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THE CLINICAL CENTER
DIVISION OF RESEARCH GRANTS

Box 2537
Fort Douglas Station
Salt Lake City 13, Utah

July 30, 1956

Dr. Robert A. Kehoe
University of Cincinnati
The Kettering Laboratory
College of Medicine---Eden Avenue
Cincinnati 19, Ohio

Dear Dr. Kehoe:

After a lapse of about three years I have again become very much interested in the potentialities of determining lead-210 in urine. In 1953 you graciously supplied me with some basic information on the absorption and excretion of lead which was very useful.

We now wish to apply this information to develop a test to serve as an index or indirect measure of radon and radon daughter inhalation by uranium miners somewhat as Sulzer and Hursh advocated urinary Po-210 tests. It appears that most of the miners' exposure is due to the decay of radon daughters which have been deposited on dust particles suspended in the air they breathe. These daughters rapidly decay to lead-210 in the respiratory passages. Some of this lead might be brought up in mucus and swallowed, but since each atom originates as a single electrically charged particle, it seems reasonable to suppose that most of it reaches the lymph or vascular system fairly rapidly. From here a certain portion winds up deposited in bone, and other portions are excreted in feces and urine. Judging from your data, and assuming a constant exposure, we would expect a plateau of excretion to be reached in about six months, after which time there would be a constant relationship between radon plus daughters breathed and urinary or fecal excretion of Pb-210. From your data we have calculated (with some assumptions) that the average adult male when receiving a relatively constant respiratory intake of lead for over six months will excrete approximately 60% as much lead per day as he takes in each day, and that about 56% of the excreted lead will appear in the urine.

Are these figures in agreement with your present data, and how reliable should we consider them to be?

Dr. Robert A. Kehoe---7/30/56 -2-

I am very grateful for your continued assistance in this matter.

Sincerely yours,



Victor E. Archer, M.D.
Field Investigator, NCI

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