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# SIGNIFICANT ACCOMPLISHMENTS

FISCAL YEAR 1952

*Excerpt*



CHEMICAL CORPS  
CHEMICAL AND RADIOLOGICAL LABORATORIES  
ARMY CHEMICAL CENTER, MARYLAND

30 JUNE 1952

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## SUMMARY OF PROGRESS

### AGENTS

#### Agent GB.

The highest priority was given to work connected with GB (fluoro-isopropoxymethylphosphine oxide). The comprehensive research and development carried out on improved methods for producing GB, and on the utilization of by-products from the manufacturing process, was the outstanding achievement in the agents field. Several processes, including the DMHP (dimethyl hydrogen phosphite), Salt, Aluminum Chloride, TIPP (triisopropyl phosphite), and Grignard methods, were investigated, and engineering evaluations were made of the most promising processes. This led to the choice of the Salt Process to be used when additional GB manufacturing facilities are constructed. Process development work on the new method was begun in C&RL, and piloting the first four steps of the process was started under contract.

A pilot plant for the fourth and fifth steps of the DMHP process for producing GB was completed and the plant was operated to obtain data for use in connection with the large-scale production plant now under construction. All semi-works phases of the operation were completed and 80% of the required pilot plant data was obtained. During the operation of the plant, 31 tons of satisfactory GB was produced. The major portion of this product was earmarked for field testing of GB munitions. Approximately two tons of GB was supplied to Canada for experimental purposes.

A pilot plant for the production of the third-step intermediate for GB by the Aluminum Chloride Process was constructed and operated to obtain process data. This work was discontinued because the emphasis was shifted to the Salt Process.

A satisfactory method for stabilizing GB in storage with tributylamine was developed, and a specific band for GB was discovered in the infrared absorption spectrum. This latter may prove very useful for analytical purposes.

Methods for preparing radioactive GB were developed and samples of the compound were supplied to the Cml C Medical Laboratories for research on the mechanism of the toxic action of this nerve gas.

#### Persistent G Agents.

Because of increased interest in some quarters in the possible use of persistent nerve gases, an investigation of GB thickened with "Lucite"

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