MAR 3 0 1989

DOCKET NO: 40-8027

LICENSEE: Sequoyah Fuels Corporation (SFC) Gore, Oklahoma

SUBJECT: SAFETY EVALUATION REPORT, LICENSE AMENDMENT APPLICATION DATED JANUARY 27, 1989, RE DELETION OF VEGETABLE MONITORING

Background

At the time of the license renewal in 1985, the staff was concerned about elevated uranium concentrations in vegetation around the SFC site. The data exhibited inconsistences and samples often exceeded the 2.5 microgram per gram action level for uranium. In order to provide site-specific data on edible food corps, SFC was required to conduct a comprehensive vegetation monitoring program to provide additional information for the radiological assessment for the ingestion pathway. By letter dated January 27, 1989, SFC requested that this program requirement (Condition 13) be deleted from the SFC license. After staff identified several errors and inconsistencies in the data presentation, SFC submitted a corrected report on March 3, 1989.

Several license conditions required SFC to submit reports to the NRC. Since SFC has submitted these reports, the status of those conditions needs to be clarified. The status of Conditions 12, 14 and 16 is discussed below.

Discussion

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For the past 3 years, SFC has maintain a garden plot located approximately 2,800 feet northeast of the main process building and approximately 700 feet east of the nearest resident. Eleven vegetable varieties were planted representing the major classes of food crops grown commonly in home gardens. Planting rates, times, and other cultural practices followed recommendations and guidelines of the Oklahoma State University Extension Service. Edible portions of each vegetable variety were harvested at the proper growth stage for consumption. For comparison, specimens of identical vegetable varieties were purchased from local food markets. Analyses were performed for moisture content and uranium, thorium, and radium concentrations.

The data provided by SFC was compiled by NRC staff in the following tables and charts for the concentrations of natural uranium, Ra-226, and Th-230 for each of the 11 vegetable varieties. Each table compares by year the concentration contained in the produce grown in the SFC garden and that bought at local markets. The SFC concentrations are higher for some vegetables, and the local concentrations are higher for others. The small differences in concentrations in the SFC and local produce are insignificant. The annual average concentration for SFC and lorai, moduce is compared in the following charts for uranium. radium, and thorium. For the past 2 years, the average values for the local market produce have actually been higher than the average values for the SFC grown produce.

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	1.700		1487		1988	
	SFC	LOCAL	SFC	LOCAL	SFC	LOCAL
RADISH	0.0600	0.0600	0.0700	0.1200	0.0280	0.0330
FOTATOE	0.0020	0.0070	0.0337	0.0230	0.0140	0.0140
CUCUMBER	0.0020	0.1400	0.0500	0.0500	0.0130	0.0100
TOMATO	0.0140	0.0460	0.0430	0.0460	0 0000	0.0040
SPINACH	0.2950	0.0200	0.0537	0.1950	0.0240	0.0100
CAPBAGE	0.0400	0.0350	0.0485	0.0285	0.0170	0.0100
ONION	0.0400	0.1400	0.0650	0.0455	0.0490	0.0120
GREEN BEANS	0.0030	0.0500	0.0367	0.0670	0.0220	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
PEAS	0.0260	0.0130	0 ~350	0.0045	0.0050	0.0220
CORN	0.0010	0.0080	0.0267	0.0200	0.0400	0.0040
OKRA	0.0100	0.0150	0.0218	0.0240	0.0300	0.0370

			TH-230	pci/q		
	1986		1987		1988	
	SPL	LOCAL	SFC	LOCAL	SEC	LOCAL
RADISH	0.1000	0.0340	0.0225	0.0040	0.0110	0.0130
POTATOE	0.0060	0.0165	0.0153	0.0325	0.0020	0.0030
CUCUMBER	0.0040	0.0390	0.0120	0.0100	0.0040	0.0070
TOMATO	0.0018	0.0110	0.0048	0.0040	0.0030	0.0010
SPINACH	0.2250	0.0260	0.0092	0.4800	0.0160	0.0150
CABBAGE	0.0050	0.0200	0,0063	0.0020	0.0030	0.0020
NOINO	0.0040	0.0100	0.0103	0.0025	0.0040	0.0050
SREEN BEANS	0.0080	0.0205	0.0035	0.0040	0.0020	0.0020
PEAS	0.0020	0.0010	0.0050	0.0170	0.0020	0.0020
CORN	0.0050	0.0045	0.0192	0.0245	0.0040	0.0070
OKRA	0.0120	0.0550	0.0068	0.0015	0.0030	0.0010

