bradbury and Poplar Springs Well Samples

Sample Number	Date Collected	Results (pCi/l)				Type of Analysis
EAS-40	11/13/85	0	+/-	7		Alpha
		5	+/-	3		Beta
		8.68	+/-	3.77	Pb-212	Gamma
		NAD				Tritium
EAS-41	11/13/85	2	+/-	4		Alpha
		3	+/-	3		Beta
		NAD				Gamma
		NAD				Trutium
EAS-42	11/13/85	1	+/-	3		Alpha
		6	+/-	3		Beta
		NAD				Gamma
		NAD				Tritium
EAS-43	11/13/8	-1	+/-	3		Alpha
		2	+/-	3		Beta
		NAD				Gamma
		NAD				Tritium
EAS-44	11/13/85	0	+/-	2		Alpha
		0	+/-	3		Beta
		NAD				Gamma
		NAD				Tritium
EAS-45	11/13/85	2	+/-	4		Alpha
		-1	+/-	3		Beta
		NAD				Gamma
		NAD				Tritium
EAS-46	11/13/85	4	+/-	4		Alpha
		1	+/-	15		Beta
		97.8	+/-	197	K-40	Gamma
		NAD				Tritium
EAS-47	11/13/85	3	+/-	4		Alpha
		1	+/-	3		Beta
		4.45	+/-	3.49	Pb-212	Gamma
		11.27	+/-	2.71	Cs-137	Gamma
		132.5	+/-	33.3	K-40	Gamma
		NAD				Tritium

NAD-No Activity Detected
pCi/l-picocurie per liter
K-40 potassium-40
Pb-212 lead-212
Cs-137 cesium-137