

OFFICE MEMORANDUM

Distribution  
DATE: October 30, 1975  
Thru : G. L. Voelz, Division Leader, MS-690  
FROM : T. K. Keenan, H-7 Group Leader (TK)  
SUBJECT : DISPOSAL OF RADIOACTIVE CONTAMINATED OILS AT THE LASL  
SYMBOL : H7-SW-530

Proper treatment and packaging of radioactively contaminated waste oils is necessary in order to assure their safe transport and handling in disposal operations. All LASL operating groups which generate these oils should be familiar with and assure compliance with the following procedures. In addition, all such operating groups should include procedures for accomplishing the proper disposal of contaminated oils in their waste management SOP.

Packaging for disposal or for retrievable storage of radioactive contaminated oils varies depending upon the type and amount of contaminant present. Oils contaminated with transuranic (TRU) radionuclides require packaging for 20-year retrievable storage when the TRU-content exceeds 10 nCi per gram of the total package or the  $^{238}\text{Pu}$  content exceeds 100 nCi/g. All other contaminated oils may be packaged for disposal by burial.

The following are the packaging requirements for these two categories of contaminated oils:

TRU-retrievable oils

All TRU-waste oils require absorption in an approved manner onto an approved sorbent material such that the resulting mass is a non-flowing semi-solid. Recommended proportions and sorbent and means to accomplish the packaging are as described in Appendix A. The absorbed TRU-oil requires packaging into a 2.3 mm (90 mil) high-density polyethylene liner contained in a new 210-2 (57.2 gal) white DOT 17C drum (LASL Stock #LG-1115). The poly liner and liner sealant are available through H-7 Waste Management. All other procedures associated with disposal of the container(s) are as described in the Memorandum "Information on Solid Radioactive Waste Management at LASL" (H8-WM-57) dated May 13, 1974.



All other contaminated waste oils

All waste oils contaminated with Uranium (except  $^{233}\text{U}$ ) fission product, activation product, tritium, and TRU-radionuclides below 10 nCi/g ( $<100 \text{ nCi } ^{238}\text{Pu/g}$ ) require absorption in an approved manner onto an approved sorbent in order to assure their safe transport and handling. Approved sorbents, maximum loadings and mixing method are listed in Appendix A. Under no circumstances may the amount of oil sorbed exceed the capacity of the sorbent.

The container used for disposal must be metal with the lid firmly sealed. Oil packaged in 20- $\frac{1}{2}$  (about 5 gal) or smaller size containers will be picked up by H-7 Waste Management personnel. For larger containers such as the 210- $\frac{1}{2}$  (55 gal) or the 115- $\frac{1}{2}$  (30 gal) drums, the waste generator will be required to provide assistance in the disposal operations or to issue a Work Order to the Zia Company to have the job done. Where these larger drums are used for packaging, the drum should have a minimum 0.13 mm (5 mil) polyethylene liner which is sealed before sealing the drum.

Tritium contaminated waste oils require additional packaging in an asphalt-lined 210- $\frac{1}{2}$  drum for containment of the tritium following disposal. For this reason, tritium waste oils should not be packaged in metal containers larger than the 115- $\frac{1}{2}$  size drum. Contact the Solid Waste Disposal Section of Group H-7 [REDACTED] (7391) regarding the special packaging and handling of all such tritium waste materials.

In all disposals, the container must be identified with a label reading "CAUTION-RADIOACTIVE MATERIAL." In addition, information as to the identity of radioactive contaminants, waste generator, site, building, and date shall be on the container. A properly completed LASL Radioactive Solid Waste Disposal Form (obtainable from the Solid Waste Disposal Section of Group H-7) must accompany each disposal (REF H8-WM-257).

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Distribution: Streamlined Group Leader and Division Leaders

Approved Sorbents, Maximum Oil Loadings,  
and Packaging Methods

1. Preferred Sorbent/Oil Proportions:

The preferred sorbent is ground (60 mesh or finer) exfoliated vermiculite, LASL Stock No. CI 6617/RKT. Oil should be mixed with this vermiculite in the following proportions:

By volume: 0.6 parts oil to 1.0 parts vermiculite  
(The oil will occupy void space only;  
total volume = vol. of vermiculite)

By weight: 3.3 parts oil to 1.0 part vermiculite.

2. Approved Sorbent/Oil Proportions:

Ground coarse vermiculite (Industrial Type No. 1), LASL Stock No. 6617/RKU. Oil should be mixed with this vermiculite as follows:

By volume: 0.5 parts oil to 1.0 parts vermiculite  
(total volume = volume of vermiculite only);

By weight: 2.6 parts oil to 1.0 parts vermiculite.

(The above proportions of oil/vermiculite were determined with oils of the range SAE 10 to 40. Contact H-7 if much heavier oils will be wasted.)

3. Recommended Procedure

- (a) Line the container with a polyethylene as described above.
- (b) Alternately add vermiculite, then oil, using no more than one-fourth of the total volume of each in each layer; attempt to maintain the ratio of oil to vermiculite as given above.
- (c) Lap the poly liner at the top of the container and seal it with tape.
- (d) Place the cover on the container.
- (e) Permit the mixture to stand for 24 hours to allow the oil to permeate the vermiculite voids.
- (f) Call H-7 at 6095 or 5862 for pick up of the waste. Be sure to have the Disposal Form prepared and available for H-7 personnel at the time of pick-up (or delivery).

APPENDIX B  
OFFICE MEMORANDUM

TO : Retrievable TRU-Waste Generators

DATE: January 5, 1976

THRU : T. K. Keenan, H-7 Group Leader TK

FROM : J. L. Warren *J L Warren*

SUBJECT : PACKAGING RETRIEVABLE TRU-WASTES IN WOODEN CRATES

SYMBOL : H7-WM-676

The H-7 Waste Management Group has had Engineering drawings and specifications made for the construction of a 1.2 x 1.2 x 2.4 m (4' x 4' x 8') wooden crate that is acceptable as packaging for retrievable TRU-solid wastes. These drawings are the following:

ENG-E 174 SHEET 1 Flush Panel Plywood Box Assembly

ENG-E 174 SHEET 2 Flush Panel Plywood Box Panel Details

Effective immediately, this will be the only wooden crate design acceptable as a packaging for TRU-retrievable wastes. Any exceptions to this design, including size, must have prior H-7 Group approval. Note, however, that any adequate crate construction may be used for packaging of wastes to be disposed of by burial.

As part of a Work Order to Zia for crate construction, you will need to include a request to the Zia painters to have the required fiber glass coating applied to the crate. The H-7 Waste Management Group has obtained equipment for this work, and Zia painters have been instructed in its operation. Once built to specification, the crate will need to be delivered to TA-54, Area G, for accomplishment of this latter work. Where only one or two crates are required, H-7 Waste Management will supply the required materials. Operating Groups, however, will be required to purchase materials when any larger number of crates are needed. Materials purchase can be arranged through H-7 Waste Management.

Only after a crate has had the fiber glass coating applied will it be delivered to the Operating Group. The Operating Group must arrange for this transport. When delivered and filled with waste the lid should be sealed in place. Arrangements then must be made by the Operating Group for delivery of the filled crate to Area G, TA-54. H-7 Waste Management then will arrange for final sealing of the lid (with fiber glass) and placement into storage. A IASL Radioactive Solid Waste Disposal Form must accompany each filled crate to Area G.

Please direct any questions concerning crate design construction, fiber glass coating, etc. to H-7 Waste Management personnel at [REDACTED] 739/.