OFFICE MEMORANDUM

To: Distribution

Date: August 31, 1961

From: Dean D. Meyer, Group Leader, H-1

Subject: DISPOSAL OF BETA-GAMMA CONTAMINATED SOLUTIONS FROM J-11

Symbol: H-1

I have asked Jerry Dummer to organize and carry out the disposal of the 200 liters of contaminated waste solutions which are now stored at DP West.

Jerry will provide a standard operating procedure and will call on members of H-1 to carry out the actual disposal. Please give him the help he requests.

There are many safety problems which must be considered in this operation and I want every one connected with the operation to be sure that all precautions are observed.

Dean D. Meyer

Dean D. Meyer

Distribution:
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LOS ALAMOS SCIENTIFIC LABORATORY
UNIVERSITY OF CALIFORNIA
LOS ALAMOS, NEW MEXICO

# OFFICE MEMORANDUM

TO : Dean D. Meyer, Group Leader, H-1 DATE: August 16, 1961

FROM : Jerome E. Dummer, Health Physicist, H-1

SUBJECT: DISPOSAL OF ON-HAND LIQUID SOLUTIONS OF U-235 AND FISSION PRODUCTS

SYMBOL : H-1-D-13

Currently in storage at the DP West vault are approximately 222 liters of fission products and U-235 solution in 143 separate containers. The total U-235 content is roughly one kilogram; the fission product activity is unknown but probably several curies. The solutions are in general in either glass 1 liter or polyethylene 2 liter bottles, the glass bottles reported (J-11) to contain the bulk of the activity, both uranium and fission products. The actual uranium content of any one bottle is unknown; U-235 batch quantities are known and vary widely - for example, 176 grams in 20 bottles, 32 grams in 1 bottle, 24 grams in 18 bottles. Gamma radiation levels vary from 5 r/hr to 2 mr/hr per batch measured at contact with the stainless steel storage boxes. Chemical composition of any one bottle is unknown but each may contain concentrated HCL and $HNO_3$, some perchloric acid, and organics. Some attempt at venting has been made on the plastic bottles; the glass bottles are in general tightly sealed.

Because of the nature of the materials involved, three ground rules may be established which greatly narrow the field of choice of disposal method.

1. The material should be removed from its present storage area as soon as possible.

2. Bottles should be handled no more than necessary and certainly not opened.

3. The Director's Office strongly opposes tankfarming this material.

In the light of the above, the following proposal is made:

Individual glass bottles, assumed to contain most of the U-235 and fission products, will be suspended in the center of a 55 gallon drum full of concrete, and buried in Area G, Pit #2. Sixty-four drums will be needed. The plastic bottles will be weighted and lowered into 2 foot diameter, 15 foot deep holes in Area C, and covered with wet concrete. The number of bottles per hole will be determined by assuming the batch content of U-235 to be entirely in the 2 liter plastic bottles and limiting each hole to 0.5 kilograms as per discussion with Paxton, N-2. Four holes will be required.

Cost estimates and standard operating procedures are attached as Appendices I and II.

TO: Dean D. Meyer  DATE: August 16, 1961

## APPENDIX I

### Cost Estimate for Liquid Waste Disposal

| Item | Cost |
|---|---|
| 64 each 55-gal. drums w/lids | $ 480 (stock item) |
| 24 yards of concrete | 600 |
| Forming and labor for drums | 1000 |
| 4 each, 2 foot diameter, 15 foot holes | 60 |
| Concrete fill for holes | 50 |
| Lead weights | 160 |
| TOTAL | $ 2350 |

TO: Dean D. Meyer  DATE: August 16, 1961

## APPENDIX II

### Operating Procedures and Preparations for Disposal of Liquid Solutions of U-235 and Fission Products

A. Disposal of one liter glass bottles.

1. Seventy-five 55 gallon drums will be prepared by filling to a depth of 20 inches with ordinary concrete, leaving a ~~6~~ 8" inch diameter hole ~~10~~ 12 inches deep and centrally located (Zia). Drums so prepared will be delivered to a pre-arranged location near Area G, Pit #2 (Zia). Bottles will be surrounded by vermiculite.

2. ADP-SF Will deliver all one liter bottles to this area.

3. A glass one liter bottle of waste will be carefully lowered into the ~~6~~ 8 inch hole using a suitable handling device at least one meter long. A 12 inch diameter sheet metal disk will be dropped over the hole and a gamma reading made at a meter above the bottle for curie estimate. The drum will be filled with concrete from a waiting mixer truck and the lid put in place.

add vermiculite

4. After a suitable wait for the concrete to harden, the drums will be moved to a suitable location in the bottom of Pit No. 2, Area G (Zia).

5. Appropriate records of batch number, estimated curies, and location will be kept.

b. Disposal of 2 liter plastic bottles.

1. Four, 2 foot diameter, 15 foot deep holes will be prepared in Area C in a location such that a concrete mixer truck can have access. A 6 inch layer of concrete will be poured into each hole and allowed to set.

2. ADP-SF will deliver 20 two liter bottles of waste (pre-selected as to estimated U-235 content) to the site.

3. A four pound weight (lead sheet) will be affixed to the bottom of each bottle with tape. An estimate of the curie content will be made with a gamma measurement at one meter. Appropriate records will be maintained as in A-5 above.

