68A1096 #138 MHS — Contamination & Decontamination

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STANDARD FORM NO. 64

Office Memorandum · UNITED STATES GOVERNMENT

TO : S. R. Sapirie, Manager
Oak Ridge Operations Office

DATE: AUG 28 1956

7894

FROM : J. D. Anderson, Manager
Schenectady Operations

SUBJECT: WASTE DISPOSAL - SOO CONTRACTOR

SYMBOL: TAD:WET

Combustion Engineering, Incorporated, Windsor, Connecticut under Contract AT(30-3)-198 with this office is accumulating waste associated with its fuel fabrication and critical facility.

It is desired that arrangements be made to ship these radioactive solid waste materials to Oak Ridge for disposal.

The rate of waste collection will increase with the operation of new buildings until the plant is complete at the end of this year. It will then consist of approximately 8,000 lbs. or 1100 cubic feet of material per year. Half of this weight will be silica vapor blast material containing enriched uranium from the fuel fabrication operation. The remainder will be rags, floor sweepings, and general waste material and enriched uranium contaminated.

Plans are to make monthly shipments using 4x4x4 foot boxes. Your assistance with respect to the procedure to be followed in this matter will be appreciated.

MEDICINE, HEALTH & SAFETY 3-4

AUG 31 1956

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August 1, 1956

Herman M. Roth, Director, Research and
Development Division

H. J. McAlduff, Biology Branch, Research and
Development Division

PRESENT STATUS OF ORNL WASTE DISPOSAL PROGRAM

SYMBOL: ORB:HJM

In a discussion with E. J. Struxness on July 30, 1957, the present
status of the waste disposal program and possible future scope of
work was outlined. This may be compared with the outline presented
in the letter of June 29, 1956, C. E. Center to S. R. Sapirie.

1. Pilot Pit #1 - Completed, report due week of July 30, 1956 -
results were, a cake was formed and it was
found that ~5 kw of heat are required to
produce the cake rather than ~12 kw calculated
on the basis of Laboratory hot pot experiments.

Recent information provided by Chemical Technology strongly indicates
that Hope wastes containing very large amounts of $Al(NO_3)_2$ do not
lend themselves to self-sintering since at least half of the heat
input is utilized in the disassociation of the $Al(NO_2)_3$. Purex wastes
on, the other hand, stand a good chance of self-sintering.

2.a. Pilot Pit IA - Will be a cold run of Pilot Pit II to check
equipment and make certain data being obtained
is what is needed for future work. Proper
mixing of the ceramic mixture and more precise
data on heat transfer coefficients are needed.
Aluminum nitrate wastes will again be used to
correlate laboratory hot pot data with that
obtained from the large hot pots. Air cleaning
problems will also be evaluated thoroughly.

MEDICINE, HEALTH & SAFETY

2.b. During this time the Ceramics Group will be asked to establish
ceramic mixtures for a Purex Waste Sinter, and also to continue
investigating other Hope waste $(Al(NO_3)_2)$ clay-flux mixtures.

3. Pilot Pit II - Will be a duplication of Pilot Pit IA except with
the addition of ~10 curies of activity as a tracer
in order to pursue certain phases of the work that
are meaningless unless some radioactivity is present.
Efforts will also be made to use Purex type wastes.

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4. Re-run Laboratory scale hot pot experiments using synthetic Purex waste mixtures. There would be a total of 5 hot pots of varying diameters for each Purex Mixture. These laboratory experiments would be set up for tracer studies and are necessary to establish far more precise parameters than were obtained in the original work. Estimate on 5 hot pots is ~ $25,000 with space and facilities possibly available in the Waste Disposal Research Bldg. 3504. If space not available, a concrete pad with roof and siding may be built adjacent to Bldg. 3504.

4. a. Determine the nature and extent of permanency in the sinter coke. Fixation, solubility, quality of coke. All lab work - some equipment.

5. Run Laboratory scale self-sintering pot with Al $(NO_3)_2$ wastes using 30 gallons of waste containing ~200,000 curies of activity. A hot cell and equipment for this would be needed which are available at Arco, Livermore or Dugway.

$Al(NO_3)_2$ wastes are considered for this run even with their known disadvantages because the cost of modification of chemical processing facilities is estimated at $25,000 as compared to $100,000 to get 30 gallons of Purex wastes at the same level. 1 MTR fuel element cooled for only 15 days could provide this activity. If a container for transport of the 30 gallons is required it will cost an estimated $15,000. Total costs of this project are considered to be in the order of $50-75,000.

6. Finish seepage-pit study during FY 1957.

6.a. Site selection - if they are thinking of pits of any design-where in the ground does one put them.

6.b. Other methods of ground disposal.

H. J. McAlduff

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