

# URANIUM REDUCTION COMPANY

## INTER-OFFICE CORRESPONDENCE

To: L. A. Painter

From: B. B. Winn

Date: September 9, 1959

Subject: RADIATION REPORT FOR AUGUST, 1959

During the month of August, considerable progress was made to correct operational procedures, equipment, and plant areas that were possible sources of radiation exposure. Work is continuing on all phases of our radiation control program and the next sixty days should put us in a most favorable position in respect to this problem.

A detailed report of the work accomplished follows:

- (1) On August 10, 1959, a letter outlining our radiation control program was sent by registered air mail to Mr. H. L. Price, Director of the Division of Licensing and Inspection, U. S. A.E.C. Copies of this letter signed by R. F. Hollis are on file in the plant radiation file. ✓
- (2) On August 27, 1959, we sent a letter to Mr. H. L. Price, Director of the Division of Licensing and Inspection in response to his request for comments on the proposed amendments of Title 10, Part 20, Code of Federal Regulations. A copy of this letter is filed in the plant radiation file. ✓
- (3) A group of four inspectors from the Idaho Falls office, Division of Inspection, U. S. A.E.C. visited our plant on August 4 to August 7. The four representatives were Mr. M. Weinstein, Mr. R. Kant, Mr. N. Watts, and Mr. J. Scott. During this period, an air sampling survey was conducted, external radiation levels were determined and samples of our effluent were taken. Samples of river water were also taken at various points along the Colorado River. URC personnel accompanied the A.E.C. inspectors in each phase of their program and a complete record of all samples taken is available. ✓

On August 11, 1959, Mr. Hollis wrote to Mr. D. I. Walker, Department of Inspection, Idaho Falls Operation Office, U. S. A.E.C., requesting observation by URC personnel of the following: ✓

1. Sample preparation; 2. Analytical procedures; 3. Calculation of data from analytical results; 4. Calculation of results as applied to time studies of the various job classifications. ✓

Further requests were made for sample reject solutions and a complete report of their investigation. A copy of Mr. Hollis' letter to Mr. Walker is on file. ✓

Mr. Walker wrote to Mr. Hollis on August 20, 1959, stating that reject solutions from 12 significant samples collected would be available. Copies of analytical procedures for both uranium and radium would be available upon request. Observation by URC personnel of the four items listed above was denied. Mr. Walker stated that he would recommend a copy of the investigation report be made available to us. A copy of Mr. Walker's letter is on file. No further information in regard to this survey has been received at this time.

(4) External Radiation Measurements

The URC film badge program which was initiated on July 20 is progressing satisfactorily. Preliminary results of the film badge readings indicate that none of our employees are over the present maximum allowable exposure. If the proposed amendment to Title 10, Part 20 is adopted, our personnel would also be below the maximum limits. At this time results of the survey indicate that no continuous "personnel monitoring" will be required.

On August 6, 1959, the U. S. A.E.C. requested that a film badge survey of all employees be made with badges supplied by the Idaho Falls Operation Office. This request was approved by Mr. Hollis, and on August 8, 1959, this program was initiated. The program will continue for three months. A record of all time spent on this project by URC personnel is being kept. No results of this survey are available at this time.

Mr. T. R. Downard of our staff conducted an external radiation survey of the plant on August 18, 1959. This survey covered the following plant areas:

1. Leach
2. Sand-Slime
3. RIP
4. Scalehouse
5. Moisture Preparation
6. Lot sample preparation room
7. Ore Pad
8. Crusher Building
9. Sample Tower
10. Fine Ore Bins
11. Ball Mill Building
12. Filter Press Area
13. Mill Office
14. Precipitation Section
15. Packaging Section
16. Storage Tanks
17. Boiler Room
18. Tailings Pond

19. Office Building
20. Warehouse
21. Machine Shop
22. Garage
23. Water Plant
24. Carpenter Shop
25. Paint Shop
26. Changehouse
27. Laboratory

The results of this survey indicate that personnel working in these areas are far below the maximum allowable exposure. The tailings pond area gave a reading of 2.00 mrem per hour, the highest reading obtained. The present limit of exposure is 300 mrem per 40 hours. A record of this survey is on file in the Personnel Department. In accordance with our radiation control program, the next external radiation survey will be conducted at the beginning of the fourth calendar quarter, October 1, 1959.

