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## Office Memorandum • UNITED STATES GOVERNMENT

TO : W. B. Harris, Chief, Industrial Hygiene Branch DATE: July 5, 1950  
 Health and Safety Division  
 FROM : P. B. Klevin *PKL new*  
 SUBJECT: U. S. BUREAU OF MINES - VISIT OF JUNE 21, 1950

SYMBOL: HSH:PBK

1. Purpose of Visit

- a. To study operations planned by Bureau of Mines on explosibility factors for Be, U, thorium, zirconium, etc.
- b. To explain to Bureau of Mines' personnel the possible hazards in handling any of the aforementioned materials.

2. Scope of Work

The Bureau of Mines will make a study of the explosibility of several materials specified by the New York Operations Office.

The study will include the following tests for each material:

- a. Ignition temperature of a cloud.
- b. Determine the amount of inert required to prevent flame propagation in any of these materials.
- c. To determine the minimum explosive concentration of a material.
- d. To determine minimum electrical energy necessary to ignite a dust cloud using four times the critical quantity.
- e. To determine ignition sensitivity of a material in an inert gas or gaseous atmosphere by means of a spark.
- f. Minimum electrical energy required to ignite a quiescent layer in carbon dioxide, nitrogen, argon, and air.

The laboratory (12' x 25') in which the experiments will be performed has the many health and safety features needed for these tests. These include two ventilated chemical type exhaust hoods, each equipped with two safety glass windows.

All operations which include unloading of material onto scales, weighing, unloading and ignition of materials will be performed within a ventilated hood. All materials will be kept in covered containers when they are transported from one hood to the other. Each test will be performed approximately 30 times. The amount of material for each run should weigh approximately one gram.

July 5, 1950

3. Distribution of Personnel

- a. Dr. I. Hartmann - Chief, Explosive Section
- b. Mr. Nagy - Supervisor
- c. Three Technicians

4. Potential Health Hazards

- a. Air hygiene in-plant — The use of uranium, thorium and beryllium should not present a health hazard due to the amount of material to be handled at any one time and the satisfactory operating procedures set up for these experiments. Both Dr. Hartmann and Mr. Nagy requested that, if possible, a member of the Industrial Hygiene Branch be present to monitor the initial beryllium and uranium runs.
- b. Air hygiene out-plant — No problems should arise on this matter. Again, the amount of material used in the tests and air dilution should provide for satisfactory air concentrations.
- c. Radiation — No problem.

5. Safety and Fire Protection

The experiments will be performed in a fire resistive building. The AEC investment in these experiments is only in the chemical materials supplied to the Bureau of Mines.

6. Waste Disposal Problem

There should be no problem concerning disposal of waste. The entire hood will be covered with Kraft laboratory paper. The Kraft papers, containing uranium, thorium, beryllium and zirconium, will be returned to AEC after the completion of each of the experiments. At the end of the experimental work, the hoods and the equipment will be properly decontaminated.

It is the opinion of both Dr. Hartmann and Mr. Nagy that the experimental work will take from three to six months to complete.

cc: E. J. Kehoe, Chief  
Fire & Accident Prevention Branch