

agents is no more than \$500,000 per year. We are concentrating on incapacitants.

Mr. FLOOD. If you are talking about a lethal agent, it does not matter how many you have. If you are killed by one it doesn't matter what it is called. And it does not matter whether the Germans or British created it. We have it.

Mr. SIKES. When you speak of the development of incapacitants, what do you include? How many different agents?

Dr. MACARTHUR. We are looking at various types on the chemical side. In addition to chemical incapacitants you can have biological incapacitants.

On the chemical side we are looking at four classes of compounds.

Mr. SIKES. You say looking at them, what does that mean?

Dr. MACARTHUR. We are synthesizing new compounds and testing them in animals. I should mention that there is a rule of thumb we use. Before an agent can be classified as an incapacitant we feel that the mortality must be very low. Therefore, the ratio of the lethal dose to the incapacitating dose has to be very high. Now this is a very difficult technical job. We have had some of the top scientists in the country working for years on how to get more effective incapacitating agents. It is not easy.

OPERATIONAL STORAGE LIFE OF AGENTS

Mr. FLOOD. We have the question of longevity as between a killer chemical agent, the longevity of a biological lethal agent and the longevity of any incapacitant.

You have four questions. You have a chemical lethal agent. You have a question of longevity. How long will it live? How long is it effective? How long will it stockpile and be effective? Six months, 6 years, a century?

Then you have a biological killer. How long will it be with us? What is its longevity or effectiveness?

Then you go to the nonlethal category, the disabling agents. You have the same classification. How long will it be chemically effective and how long biologically effective?

Mr. SIKES. Generally let's have the periods at which these materials in the different classifications enumerated by Mr. Flood can safely be stored and will retain their effectiveness.

Dr. MACARTHUR. We maintain our chemical and biological agents now—

Mr. FLOOD. Not 100 percent effective, but operationally effective.

STORAGE OF CHEMICAL AGENTS

Dr. MACARTHUR. As far as chemicals are concerned, I would say the lethal capacity can be effective for indefinite periods of time.

Mr. FLOOD. That doesn't satisfy me. By "indefinite" what do you mean? Six months, 6 years?

Dr. MACARTHUR. Five to ten years.

General STONE. Beyond that time period we begin to worry about what is happening in the munition, itself. The fuzes for example.

Dr. MACARTHUR. Also, after that period the container might start to leak due to corrosion,