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RESEARCH AND DEVELOPMENT

25 June 1956

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Dear Walter:

According to the agreement reached in our conference of 21 June 1956 I am sending you a list of questions to help you get a better feeling for our needs in medical and biological effects of radiation. This list was made up in consultation with Dr. Johnstone and others who will be users of the information. Please think of this list as suggestive of the types of information we are after rather than as exhaustive. Later we will probably be looking for quite a few additional data and would appreciate your help in completing the list.

I believe that research which is being carried out in the National Laboratories is aimed at determination of basic physiological phenomena whereas we are really interested in social response. Therefore, in addition to the uncertainties inherent in extrapolation of animal data to human beings, there are other large uncertainties which we really cannot expect to resolve at this time.

Now let us look at the questions. We will soon have tabulations of estimated number of people who have, within four days, received dosages of under 100 r, 101-200 r, 201-300 r, and 301-700 r, but who are not classed as dead from this cause by D-day plus 60. Our symptomatic table also gives us the number of these survivors who are "sick." For the social analysis it would be useful to know more about the condition of these people along the following lines:

- a. What proportions of such survivors would be capable of one or more levels of physical exertion?
- b. Conversely, what would be the effect, if any, of strenuous physical exertion upon such survivors?

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c. Would there be any rest, medical care, or dietary requirements over and above a pretty primitive level of subsistence, to prevent such survivors relapsing into a more serious level of symptoms?

d. Considering that these survivors would in most cases be deprived of normal public health protection, to what extent if any might they be more susceptible to infectious diseases? which infectious diseases?

e. What would be the effect of these less than lethal dosages upon the ability of people to tolerate the lower residual dose rates of contaminated areas after thirty or sixty or ninety days?

f. What kind of an average aging factor per unit of dose would be most defensible, to be applied to the entire population (which could be broken down into age groups)?

g. What significant long-term effects, in addition to life shortening, are expected for a population surviving a heavy irradiation?

In view of our interest in possible longer term effects upon agriculture, food supply, and the ecological balance of nature in relationship to agriculture.

a. What dosages vs. symptoms relationships different from those we are using for humans should be applied to common domestic animals and fowls, birds and vertebrate wildlife, and finally insects?

b. Are there special considerations regarding Beta contamination we should particularly bear in mind when considering animal feeding habits, contact with earth and foliage, etc.?

c. What order and kind of effects would follow from consumption of contaminated food (either Beta or Gamma) by either animals or humans or wearing or use of fibers from contaminated areas.

d. At what levels of contamination can we assume serious immediate effects upon common agricultural plant life, or significant early genetic effect upon the same plant life.

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We are also interested in world-wide fallout effects.

a. What are the dangers to the world population due to fallout of bomb debris?

b. At what level of contamination of the stratosphere is there a serious problem?

Let us discuss this list at your earliest convenience to determine the best method for obtaining assistance from the experts in biological effects.

Sincerely,

JOHN L. MAGEE

JLM/ljg

cc: Dr. Paul Henshaw  
Dr. Douglas Worf

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