

Office Memorandum • UNITED STATES GOVERNMENT

TO : AFSB Files

DATE: June 26, 1951

FROM : George G. Manov, Chief, AFSB *Manov*SUBJECT: VISIT TO U. S. RADIUM CORPORATION, BLOOMSBURG, PA., MAY 21, 1951

The plant and laboratories of the U. S. Radium Corporation at Bloomsburg, Pennsylvania, were visited on May 21, 1951. U. S. Radium Corporation had applied for 6 to 10 curies of Sr^{90} for use in a classified ordnance device known as a "Metascope", details of which are available elsewhere. (Approximately 22,000 metascope are involved.) The visit was made for the purpose of determining the adequacy of the existing and proposed health and safety facilities for use of this large quantity of Sr^{90} . Mr. C. W. Wallhausen met the writer at Newark, New Jersey, and we drove 160 miles to the Bloomsburg plant.

The main laboratory is housed in a modern building only three years old; it is of brick and glass block construction, and clean and orderly inside. The laboratory in which the Sr^{90} is to be used is 25' x 30' and air-cooled. It has two six-foot hoods mounted back-to-back in the center of the room. The hoods are made of stainless steel with one-half inch lucite sliding doors. The air flow is of the order of 100 feet per minute. Two large gloved boxes, each equipped with a filter and a small blower, are available, together with a large quantity of remote-control tongs, both mechanical and vacuum type. Two G-M survey meters, a Cutie Pie, and a Nuclear Research Corporation count rate meter were at hand. There was no evidence that this laboratory had been cleaned up especially for the visit by the Isotopes Division representative. Laboratory personnel wore clean laboratory coats and film badges and pen meters. The floor was of plastic tile and was well-waxed and clean.

Personnel are examined medically three times per year at the Bloomsburg Hospital. Blood counts, complete medical examinations, and finger inspections are part of the procedure.

Details of preparing the Sr^{90} sources are contained in a letter from Mr. Wallhausen to Dr. Lough (May 18, 1951). The equipment for rolling the Sr^{90} wafers to the desired thickness is in the main laboratory room and methods were discussed with Mr. Wallhausen, Mr. C. C. Carroll, Chief Chemist, and Mr. J. E. Paul, Vice-President in Charge of Production, for shielding this equipment with plastic. Also discussed were details of swivel tongs of the type used at ORNL for handling large quantities of P^{32} and that might be found useful for working with Sr^{90} .

The writer was shown the assembly floor where it is proposed to fit the sources into the metascope. This room is approximately 40' x 50' wide, is air-cooled, has a linoleum floor, and is neat and clean. The equipment which has been used to assemble radioactive dials in various aircraft instruments was demonstrated. The dials are handled under a small plastic hood approximately 12" x 18", the air flow being away from the operator.

II-001

June 26, 1951

A complex mechanical assembly fastened the radioactive dials to the instrument and there was little, if any, opportunity for human contact. This type of equipment was proposed for use with the metascope and approximately twenty such units were at hand.

It was stated that approximately 25 to 30 girls and 3 supervisors would be employed for approximately five months on one shift in assembling these sources. (Approximately 22,000 metascope are involved.) Six semi-technical people would perform darkroom inspections (fluorescent examination for radioactivity), and 3 chemists and 1 physicist ~~would prepare the sources~~.

I was shown two more assembly lines in which approximately 25 to 30 girls were employed in a current run involving radioactive dials. This appeared to be in every way similar to what Mr. Wallhausen stated he intended to use for the strontium sources. In addition, he thought it would be a good idea for the girls on the Sr⁹⁰ operations to wear respirators. Information was furnished to him concerning the GWS #6 respirators now available commercially.

It is interesting to note that these metascope were originally fabricated by U. S. Radium Corporation. For sufficient reason it has now become necessary to modify this instrument and to replace the radium button with one of Sr⁹⁰. Conversion of these instruments is to be done on the basis of competitive bid with one other company bidding for the contract. The performance bond is said to be approximately one-half million dollars, and the

"award will be made only to contractors whose facilities for handling this material are approved by the AEC. Bidders must show that their facilities have been cleared by the AEC and proof of clearance submitted with bid".

The contract number is ENG 33-062-51-426, administered by the Marion Engineering Depot of the U. S. Corps of Engineers, Marion, Ohio. The Contracting Officer is Rene Quenniville; technical assistance is rendered by Dr. Fred Paul, Chief, Radiation Branch, Engineering Research Labs, Fort Belvoir, Va.

A tour of the rest of the plant facilities of U. S. Radium Corporation was then made with Mr. Wallhausen and Mr. Paul. I was shown the room in which numbers are painted on clock and instrument dials with radioactive paint. A large room, approximately 40' x 60', is used for this purpose. Approximately 50 girls were employed at the time, each one having in front of her about 1 gram of paint containing 5 ug of radium. Individual tables are provided for each worker and a small plastic hood, approximately 12" x 18" and 6" high, is at the head of each table. Each hood is connected to a duct for removing any radon emanation. A lighted match, held near one of the hoods, indicated ample air flow. Every fifth girl wears either a film badge or a pocket ionization chamber. The floor of the room was of asphalt tile, well-waxed and spotless.

June 26, 1951

Each of the girls wore clean uniforms and a white cap, the clothing furnished by the U. S. Radium Corporation. None of the girls wore gloves, and upon questioning, the writer was shown the fluoroscopic examination room through which each person passes before leaving the assembly floor. This room is completely dark except for a ultra-violet light, and the writer was shown how easy it is to detect extremely small quantities of radioactive materials in the form of radium paint. Fingernails are kept cut very short, and a standardized scrubbing and decontamination technique is used if any radioactivity is detected.

Waste disposal is accomplished by burial in a 10-foot steel-lined pit with a concrete floor located on the grounds of the USRC. Many years would elapse before this pit would be filled up, after which it would be sealed with concrete and left in place. This plant produces very little scrap material and does not engage in burning waste radioactive paper.

The writer was shown a separate building in which it is proposed to store the large quantity of Sr^{90} . This building is adequately shielded and fenced off. A similar building, also in the fenced area, is used to store large quantities of radium.

The writer came away with the feeling that this was a well-run plant operated by personnel who gave every indication of wishing to protect their people, and in the opinion of the writer, was quite well prepared to handle this large quantity of Sr^{90} . This laboratory is one of the cleanest yet seen by the writer.

The 160-mile trip back to Manhattan was accomplished without incident.


George G. Manov

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Via EAWiggin