GENERAL ELECTRIC COMPANY

727515

PRIVACY ACT MATERIAL REMOVED

RICHLAND, WASHINGTON . . . . . HANFORD ATOMIC PRODUCTS OPERATION

February 9, 1954

AIR MAIL
SPECIAL DELIVERY

Charles L. Dunham, M.D.
Chief, Medical Branch
Division of Biology and Medicine
Atomic Energy Commission
Washington 25, D.C.

Dear Dr. Dunham:

I am enclosing a short summary of the work of R. W. Wager and L. A. Temple in regard to specific agents promoting the excretion of administered plutonium.

Our clinical experience with both zirconium and EDTA has been quite limited because of scarcity of cases. We have administered zirconium citrate to several cases, as an emergency procedure, who were suspected of contamination with plutonium but the dosage was limited by citrate toxicity and was too low for any notable effect. EDTA was administered to one case with the assistance of Harry Foreman. This was the case of with bone deposition of several years' duration and while some increase in DPM was demonstrated during the administration of EDTA, one might conclude that any increase in excretion for any period of time might be of some value. But to be able to reduce the deposited amount significantly in a reasonable time was not demonstrated.

The work of the Biology section here to date might be summarized as indicating that neither the use of zirconium or EDTA is the answer for human treatment but is a basis for future work. The hypocalcemic effect of zirconium citrate therapy can be avoided by the inclusion of calcium salts. The work indicates that early administration of either agent will tend to mobilize plutonium from soft tissue, especially liver, but that bone displacement seems as yet clinically insignificant.

In future incidents here of real or suspected personnel deposition of plutonium we feel now that we would administer both EDTA and zirconium citrate although the discouraging factor is that the per cent of elimination seems to be independent of the body burden of plutonium.

Sincerely yours,

P. A. Fuqua, M. D.
Manager
Industrial Medicine

PAF:gf

PRIVACY ACT MATERIAL REMOVED

REPOSITORY Doc Rec Hold Cent
COLLECTION RG 326
BOX No. 326-78-3 #2
FOLDER MHS Plutonium Cases 1954
MEDICINE, HEALTH & SAFETY 3-9 Plutonium Cases
1191299

## SPECIFIC AGENTS PROMOTING EXCRETION OF ADMINISTERED PLUTONIUM

### I. Comparison of CaEDTA With Zirconium Citrate

R. W. Wager and L. A. Temple

Prompt treatment utilizing "zirconium citrate", 25 mg/kg, in a single i.v. injection removed up to 90 per cent of previously administered plutonium. CaEDTA, although administered by interrupted venoclysis (73 mg/kg twice daily for five days) removed only up to 60 per cent of injected plutonium in dogs.

(in all cases .1 ug/g of body weight)

Mean per cent of total Pu excreted in urine after "zirconium citrate" treatment oue hour after intoxication.

| Treatment | Frequency of Treatment | Dose mg/kg | Number of dogs treated | Per cent of total excreted | Standard deviation |
|---|---|---|---|---|---|
| None | -------- | ---- | 2 | 1.84 | 0 |
| Zr citrate | Single dose | 12.5 | 1 | 12.6 | --- |
| " " | " " | 25.0 | 3 | 66.6 | 17.3 |
| " " | " " | 50.0 | 5 | 70.2 | 20.9 |
| " " | " " | 100.0 | 2 | 82.5 | 39.9 |
| Zr citrate | 1/day for 5 days | 50.0 | 2 | 95.0 | 10.0 |

Per cent of total Pu excreted in urine after CaEDTA treatment one hour after intoxication.

| Treatment | Frequency of treatment | Dose mg/kg | Number of dogs treated | Per cent of total excreted | Standard deviation |
|---|---|---|---|---|---|
| CaEDTA | Single dose | 73.35 | 1 | 1.42 | --- |
| " | " " | 147.0 | 1 | 14.9 | --- |
| " | 1/day for 5 days | 73.35 | 2 | 18.8 | 5.2 |
| " | " " " " | 147.0 | 1 | 43.5 | --- |
| " | " " " " | 36.67 | 2 | 29.4 | 2.0 |
| " | 2/day for 5 days | 73.35 | 1 | 62.8 | --- |

Ca glucomate

1191300