

# BATTELLE-NORTHWEST

RICHLAND, WASHINGTON

PNL-9037

DATE November 7, 1967

TO H. M. Parker, Chairman  
Human Subjects Committee

FROM H. E. Palmer

SUBJECT  $^{143}\text{Pm}$  Study

File  
LB

I would like to extend the present  $^{143}\text{Pm}$  study to include three volunteers who will inhale 100 nCi or less of  $^{143}\text{PmCl}_3$ . The  $^{143}\text{PmCl}_3$  would be contained in an aerosol of NaCl particles generated from a solution of  $^{143}\text{Pm}$  in saline solution. The particles will have a mass median diameter of about 0.5 micron. These particles should be very soluble in the lung and the  $^{143}\text{Pm}$  should be readily absorbed into the bloodstream.

The main purpose of this experiment is to establish that the distribution of  $^{143}\text{Pm}$  in the body after uptake from the lung is the same (or not the same) as the distribution in the body from intravenous injection of  $^{143}\text{PmCl}_3$ . Additional information on the rate at which  $^{143}\text{Pm}$  leaves the lung and deposits in the liver will also be obtained.

The radiation dose from this experiment will be relatively innocuous. If we assume a case where the  $^{143}\text{Pm}$  remains in the lung and is uniformly distributed, the total dose to infinity to the lung would be about 250 mrad. The probability of this happening is very remote with a NaCl aerosol. If 0.1% of the Pm goes to the pulmonary lymph nodes, as it did in the dog experiments, the dose to the lymph nodes would be only 1.2 mrad. If all the  $^{143}\text{Pm}$  dissolves, goes into the bloodstream, is absorbed by the body and distributes equally between bone and liver, the dose would be 60 mrad to the liver, as it is in the injection experiments.

If this additional experiment is approved, we hope to start it during the first week of December, 1967.

HEP:tec

REPOSITORY PNL

COLLECTION Promethium

BOX No. 2947

FOLDER HSC 66-1

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