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Merril Eisenbud

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THORIUM STUDY

SYMBOL: HSH:WBH:msh

On August 28th, a visit was made to the Maywood Chemical Company where monosite sands are processed for the extraction of rare earths and mantle-grade thorium nitrates. Maywood Chemical Co. has been processing these materials for approximately 50 years and has a very substantial background in the handling of thorium-bearing materials. For this reason, it was thought advisable to investigate the exposures and health experience at this plant in order that this experience may be put to use when and if the Commission becomes involved in the handling of commercial quantities of thorium or its salts.

The visit was made in the company of R. C. Heatherton and Dr. I. Tabershaw. At Maywood, we discussed the matter with Messrs. Turner and Hunter, General Manager and President of the company respectively.

The discussions which we had with the plant personnel centered around the availability of the plant to personnel from the New York office for various studies which would lead to a correlation between thorium exposure and any conditions of health which might be considered to arise out of such exposure.

The atmosphere was very friendly and we were assured of cooperation to the following extent:

1. We would be permitted complete access to all medical records in the possession of the plant. It was indicated that these records extended for approximately 10 years.
2. There would be no objection to our going to the local plant physician for any information which he may be in a position to give.
3. We would be permitted to approach the Bergen County Health Department for a review of the X-rays of these individuals, 2 sets of which have been taken - the latest within the year and the previous one about 2 years before.
4. If it were deemed necessary, either our physician or their physician could perform physical examinations on the individuals involved.
5. We would be permitted to obtain air sample data from the plant atmosphere under operating conditions.

In addition to the conference, a short trip was made through the plant to review thorium operations. In brief, these are as follows: Mono-site sands are dissolved in hot sulphuric acid, either in a steam jacketed tank or in a sulphating mill similar but smaller than the one used at Luckey. After sulphation, the sulphated material is leached with water and vacuum filtered. The filtrate is treated through several precipitation and processing steps and is finally precipitated and removed in the first dry form as a moderately purified thorium nitrate. Thorium nitrate is pulverized and blended by hand to the final finished product and packaged.

It appeared that the major hazards might arise in the sulphating area and more likely in the final blending and pulverizing room. An air sample was taken for about 3 hours in this room to provide some idea of the type of analysis that would be required in our laboratory. This sample, which showed a very high concentration of thoron daughter products was measured to contain approximately _____ of thorium. It is interesting to note that there is one operator employed in this room. The plant management contends that he is one of the healthiest individuals in the plant and has been carrying on this identical operation with the same equipment in the same room under the same conditions for over 40 years.