U-NAT pci/g

	1780		1987		1988	
	SFC	LOCAL	SFC	LOCAL	SFC	LOCAL
RADISH	0.2300	0.0600	0.0615	0.0115	0.0244	0.0264
FOTATOE	0.0070	0.0070	0.0425	0.0185	0.0041	0.0088
CUCUMBER	0.0200	0.0100	0.0130	0.0330	0.0102	0.0467
TOMATO	0.0300	0.0400	0.0223	0.0097	0.0034	0.0061
SPINACH	0.5750	0.0400	0.1102	0.2680	0.0548	0.0474
CABBAGE	0.0200	0.0135	0.0170	0.0155	0.0047	0.0047
ONION	0.01.00	0.0150	0.0290	0.0210	0.0467	0.0481
GREEN BEANS	0.0100	0.0400	0.0125	0.0150	0.0048	0.0095
PEAS	0.0500	0.0250	0.0097	0.0115	0.0034	0.0047
CORN	0.0100	0.0085	0.0070	0.0090	0.0068	0.0041
OKRA	0.0100	0.0250	0.0130	0.0045	0.0081	0.0068



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The monitoring program conducted by SFC over the past 3 years has alleviated the concern that edible food crops grown near the facility may exhibit elevated levels of uranium and therefore, contribute significantly to the dose received by the public. The data demonstrates that the SFC operations are not contributing to the uranium, radium, and thorium content of vegetables grown near the facility. The value for the SFC and local market produce are comparable. Therefore, food crops are not significantly contributing to the dose received by the nearest residence via the ingestion pathway.

In addition, the status of License Conditions 12, 14, and 16 needs updating. The report required by Condition 14 was submitted on March 20, 1986. The investigation showed that FTP-2A nitrate levels were not the result of pond leakage. Since this report fulfills the requirements of Condition 14, the staff recommends that the condition be deleted.

The report required by Condition 16 was submitted on December 19, 1985. The report provided the results of SFC's examination of the source of elevated uranium concentrations in surface runoff water and the mitigation program to abate future loss. The program was incorporated into the license in License Amendment 7 dated February 17, 1987. Condition 16 has also been fulfilled and should be deleted.

As required by Condition 12, SFC submitted a report on January 20, 1986, and a supplement on December 15, 1986, that evaluated the ground water quality in the area of the raffinate storage ponds. The reports concluded that storage of raffinate in the ponds had not caused any directly discernible impact on ground water. SFC also proposed to expand the network of monitor wells by six and to conduct annual electrom. netic surveys. The December report discussed the installation of the new wells and the results of the electromagnetic survey. The staff requested that the NRC Uranium Recovery Field Office (URFO) provide technical assistance in reviewing these submittals. In a report dated April 21, 1987, URFO concluded that Ponds 5 and 6 were leaking solution, however, they also concluded that there was no conclusive evidence which confirms that the raffinate solution was reaching the ground water. URFO recommended that less reliance be placed upon the electromagnetic survey and that a water quality program be undertaken. SFC responded to these findings on November 20, 1987, and concluded that the current monitoring program was proper and that no modifications to the existing program were necessary. URFO reviewed the SFC submittal and made recommendations in a March 18, 1988, report. URFO concluded that both the URFO and SFC reports were valid on the ground water conditions in the vicinity of the ponds. The differing opinions were due to different assumptions relative to the origin of nitrate concentrations in three wells. At a meeting held with staff to discuss these reports, SFC agreed to perform some additional tests on the wells and submitted the results on November 17, 1988. URFO reviewed the test results in a report dated December 15, 1988. Staff has completed the review of the hydrological study and agrees with SFC's conclusions that the elevated nitrates present in the wells are not indicative of current pond leakage. Based on the information available, staff believes that the current ground water monitoring program is adequate. By virtue of the November 17, 1988, report and the earlier reports, SFC has satisfied Condition 12, and staff recommends that it be deletel.

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Conclusion/Recommendation

Based on the above discussion, the staff recommends that SFC's request to discontinue the monitoring program required by Condition 13 be granted. Staff further recommends that Conditions 12, 13, 14, and 16, be deleted from the license.

The Region IV staff has no objection to this proposed action.

Original Signed By:

Merri Horn Uranium Fuel Section Fuel Cycle Safety Branch Division of Industrial and Me. 131 Nuclear Safety, NMSS

Approved by:

George H. Bidinger, Section Leader

Vigural Signed By:

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