4. One foot of wet concrete will be poured into each hole and before hardening 5 weighted bottles will be lowered into each hole by means of a stout cord and imbedded in the concrete with the assistance of a long pole.

remote w/o [illegible] 11-1-62

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5. The holes will be temporarily covered until the concrete has set, at which time one foot of concrete will be added and allowed to set.

6. Steps 2 through 5 will be repeated three times until all bottles are buried. The remainder of each hole will be filled with dirt.

C. Radiological procedures.

1. Monitoring personnel will be present at all times.

2. Water repellant, anti-contamination clothing and face shields will be worn by personnel handling the waste bottles.

3. Dosimeters and film badges will be worn by all personnel.

4. Water truck available on hose

Jerome E. Dummer

JED:phf
cc: C. W. Christenson, H-7
W. R. Kennedy, H-6
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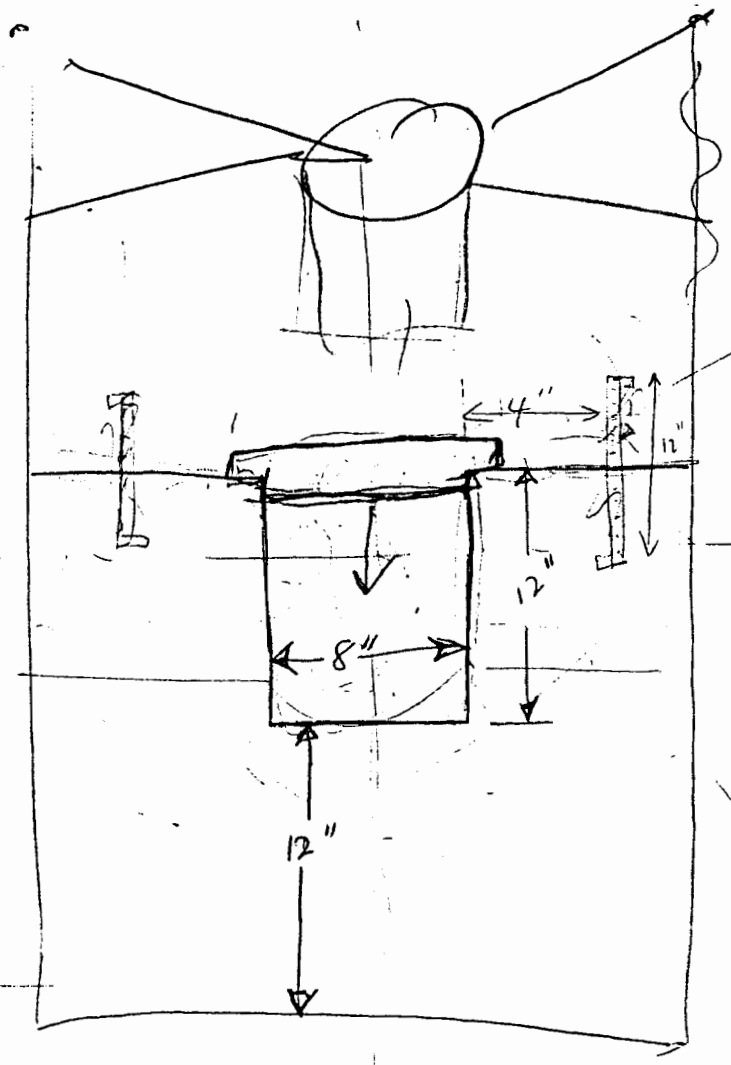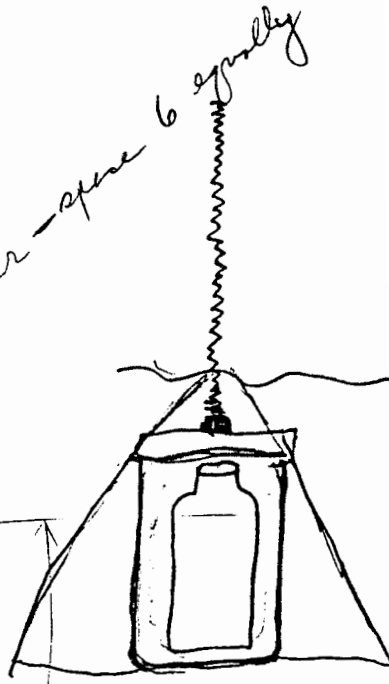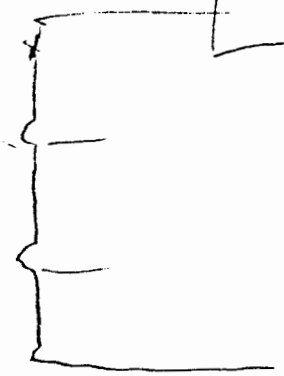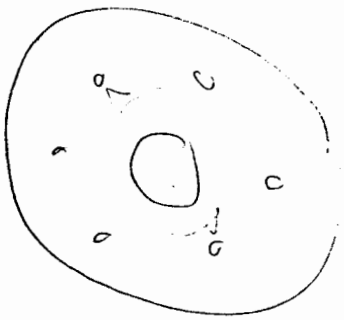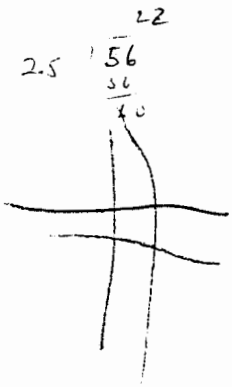
~~Make 6 Each~~
" 65 Each.