(5) Air Sampling Survey

Mr. T. R. Downard of our staff conducted a complete air sampling survey during the month of August. This survey began on August 3, 1959 and extended throughout the month. Both general air samples and multiple time weighted breathing zone samples were collected as outlined in our radiation control program. A total of 59 breathing zone samples and 54 general air samples were collected. Duplicate and triplicate samples of some job classifications and areas are still in process.

*not true  
even in  
sampled lab.*

The results of this survey were very favorable. One employee, the grizzly man, showed a breathing zone sample in excess of the allowable concentration. This particular sample was taken while stockpile ore was being treated and conditions were very dusty during the sampling period. Duplicate and triplicate samples of this job are now in process. The results of the initial survey sample for this job classification indicated an exposure of  $7.1 \times 10^{-11}$  uc/ml, the maximum allowable concentration being  $5 \times 10^{-11}$  uc/ml. Three general air samples resulted in these areas being over the maximum allowable concentration. The areas sampled and found to be over the limit were: 1. Crushing Building - Area around the #2 and #3 vibrating screens. Air concentration  $59.5 \times 10^{-11}$  uc/ml; 2. Mill Building - #1 Hearth Deck - Air concentration  $12.4 \times 10^{-11}$  uc/ml; 3. Mill Building - Packaging area - Air concentration  $32.2 \times 10^{-11}$  uc/ml. The concentrations in the areas listed as #2 and #3 were caused by a leak in the hearth roaster discharge chute gasket and a broken hammer mill casting. These conditions were reported and repaired immediately. Breathing zone samples of all employees working in these areas were below the maximum allowable concentration.

In those areas in which the breathing zone samples and general air samples are completed and are below the maximum allowable concentration, sampling will be discontinued until the beginning of the fourth calendar

quarter, October 1, 1959. An exception to this will be areas in which we are completing renovations or installing new equipment. The results of this air sampling survey are on file in the Personnel Department.

(6) Employee Education and Instruction

The Personnel Department instituted an indoctrination lecture for new employees covering the following subjects:

1. General Health Precautions
2. What Radiation is, who establishes the standards or levels of radiation, and why the levels of exposure were set where they are and where potential hazards of radiation exposure exist.

Copies of this indoctrination lecture are on file in the Personnel Department.

Each mill foreman conducted a safety meeting for his crew during which these same topics were covered.

All supervisory personnel were issued a copy of the A.E.C. booklet entitled "Living With Radiation, Fundamentals I".

(7) Pre-Planned Housekeeping Program

On August 10, 1959, Joe Francese was hired as a special Crushing Department cleanup man. Mr. Francese has spent his time in vacuum cleaning the beams, ducts, and all other dust settling areas in the Crusher Building and Sample Tower. The results of his work are readily apparent and dust conditions in these areas have improved considerably. His work has been handicapped for lack of the proper type of equipment. Future installation of a permanent type vacuum cleaning system will correct the situation.

A permanent vacuum cleaning system for installation in the product packaging area was ordered on August 31 from the Spencer Turbine Company. Shipment is scheduled for September 11. In addition to the purchase of the vacuum cleaning system, the Engineering Department has started drawings on a canopy type hood which will be installed over the hearth roaster. By this means, we hope to minimize the need for vacuum cleaning the beams, ceilings, etc., in this area.

(8) Continuous General Housekeeping Program

In general, the cleanup of dust throughout the plant is progressing satisfactorily. The cleanup program will be accentuated and more satisfactory cleanup methods will be adopted with the installation of the permanent vacuum cleaning equipment. In the product packaging area, wet cleaning methods have been instituted wherever possible. We hope to eliminate cleanup methods utilizing brooms as soon as possible.



