MAY 3 1 1961

Dr. Heinrich Mandel, Vice President
Rhernisch-Westfachsches Elektrizitaets-werk
Aktiengesellschaft
Rellinghauser Street 53
Essen, Germany

Dear Dr. Mandel:

This is in reply to your letter of March 3, 1961 on the subject "Siting of Nuclear Power Plants in Connection with Water Supply Interests" and will confirm our later discussion on this subject with your representatives.

It is our impression that evaluation of the implications to water supply safety for the situation described in your letter might require a more comprehensive analysis than has been required for sites approved for nuclear power plants in the United States. In the particular problems on safety to water supplies, we have thus far not required a quantitative assessment of such effects as uptake in vegetation, ion exchange in the soil, etc., in reaching a judgment on the suitability of the site. These effects, however, are considered in a qualitative sense, but to this time the degree of refinement which would be afforded by taking them into account quantitatively has not been required. We have generally assumed that if our other analyses and specifications are satisfied, the detailed factors which you enumerate will also be satisfactory.

We are enclosing one copy of a site evaluation report entitled, "Analysis of Physical Data Pertaining to Environmental Survey for the Peach Bottom Atomic Power Station, Philadelphia Electric Company" which contains calculations and a description of field procedures carried out in assessing the water supply safety problem associated with that site. This report may be of some assistance to you on the questions you have raised.

Research work has recently been started within the U. S. Atomic Energy Commission to determine the chemical status of fission products after release to the atmosphere from irradiated reactor fuel. Information on results of this work is not yet available.

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We are enclosing a paper by Dr. R. F. Reitemeier entitled, "Soil and Plant Relationships of Fission Products" which may be helpful to you in evaluation of the effects of uptake by vegetation on the water safety problem. Enclosed also is a list of AEC Research Contracts and Programs in soil chemistry and mineral metabolism of plants. This research work is sponsored by the Division of Biology and Medicine.

Volume 2 of the Hearings on the subject of Industrial Radioactive Waste Disposal which were held before the Special Subcommittee on Radiation of the Joint Committee on Atomic Energy, Congress of the United States from January 28 to February 3, 1959 contains information on ion exchange of soil materials, and movement of radionuclides through earth materials that may be applicable to your problem. You may obtain copies of this through your Embassy representative from the Department of Commerce, Publications Division.

Additional references on ion exchange which may be of interest to you include:

"A Method for the Determination of the Cation Exchange Capacity of Clay Minerals and Soils" by Galen Frysinger and Henry C. Thomas; Proceedings on Third National Conference on Clays and Clay Minerals, Publication 395 of the National Academy of Sciences, National Research Council, Washington, D. C.

"Ion Exchange in Clays and Other Minerals" by Dorothy Carroll; Bulletin of the Geological Society of America, Volume 70, pp. 749-780, June, 1959.

"Summary of Current Geological Research in the United States of America Pertinent to Radioactive Waste Disposal on Land," E. S. Simpson (Geological Survey, Washington, D. C.) p. 517-31, "Disposal of Radioactive Wastes, Conference Proceedings, Monaco, 16-21, November 1959, Volume 2."

We also enclose a reprint of proposed Reactor Site Criteria Guide which we have prepared to give guidance on policies in selection of sites for power and test reactors.

We were pleased for the opportunity to discuss this problem with your representatives. If you have any further questions, we will endeavor to answer them.

Sincerely yours,

Robert Lowenstein
Acting Director
Division of Licensing
and Regulation

Enclosures:
1. Site Evaluation Report
2. Paper by Dr. R. F. Reitemeier
3. List of AEC Research Contracts and Programs
4. Proposed Reactor Site Criteria Guide

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