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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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URFO:SZJ
Docket No. 40-6659
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MEMORANDUM FOR: Docket File No. 40-6659

FROM: Samuel Z. Jones, Project Manager
Uranium Recovery Field Office, Region IV

SUBJECT: REVIEW OF ENVIRONMENTAL MONITORING DATA AND 40CFR190 DOSE CALCULATIONS FOR THE PETROTOMICS MILL

By letter dated August 31, 1982, Petrotomics Company submitted the results of environmental monitoring data and dose assessment for the second quarter of 1982 as required by Amendment No. 9, License Condition No. 30. My review of the data provided is discussed below.

I. Environmental Data

Airborne Effluents

Radionuclide	MPC_a (μCi/ml)	*Conc.	Location	% MPC
U-nat	5×10^{-12}	1.4×10^{-14}	Site 5	0.3
Ra-226	2×10^{-12}	5.15×10^{-15}	Site 5	0.3
Th-230	3×10^{-13}	6.31×10^{-15}	Site 5	2.1
Rn-222	3×10^{-9}	2.28×10^{-9}	Site 4	76.0
Pb-210	8×10^{-12}	2.52×10^{-14}	Site 2	0.3

*Highest reported concentration

Brief Comments and Conclusions

Petrotomics has submitted the results of the quarterly composite measurement for six airborne particulate sampling sites as specified in SML SUA-551. Review of the radionuclide data indicates that all of the reported airborne effluents were below the appropriate MPCs. A comparison of the second quarter data to the previous quarter indicates no significant differences.

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Groundwater (Chemical Parameters)

Common Ions	*Standards (mg/l)	**Conc.	Location	% MPC
pH	(2) 6.5-8.5	8.22	LMBR	
Nitrate	(1) 10	1.55	RTH#1	15.5
Sulfate	(2) 250	1189.8	Mill Feed Pond	475.9
Chloride	(2) 250	475	RTH#1	190.0
Arsenic	(1) 0.05	0.003	LMBR	6.0
Selenium	(1) 0.01	ND(0.002)	All	4.0
Iron	(2) 0.05	0.3	Mine Shop Well	600.0
TDS	(2) 500	2338	RTH#1	467.6

(1) Primary
(2) Secondary
* EPA Drinking Water Stds
** Highest concentration reported

Brief Comments and Conclusions

Petrotomics has submitted the results of chemical parameters associated with groundwater monitoring as specified in SML SUA-551. Several of the results exceeded the EPA drinking water standards. However, these results were from wells within the restricted area boundary. Results at the Townsite and the mill's potable water supply were all within normal limits. However, both the Townsite and the mill potable water supply were high in iron concentrations (200% and 260%, respectively, above the EPA's drinking water standards).

Groundwater (Radionuclides)

Radionuclide	MPC_w (μCi/ml)	*Conc.	Location	% MPC
U-nat	3×10^{-5}	15.57×10^{-9}	RTH#4	0.02
Ra-226	3×10^{-8}	3.25×10^{-9}	RTH#1	10.08
Th-230	2×10^{-6}	18.80×10^{-9}	RTH#5	0.9
Pb-210	7×10^{-7}	4.34×10^{-9}	Potable	0.6
Po-210	1×10^{-7}	2.60×10^{-9}	RTH#4	2.6

*Highest reported concentration

Brief Comments and Conclusions

Petrotomics has performed quarterly grab sampling at seven monitor wells, as specified in SML SUA-551. Review of the radionuclide data indicates that all of the reported groundwater measurements were below the appropriate MPCs. A comparison of the second quarter of 1982 data with the previous quarter's data shows no significant differences.

Surfacewater (Radionuclides)

Radionuclide	MPC_w (μCi/ml)	*Conc.	Location	% MPC
U-nat	3×10^{-5}	34.5×10^{-9}	LMBR	0.1
Ra-226	3×10^{-8}	6.02×10^{-9}	Mill Feed Pond	20.1
Th-230	2×10^{-6}	17.7×10^{-9}	Sand Draw	0.9
Pb-210	7×10^{-7}	13.4×10^{-9}	LMBR	1.9
Po-210	1×10^{-7}	6.3×10^{-9}	Sand Draw	6.3

*Highest reported concentration

Brief Comments and Conclusions

Petrotomics has reported the results of quarterly grab sampling of surface water for five locations as specified in SML SUA-551. Review of the radionuclide data indicates that all of the reported surfacewater measurements are below the appropriate MPCs. All surface water radiological results were similar to the results of the previous quarter.

Direct Radiation - (Gross beta-gamma)

	mrem	Location
1.	47.3	Site 1
2.	70.3	Site 2
3.	67.3	Site 3
4.	48.0	Site 4
5.	60.5	Site 5
6.	44.8	Site 6

Brief Comments and Conclusions

Petrotomics has submitted the results of direct radiation measurements as specified in SML SUA-551. Site #1 is the background location. Site #4 is the nearest residence location.

Stack Sampling

Radionuclide	Total Release Rates (Ci/qtr)	Flow Rate
U-nat	2.56 x 10-4	dryer scrubber 0.857m^3/sec
Ra-226	8.21 x 10-6	packaging room scrubber 0.363m^3/sec
Th-230	4.22 x 10-6	cooler stack 0.501m^3/sec
Pb-210	9.8 x 10-7	

Comments and Conclusions

The above release rates are a summation of the dryer stack, packaging room stack and cooler stack of the Petrotomics facility.

Soil, Sediment and Vegetation

Brief Comments and Conclusions

Petrotomics is required by SML SUA-551 to collect soil and sediment samples annually. The licensee is required to collect vegetation samples three times during the growing season. There were no samples taken or required the second quarter of 1982.

II. 40 CFR 190 Dose Assessment

Petrotomics has considered the following exposure pathways in determining their compliance with 40 CFR 190 orders: 1) external radiation and 2) inhalation of airborne particulates. The licensee was not required to submit vegetation data for the first quarter of 1982; therefore, no values were considered for the ingestion of meat from cattle grazing on contaminated vegetation. The dose calculations submitted by the licensee were computed using actual monitoring data. The staff has compared the dose assessment provided by the licensee with NRC calculations and there was a slight discrepancy which was discussed in a September 29, 1982 telecon between S. Pfaff, Petrotomics, and S. Jones, NRC. However, the staff's calculations indicate that the projected annual dose commitment at the nearest residence would be less than 25 mrem/year for either whole body or any individual organ, as specified in 40 CFR 190.

Harry Pettengill

for Samuel Z. Jones, Project Manager
Uranium Recovery Field Office
Region IV

Approved by: H J Pettengill

Harry J. Pettengill, Section Chief
Uranium Recovery Field Office, Region IV

Case Closed: 04006659111E