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UNITED STATES RADIUM CORPORATION

4150 OLD BERWICK ROAD / BLOOMSBURG, PENNSYLVANIA 17815 / (717) 784-3510

October 23, 1978

Radioisotopes Licensing Branch
Division of Fuel Cycle and Material Safety
U. S. Nuclear Regulatory Commission
396SS Washington, D. C. 20555

Attention: Mr. Frederick Combs

Reference: USNRC License 37-00030-02

Docket No. 87910

Dear Mr. Combs:

Enclosed is the information you requested in your letter of June 9, 1978. Specific operations are scheduled only through June of 1979. At this time, a complete evaluation of survey results collected will be carried out to determine further operations.

Very truly yours,

UNITED STATES RADIUM CORPORATION

Terry D. Brown
Nuclear Operations Manager

TDB
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Enc.

CERT. MAIL -rrr
CC: USNRC

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INSPECTION AND ENFORCEMENT

DECONTAMINATION PROGRAM

U. S. RADIUM CORPORATION

BLOOMSBURG FACILITY

PART I

PRESENT STATUS

PREFACE

With the conclusion of the decontamination of the primary facilities utilized in activities licensed under USAEC License 37-00030-02, a survey of the entire plant was begun. This survey, carried out over a period of three years, included every building on the site regardless of whether radioactive materials had been processed in them or not. The purpose of the plant survey was to identify, to the best of our ability, the status of the entire plant site. The survey was not designed to determine the full extent of any contamination found in a specific area, but rather to determine what areas or buildings did have any significant levels of contamination, and a rough estimate of the work and equipment needed to carry out such decontamination. This type of survey was sorely needed because records of the early history of radioactives operations on the site (1948 - 1956) were incomplete. The following pages show the results of that survey and represent the present status of our site. DPM values are per a nominal 50-100 cm².

AREA #1 - MAIN BUILDING

The former Hand Painting department occupied the second floor front of this building. The area itself has been completely decontaminated. However, the attic above this area still contains the contaminated exhaust ducts for the old radium painting operations. In addition, there is widespread alpha contamination on rafters, ceiling joists, and underside of the roof. Levels of contamination range up to 20,000 DPM. Between the floor of the former Hand Painting department and the ceiling below there is lower level alpha contamination, on the order of 200-600 DPM.

The only other known contamination remaining in this building is a drain line from a Strontium-90 production operation which was removed in the early 1950's. There is no measurable radiation coming up through the floor. However, there is no way to determine the extent of the contamination (if any) within the drain line. The drain is not in use, and hasn't been used for some twenty years.

AREA #2 - ETCHING BUILDING

The former shipping room in this building once housed radium screening machines. There is low level fixed alpha contamination on the floor (200-600 DPM). There are higher levels in certain cracks around the cement pads on which the radium screening machines once stood (200-2000 DPM). The entire floor has been covered with plywood and is used only for storage of little used materials. Removable alpha contamination has not been found in the area since the plywood was laid down. It is suspected that the soil beneath the wooden floor may also have low level contamination in it; however, radiation levels show no gamma radiation above background in this area.

The former Watch Dial screen rooms and drain line in this building were used for applying Tritium to watch dials in large sheets. Although the operation was moved to the Nuclear Building in 1969, the area has only been partially decontaminated. Levels of Tritium removable contamination range from 5000-50000 DPM. The exhaust ducts, absolute filter bank, blower and discharge stack for the former Watch Dial screen rooms are still intact. Contamination levels in these areas are unknown.

The attic of the building has scattered spots of low level alpha contamination (200-1000 DPM).

The maintenance wire enclosure has a 12" thick concrete floor poured over an old radium drain. Radiation levels in the enclosure are background.

AREA #3 - TRITIUM BUILDING

The Tritium building originally housed the equipment used for making Tritium foil. This equipment was moved to the Nuclear building in 1969. Surveys of this building over the past nine years have shown a steady decrease in removable Tritium contamination from 50,000 - 80,000 DPM in 1969, to its present 8,000-10,000 DPM.

AREA #4 - PIPE SHOP

Radon samples taken in 1973 showed excessive levels of radon (in excess of 3 X mpc). Surveys showed 200-400 DPM removable alpha uniformly distributed over every interior surface of the building. Although no radioactive operations have ever been performed in this building, it extends over an area that was used as a plant dump in the late forties.

AREA #5 - RADIUM VAULT

This building was formerly used for storage and handling of radium bromide, radium foil and radium radiation sources. When closed off in 1970, contamination levels were 1,000-50,000 DPM fixed alpha and 50-200 DPM removable alpha. Radiation levels at some places in the building were 0.1-0.3 mR/hr beta-gamma.

AREA #6 - SOLUTIONS VAULT

This building was used for handling certain radioactive solutions and for storage of certain high-level radiation sources. Recent surveys have shown that there is no detectable removable alpha or beta-gamma. The building is presently being used for storage.

AREA #7 - SEALED SOURCES VAULT

This small building was used only for the storage of certain sealed sources; however, some contamination has been found in and around the floor and door of the building. The last surveys showed less than 0.25 mR/hr beta-gamma.

AREA #8 - OLD GARAGE

Originally used as the waste disposal building, this structure has been vacant since the late 1950's. The dirt is contaminated (200-2,000 DPM alpha and 0-0.4 mR/hr beta-gamma).

