

OFFICE MEMORANDUM

TO :  
FROM :  
SUBJECT:  
SYMBOL :

DATE: 401057

$\text{Cr}^{51}$  decays by electron capture, a process that involves the emission of no absorbable energy. Following this event, a  $V K_{\alpha}$  X-ray is emitted with an energy of 5 Kev. Ten per cent of the time a 320-Kev gamma ray is emitted. The latter has an effective absorption coefficient of 0.35 in the body, so the energy deposition is 112 Kev per gamma. The total energy per disintegration is, therefore, 16 Kev. With this energy, the dose rate is 0.082 mrad/wk or a total body burden of 1  $\mu\text{c}$ . The proposed dose of 500  $\mu\text{c}$  would, therefore, involve an initial dose rate of 40 mr/wk, which is a factor of 10 below the maximum permissible level.

Because of the short biological and physical half-life of  $\text{Cr}^{51}$  in this experiment (13 days), even this dose rate will not continue for long. The total integrated dose to infinity will be only 100 mr, which is still less than a single week's permissible exposure.

Enclosed is an extra copy of this memo, which should be returned to the Group Office with your approval in the event you concur in this experiment.

BEST COPY AVAILABLE

  
C. C. Lushbaugh, M.D.

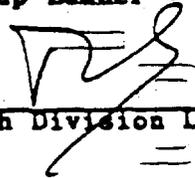
CCL:ES

Enc. 1 Copy

Approved:

  
Group Leader - H-4

Approved:

  
Health Division Leader