

Mound Laboratory, Miamisburg, Ohio

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July 31, 1952

CIRCULATION LIMITED

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Dr. Carroll A. Hochwalt

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MOUND DECLASSIFICATION REVIEW	
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AUTHORITY: OAC, OAD, OAD, OAD	
NAME: TIM FLORESAN	
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NAME: R. Ratun	

Biology

Our request for immediate extension of the biology program has been given verbal approval. This involves the addition of nine people, most of whom will be nontechnical. This presumes a total fiscal 1953 budget of \$685,000.00. Both acute and chronic studies involving actinium and its daughters will be made on mice. Because of the short life span of the mouse, qualitative and rough quantitative data can be established in a relatively short time. More accurate data concerning actinium will then be obtained by the use of larger animals after we have finished our chronic studies with polonium. Recent data with polonium indicates that it causes the growth of cysts in the kidney. This data leads us to believe that our past tolerances are still safe but do not include the enormous factor of safety that we have assumed in the past.

Operations

Production of Tom and Pot type initiators is well in hand and is causing us no difficulty. Production of Cell type initiators (artillery shell) is extremely difficult and a high percentage of our first two months output was rejected. These rejections occurred because of failure to meet specifications that were beyond our local control. We now have in use an extensive X-ray testing laboratory which has enabled us to produce these initiators with only ten per cent rejections over the past six weeks. We have in toto produced an acceptable number to meet the stockpile requirements. With the expanded facilities now available within the T building, we are confident that we can meet all future requirements for Cells.

The new expansion program throughout the AEC will result in the construction of new reactors at both Hanford and Savannah River. The construction of these reactors will increase the amount of polonium available from these sites, without undue interference in plutonium production, to such an extent that we shall not need our own polonium producing reactor until 1956. The latest design of our reactor incorporates the idea that an appreciable quantity of actinium may also be produced in it. Argonne Laboratory and

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The architect engineering firm of Shaw, Metz and Dolio have been instructed by the AEC to proceed with design of the reactor for Mound Laboratory. Last week this proposed reactor was described to the Industrial Committee on Reactor Location Problems, of which Rogers McCullough is the chairman. If this committee decides that such a reactor should not be built at Mound Laboratory, the AEC is then prepared to suggest Scioto Laboratory as an alternate. It is the feeling of the AEC that there is no greater than a 50-50 chance this committee will approve Mound Laboratory as the site for the reactor.

AEC thinking at the moment is that the future actinium production building will be built at Scioto Laboratory and immediately go into use. The present polonium production building will remain in standby but many of the rooms in it can be adapted for use in conjunction with the actinium production building. It is our goal to construct such an actinium building in 1956.

Research

The Research Division has successfully fabricated one and one-half Tom type initiators from actinium. We are, therefore, ready to start design and construction of a pilot plant for actinium initiator production. Unfortunately, due to one of the riders in the latest Congressional appropriation, we shall not have funds available for this purpose until early spring of 1953. In the meantime, we are putting our research efforts into the gadgeteering and process research necessary for ultimate design. Fabrication of actinium initiators is extremely difficult and fraught with health physics hazards. However, our detailed cost analysis concerning the use of substitute materials indicates that within five years of operation of an actinium plant we would save approximately 20 per cent by meeting the proposed production requirements by use of actinium 227. From the proposed schedules, it is our guess that 1958-60 will necessitate two shift operation of the T building at Mound Laboratory, plus operation of the actinium plant at Scioto. Pot and Cell type initiators will always be fabricated from polonium 210.

Due to the failure of Congress to appropriate funds for raw material research, we must forego our participation in this program. As a result, we have been invited to participate in a new program concerning the separation of lithium 6 from lithium 7. Due to security limitations, we have been asked not to advertise this new program more widely than absolutely necessary. We have deferred our bid for this research until such time as it is possible for Samaras, Sapirie, Roberson, and me to discuss this proposition fully.

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J. Burbage
Joseph J. Burbage

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