AREA #9 - SILO

The silo was used solely for the remote storage of certain types of high-level sources. Contamination is basically background; however, a thorough survey has not been conducted.

AREA #10 - OLD HOUSE

This structure has been used for the storage of many low-level contaminated items over the years. Low-level alpha contamination (200-1,000 DPM) is widespread in certain areas of the building.

AREA #11 - PERSONNEL OFFICE

In the basement of the former personnel office is an old well of some sort that was apparently used for waste disposal purposes. No records are available as to what was disposed of in this well - by whom, why or when. It apparently has a concrete cap. Radiation levels over the cap are 0-0.25 mR/hr beta-gamma.

AREA #12 - BURIAL PITS

Originally licensed for the disposal of low-level wastes in 1956, there are no records in existence of how these burial sites are constructed, nor of what is buried in them. Radiation levels at soil level range from background to 0.6 mR/hr beta-gamma. These pits were under water during the flood of 1972; however, there has been no significant change in radiation levels during or after the flood.

AREA #13 - PLANT DUMP at Southwest Corner of Property

Originally found in 1970, some decontamination has been carried out in this area. Present radiation levels are less than 0.6 mR/hr beta-gamma.

AREA #14 - PLANT DUMP between Lagoons

This area was found during the installation of a new storm sewer in 1972. Radiation levels are approximately several thousand CPM beta only. There appears to be little or no associated gamma.

AREA #15 - CEMENT TROUGH, SEWER AND GRATE

Source of contamination of these items is unknown. Contamination levels are 200-2,000 DPM alpha.

AREA #16 - EAST LAGOON

The full extent of contamination in this pond is difficult to ascertain due to the water and mud in the pond. Underwater surveys with a waterproof probe show radiation levels range from background to 4 mR/hr gamma.

AREA #17 - CONTAMINATED SOIL UNDER OLD LOADING DOCK

This area was formerly the main access to the alpha laboratory for the removal of radioactive waste and other large items. The soil beneath it is relatively inaccessible; however, the limited surveys possible indicate contamination levels ranging from background to 2 mR/hr beta-gamma.

AREA #18 - CONTAMINATED SOIL BY SILO FENCE

This contaminated area adjoins the old garage formerly used for waste disposal. Radiation levels range from background to 0.6 mR/hr beta-gamma.

AREA #19 - CONTAMINATED SOIL BY TRITIUM BUILDING

A small area of soil near the front of Area #3 has a radiation level of approximately 0.6 mR/hr beta-gamma.

AREA #20 - CONTAMINATED SOIL EAST OF LAGOONS

This is a large area of soil completely covered with heavy undergrowth. Radiation levels range from background to 0.6 mR/hr beta-gamma.

AREA #21 - CARPENTER SHOP

This building was used for storage of radium in the late forties and early fifties. One wall is known to be contaminated with 10,000 to 50,000 DPM alpha and 1-2 mR/hr beta-gamma.

AREA #22 - SIDEWALKS

At various times in the past, contamination has been found at isolated points on the exterior walkways on the site. This has generally been 200-2,000 DPM alpha with no detectable beta-gamma.

AREA #23 - FORMER CANAL BANK

At one time, there were additional lagoons on the site. These were decontaminated in the early sixties. However, no records of residual levels of contamination exist.

AREA #24 - CONTAMINATED DRAINS

A number of contaminated drains left from old radioactive operations remain on the site. The extent of contamination in these lines is unknown.

AREA #25 - FORMER EXIT SIGN ASSEMBLY AREA

This area in the Etching building was used for the assembly and storage of exit signs containing Tritium. Brief surveys showed no detectable contamination; however, a thorough survey remains to be done.

AREA #26 - FORMER CESIUM ION-EXCHANGE HUT

This building formerly housed the ion-exchange columns used to treat waste water from the Cesium laboratory. While gross contamination has been removed, survey records are incomplete.

PART II

PROPOSED SCHEDULE FOR
FURTHER SURVEY AND DECONTAMINATION
OPERATIONS

PREFACE

Based upon the site contamination status contained in Part I of this program, a tentative schedule for the decontamination program has been developed covering the next nine months. It will be modified by considerations such as weather conditions and survey results.

In June of 1979, a schedule for the next twelve months will be developed, based upon new survey results and any other new information available.

OCTOBER THROUGH DECEMBER, 1978

- Area 9 - Survey silo to determine nature of decontamination efforts necessary.
- Area 12 - Take three core samples in vicinity of old burial pits and establish permanent wells for continuing samples of ground water and sub-surface radiation levels.
- Area 14 - Excavate contaminated soil between lagoons.
- Area 15 - Decontaminate cement trough and storm sewer. Replace if necessary.
- Area 18 - Survey to determine extent of area involved. Take core samples by hand.
- Area 19 - Remove contaminated soil by Tritium building.
- Area 21 - Remove contaminated wall in carpenter shop.
- Area 22 - Survey all external plant walkways.

JANUARY THROUGH JUNE, 1979

- Area 2 -
 - (a) Decontaminate former shipping room.
 - (b) Survey former Watch Dial screen rooms, exhaust ducts, filter bank and plenum chamber.
 - (c) Survey attic to determine exact location of contaminated areas.
- Area 5 - Reopen and survey old radium vault.
- Area 7 - Decontaminate sealed sources vault.
- Area 8 - Decontaminate old garage.
- Area 23 - Survey canal bank.