

## Office Memorandum • UNITED STATES GOVERNMENT

TO : ~~RSB~~ RSB FILES

DATE November 7, 1955

FROM : Robert F. Barker *RFB*SUBJECT: VISIT TO THE U.S. RADIUM CORPORATION, BLOOMSBURG, PENNSYLVANIA,  
ON OCTOBER 25, 1955.

We met with Mr. H. H. Dooley, chief chemist and Mr. C. C. Carroll, general manager, of the Bloomsburg plant. We also met Jim Atherton and Dr. Wright, who will be handling most of the tritium and are presently handling C 14, Iron and Krypton 85, and also a Mr. Palmeri, although we did not visit his laboratory.

The discussion moved along fairly rapidly on the general health hazards associated with tritium. A brief discussion indicated that they agreed one should operate with larger quantities inside a hood which has a fairly good flow in order to provide sufficient ventilation to sweep out any leakage of tritium. Also, the best monitoring device is urinalyses for operating personnel. Some references were given to them on the different methods of urinalysis. Then we talked with Mr. Atherton about the general type of system which he will be using for the tritium. They have an uranium reservoir encased in stainless steel. The metal system is ~~not~~ enclosed in a hood.

Their present plans are to use only the gas and not any tritiated compounds. The proposal is to add gas to a powder phosphor or coat the phosphor on glass and then introduce the gas into a glass flask-type arrangement.

They are also considering the construction of several 10 curie polonium-beryllium sources. In order to do this, they plan to operate under drybox conditions, again, with urinalysis for all personnel involved. The only question arose as to the type of neutron monitor which should be used. Some little discussion followed and it was suggested that for this particular operation, namely, that of compounding a source, the most satisfactory method was to actually calculate a maximum exposure at any operating distance, estimate the time of working necessary, and rotate personnel on the basis of permissible exposures, as determined by time and distance. Later, during the discussion they suggested that they probably would try to get hold of a commercial model of a neutron monitor, to supplement this.

We then ~~a~~ visited areas where they had the tritium line started inside a hood and where the Krypton 85 line was operating. Around the Krypton line we found about 100 millir per hour next to the

lead shielded flask, about 25 millir per hour at 1 foot, and outside a 1/2" plexiglass shield, about 5 millir per hour. The Krypton 85 line is very similar to the type of line they would use for tritium.  
Note:

The shipping capsule glass was quite discolored by radiation.

We then visited the Strontium 90 operating room where their luminous compounds are prepared. See the sketch and results of some swipes taken there.

During the discussion the question arose as to the size of tritium-activated sources which would be authorized without too much question and the requirements necessary for large sources, thinking of multicurie, or at least, full curie sizes, leak test requirements, etc.

Disposal is being made in ~~xx~~ two old silos which have been buried in the ground, some 15 feet deep. These silos are 15 feet in diameter. They have concrete floors and manholes in the top for introducing contaminated solids. These cost about \$150, three years prior to filling the first one. The top of the full one was covered with concrete. This, they think, is permanent type of disposal system. The other one is only partly filled.

They are interested in more information on leak testing. For example, it was suggested to me that a certain Carbon 14 activated phosphor involving about 12 millicuries of activity had been exempted from leak testing. Also, they have developed some polonium foils, which he suggested were free from leakage. They are interested in the the availability of uranium and also plutonium. The address of the person to contact should be sent them. They wished information on the specific reference for the Harvard valve which was suggested by Mr. Martin of McCullough Tool. Also, they are interested in any other information on valves. They asked for detailed drawings on storage wells. These are concrete wells as shown in several of our publications. Also, anything on neutron monitoring and particularly the requirements for the production of such as 10 curie sources which they are considering. Some of this may be covered in LA-1835.

Major additional facilities include a proposed hot cell for the purpose of handling large backscatter sources equipped with some type of manipulator and the processing area for the polonium. The latter will be a separate room with its own change room facilities. These additions will be made in the east wing of the present existing laboratory. General opinion, the entire laboratory is operated as a contaminated area, including the offices, through which visitors and everyone can pass. We walked right into the Strontium room, right through the radium room, passed all of the rooms handling tritium gas, cesium, iron, without question or hesitation. No film badges were provided, nor booties. The question of cross contamination perhaps is not too great, however, it does seem that they are somewhat lax in containment. Perhaps this will be better indicated by the results of the Strontium ~~xx~~ 90 smears, in particular.

Smear Results

10% geometry

1.	85	cpm	top of small desk
2.	5332		Knob on door through which milk S <sup>90</sup> is introduced
3.	6		thumb of glove in box
4.	8		Palm of glove in box
5.	169		Top of dry box
6.	65		Face of dry box (p <sub>2</sub> side)
7.	1144		Handle of mallet in California
8.	239		Top of furnace inside Calif hood.