In addition to the general housekeeping rules outlined in the departmental safety meetings, specific instructions, as to the required use of a respirator by mill personnel were issued by you in memos to R. W. Unger dated August 25, 1959. A copy of these memos is on file in the plant radiation file. Caution signs with the words "Respirator Required" have been issued to supervisors in the mill and crushing departments. These signs are to be used in isolated dusty areas.

(9) Crash Cleanup Program

(a) Packaging Area - Disposal of filter papers removed from the Shriver Presses continues to be a problem. Currently the investigation of the feasibility of a digester (knife cutter) or an incinerator is in progress.

The project for installing a combined tray and vacuum outlet on the hearth roaster doors was modified due to the unsatisfactory performance of the vacuum installation. In this modification, a permanent tray holder was installed beneath each roaster door. Two moveable trays were provided for use on doors located on each deck. The proper operating instructions in the use of these trays was described by you in a memo to R. W. Unger dated August 31. A copy of this memo is on file. I have observed the use of these trays and found them to be quite satisfactory.

A stainless steel trough was installed beneath the deck on which the roaster scrubber is located and this has eliminated the debris from the cleanup operation of the scrubber from falling to the deck below.

(b) Crushing Plant - On August 12, a five-man maintenance crew consisting of a lead man, two mechanics, and two helpers were assigned to the installation and renovation of equipment in the Crushing Plant. By this means we hope to achieve a more rapid completion of the investigative and corrective work necessary to increase the efficiency of the Crushing Plant's dust collection system. Whenever economical, the fabrication and installation of new duct work has been contracted locally.

Work completed and operating satisfactorily at this time is as follows:

1. Hooding of feeder belt discharge chute and the installation of fog mist nozzles in this unit.
2. Hooding of loading end No. 1 conveyor belt with installation of air pressure balancing duct.
3. New cover on cleanup door, loading end No. 1 conveyor belt.
4. Installation of ventilation fan and exhaust duct in pit beneath grizzly hopper.

5. Installation of redesigned dust pickup hood on south end No. 2 conveyor belt - air balancing duct installation at this point also.
6. Installation of redesigned dust pickup points at center and north end of No. 2 conveyor belt (portion of belt in main Crushing Building)
7. Water sprays at top end of No. 2 conveyor belt.
8. Installation of redesigned dust pickup hoods and air balancing ducts at west end No. 4 conveyor.
9. Redesigned door installed on bucket elevator in sample tower.
10. Exhaust hood installed on rotary sample dryer.
11. Redesign and renovation of "coffee mill" dust exhaust ducts.

In addition to the renovation of present equipment, the radiation maintenance crew has "worked over" various chutes and equipment and eliminated many of the leaks that were producing dust.

(10) Effluent Treatment Plant

During the month of August, the Engineering Department completed plans for the installation of a barite treatment pond adjacent to the west side of our present tailings pond. Work has progressed very satisfactorily on this installation. The unit will be ready to go with the wiring of the reagent feeder motor and the installation on an overflow flume. A twenty ton shipment of barite was purchased and received.

(11) Colorado River Sampling Schedule

In accordance with our radiation control program, the sampling of the Colorado River at various points was continued. In addition to the regular monthly samples of our mill effluent, Colorado River one mile above the mill and five and ten miles below the mill, special samples of river water were taken at the points listed below:

1. Colorado River above junction with Dolores River
2. Colorado River at Dewey Bridge
3. Colorado River 1/2 mile below mill
4. Colorado River one mile below mill
5. Colorado River at Ralph Miller farm
6. Colorado River five miles below mill

7. Colorado River ten miles below mill
8. Colorado River 20 miles below mill
9. Colorado River 20 miles above confluence with Green River
10. Colorado River 10 miles above confluence with Green River
11. Colorado River one mile above confluence with Green River
12. Green River one mile above confluence with Colorado river
13. Colorado River one mile below confluence with Green river
14. Tailings pond effluent
15. Colorado River 1/4 mile below mill
16. Colorado River at bridge above mill

All of these samples have been mailed to the Combustion Engineering Company in New York for radium analysis.

Special samples of the river bottom mud were also procured. These samples are being retained until our radiation laboratory is completed.

*B. B. Winn*

B. B. Winn  
Plant Metallurgist