

UNITED STATES GOVERNMENT

# Memorandum

TO : Files  
THRU: Donald A. Nussbaumer, Chief  
Source and Special Nuclear Materials Branch  
FROM : Don F. Harmon *DFH*  
Source and Special Nuclear Materials Branch  
Division of Licensing and Regulation  
SUBJECT: EFFLUENT AUTHORIZATION, ATLAS MINERALS. DOCKET NO. 40-3453.  
DLR:DFH

DATE: FEB 20 1964

On November 23, 1962, Atlas Mineral's license was amended to authorize the discharge of effluents containing concentrations of radioactivity in excess of 10 CFR 20 limits into unrestricted areas. This amendment required the licensee to perform surveys which would provide sufficient data to determine the effects of the release on concentrations of radioactivity in unrestricted areas and to file a report with the Commission showing the results of the surveys. By letter dated January 28, 1964, the licensee submitted the subject report and requested renewal of the authorization.

Listed below is a summary of the more important data for the year of 1963 which has been submitted by the licensee. A discussion of the significance of the data is contained in the memo to files dated November 23, 1962.

## AVERAGE COLORADO RIVER AND EFFLUENT CONCENTRATIONS

Ra226\*(X10<sup>-8</sup>uc/ml) Th230\*(X10<sup>-6</sup>uc/ml) Unat\*(X10<sup>-5</sup>uc/ml)

1 mile above mill	0.08	0.0100	0.0018
1/4 mile below mill	0.16	0.0090	0.0045
1/2 mile below mill	0.09	0.0074	0.0030
1 mile below mill	0.064	0.0073	0.0017
5 miles below mill	0.06	0.0060	0.0020
10 miles below mill	0.07	0.0060	0.0019
effluent**	4.85	0.023	0.12

\* Part 20 concentration limits for unrestricted areas

Ra226 - 1X10<sup>-8</sup>uc/ml

Th230 - 2X10<sup>-6</sup>uc/ml

Unat - 2X10<sup>-5</sup>uc/ml

\*\*Average effluent release rate - 1117 gallons per minute  
Average Colorado River flow rate - 1,575,538 gallons per minute  
Average dilution factor - 1400

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Inasmuch as the effluent release rate averaged 1117 gallons per minute at only 4.85 times the Part 20 limit for unrestricted areas and the average Colorado River flow rate averaged 1,575,538 gallons per minute for 1963 at this location, significant effects on background concentrations were not expected. The data show that, except for the sampling location 1/4 mile downstream from the mill, concentrations in the Colorado River below the point of effluent release were essentially background. The concentration of radium-226 in the river at the sampling location 1/4 mile downstream did average slightly higher than background but was well within AEC and PHS standards of 10 uuc/liter and 3.3 ucc/liter respectively.

It should be noted that the licensee was treating his effluent for radium removal with  $\text{BaSO}_4$  until September 1963, at which time he began treatment with  $\text{BaCl}_2$ . Limited data for the remaining of 1963 indicate that significant reductions in the radium-226 concentrations in the effluent have been achieved. The licensee plans to continue the treatment of his effluent with  $\text{BaCl}_2$  but it will be some time before data can be obtained which will accurately reflect the effects of this treatment.

In view of the foregoing it appears that there is little likelihood of any individual in unrestricted areas being exposed to concentrations of radioactivity in excess of 10 CFR 20 limits from this release. Accordingly, it is recommended that the subject authorization be renewed for a one year period.

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