

URECO

NO. 40-3453  
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# URANIUM REDUCTION COMPANY

Box 488 — Moab, Utah

R. F. HOLLIS  
General Manager

September 18, 1961

Mr. H. L. Price, Director  
Division of Licensing and Regulation  
United States Atomic Energy Commission  
Washington 25, D. C.

Dear Mr. Price:



On August 12, 1960, we submitted to you a new revised radiation program which we put into effect on October 1, 1960, and have followed since. Subsequent changes in the regulations, experience in the various phases of radiation control, and data obtained warrant the revision of our current program in order to establish a more concise, more efficient method of maintaining proper radiation control in our plant.

The revised program which follows, will become effective on October 1, 1961:

A. EXTERNAL RADIATION.

(1) All job classifications have been film badged for a period of one calendar quarter. Badges used were Type "A" Twin Window badges furnished by Tracerlab, Inc. The Inspection Division of the USAEC also film badged all employees of Uranium Reduction Company during the same period. The results of the two surveys were in excellent agreement. Subsequent quarterly scintillator surveys have detected no significant changes in the levels established. According to the film badge surveys, no employee was exposed to an average radiation level above 50 mr per week. However, about 40 employees, or 20 percent of the total employed, were exposed to between 25 and 50 mr per week.

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(2) From the data obtained as a result of the film badge survey mentioned above, mean levels of exposure for each job classification have been established. These levels will remain the same as determined, unless a process change is inaugurated or the duties of a particular job classification are significantly changed. In cases where new job classifications are created or significant changes are made in an existing job classification, the individuals on these jobs will be film badged for a suitable period and a new mean level of exposure established.

(3) The Metallurgical Department will make an extensive external radiation survey each calendar quarter. These surveys will be made by means of a Model 111 B Scintillator, AEC No. SBX - 11 A. The results of the scintillator surveys will be compared with the mean levels of exposure for each job classification as determined by the film badge survey. All job classifications that indicate significantly higher levels than those determined by the film badge survey will be further investigated.

(4) Personnel whose exposure level is indicated to be 75 per cent or more of maximum allowable exposure will be monitored continuously by means of film badges provided by Tracerlab, Inc., or some other acceptable film badge supply company. Personnel whose exposure is in excess of 96 mr per week will be removed from their jobs and transferred to another location. Such transfers will continue on a rotating schedule to insure that no employee receives a dosage in excess of the maximum allowable exposure for one calendar quarter.

B. AIRBORNE RADIATION.

(1) The approach used in determining individual exposures to airborne radiation will be the Multiple Sample Time Weighted Average Exposure method as outlined in the report, Air Sample Procedures in Evaluating Exposures, by H. Glauberman and W. B. Harris of the Health and Safety Laboratory, U. S. Atomic Energy Commission. The filters from individual Breathing Zone samples will be composited on a working time basis and the Breathing Zone exposure determined. All samples will be taken in triplicate. Uranium content of individual samples will be determined fluorimetrically by our analytical staff. Calculation of the activity of the samples will be based on the assumption that the natural uranium is in secular equilibrium as has been indicated by test work to date. Secular equilibrium of our ores will be checked annually by our analytical staff.

(2) In addition to the quarterly Breathing Zone surveys, a quarterly Multiple Spot General Air Survey, also, as outlined in the above report, will be taken primarily to provide a guide to an understanding of the situation. Equipment used, analytical methods, etc., will be the same as used for the Breathing Zone Surveys.

(3) Data obtained to date from previous surveys will serve as a guide for future surveys. Individual Breathing Zones and General Air Locations which have indicated low concentrations in the past will be omitted from future surveys except for periodic spot checking in order that additional attention can be directed to areas requiring more frequent monitoring.

(4) In any area in which the average concentration of uranium, as determined by the Multiple Sample Time Weighted Average Technique, is found to be above the maximum allowable concentration, corrective action will be taken. Additional samples will be taken after each corrective action, or series of corrective actions, has been completed in order to evaluate the effects of such actions. Surveys will continue to be made in this manner until the area in question shows airborne radiation concentrations below the MAC. When this occurs, the sampling schedule in this area will revert to a quarterly basis.

(5) In the event major process changes are inaugurated, equipment is redesigned or relocated, or new equipment is added, which may possibly result in an increase in airborne radioactive material concentrations, Breathing Zone and General Air surveys will be conducted immediately until the level of the concentration of the area in question is determined.

C. AIRBORNE RADIATION (Unrestricted Areas).

(1) An annual General Air survey will be conducted in the area surrounding the URECO mill, in the city of Moab, Utah, and in some uninhabited areas surrounding the city of Moab. Samples will be taken by means of a Staplex High Volume air sampler. A minimum of 10,000 liters of air will be passed through a TFA No. 41 filter in order to insure maximum accuracy.

(2) Periodic tests will be made of the stack gases of our product dryer to prevent excessive amounts of product dust being discharged to an unrestricted area.

D. LIQUID EFFLUENTS.

(1) In order to monitor our tailings pond effluent as closely as possible, a continuous sampler has been installed on the effluent line from which a daily sample is taken and composited on a monthly basis. When completed, the composite sample is assayed for Radium 226, Thorium 230, and Uranium.

(2) In addition to these samples, a monthly survey of Colorado River water will be made. This will consist of a sample taken one mile above the Moab mill, a sample taken five miles downstream, and another ten miles downstream from the mill, plus a monthly grab sample of effluent.

(3) Some data obtained from the present testing program have been submitted as evidence that no significant increase in concentrations results from mill operations. The survey outlined above will be continued to insure that a concentration does not develop which might result in an over-exposure.

E. EMPLOYEE EDUCATION AND INSTRUCTION

(1) All new mill employees will be indoctrinated in general health precautions, what radiation is, why the standards or level of exposure were set and by whom, and where the potential hazards of radiation exposure exist. Data for this educational program will be taken from the booklet, Living with Radiation, Fundamentals I, published by the USAEC. Copies will be available to employees on request.

Very truly yours,



R. F. Hollis

Vice-President - General Manager