

*Zerwekh*  
OFFICE MEMORANDUM

TO : K. J. Schiager, H-8  
THRU : R. D. Baker, CMB-Division Leader  
FROM : G. R. Waterbury & Al Zerwekh  
SUBJECT: Transuranic Waste & Development Program (A412) Monthly Report for  
December, 1974  
SYMBOL : CMB-1

DATE: December 27, 1974

- 1506 Report*
1. Corrosion Studies. Samples of coated and uncoated mild steel coupons are being taken for electron microprobe examination. These samples have been exposed to 50 and 100% relative humidity for periods up to one year.
  2. Radiolysis Studies. Studies are continuing of the products of radiolysis from 52.5-g quantities of cellulosic wastes contaminated with 62 mg of  $^{238}\text{Pu}$  in closed storage at temperatures of  $55^{\circ}\text{C}$ , the highest anticipated temperature for solid wastes of this type in summer on the ITSA pad\*;  $-13^{\circ}\text{C}$ ; and  $20^{\circ}\text{C}$ . The rates of pressure increase are dependent upon the temperature: 4.93 kPa/day at  $55^{\circ}\text{C}$ , 3.45 kPa/day at  $20^{\circ}\text{C}$ , and 2.59 kPa at  $-13^{\circ}\text{C}$ . Analyses of the gaseous products show that the  $\text{H}_2\text{CO}_2$ ,  $\text{CO}$ , and  $\text{CH}_4$  percentages are similar to those of the other tests at ambient temperature ( $20^{\circ}\text{C}$ ), but in addition at  $55^{\circ}\text{C}$  a new component at about mass 60 is appearing. This component, probably an organic, has not been identified, but indicates additional degradation of the waste matrix at the higher temperature.

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\* Idaho Transuranic Storage Area

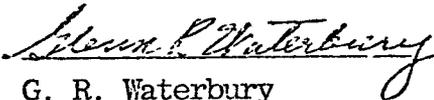


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A rust-colored granular material formed, in addition to the tan-colored powder previously described, from strongly contaminated neoprene drybox material. Analyses of this granular product showed that 42% was volatile or combustible at 1000°C in air and that the ash consisted of Cr, Ni, Fe, Cu, Zn, Pb, Pu, Na, Mg, Al, Si, and Ca. The Cr, Ni, and Fe probably came from the stainless steel container which was darkened where the neoprene under radiolytic attack had reacted with it. The other elements listed are from the contaminated waste matrix.

Gas samples from the instrumented 115-l drums of  $^{238}\text{Pu}$ -contaminated trash, retrievably buried at the LASL disposal site for 41 days, were analyzed. In addition to the components of air, the gas samples contained the typical gas mixture from radiolytic attack of combustibles:  $\text{H}_2$ ,  $\text{CO}_2$ ,  $\text{CO}$ , and  $\text{CH}_4$ . None of the drums had a positive internal pressure. As these are typical waste drums without special gaskets or sealing compounds, it is likely that they will not hold pressure. On the next sampling, samples will be taken both from the drums and from the casks. If the casks also do not show positive pressure, we will then assume that the gas is escaping by diffusion, effusion, or just plain leaking, and the gas from the open space around the heads of the drums in the first cell will be sampled.

A topical report on radiolysis is in preparation and will be published soon.

  
G. R. Waterbury

GRW:tb

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