TO : Dean Meyer, Group Leader H-1 1/28/59

FROM : John Enders, H-1

SUBJECT: ANNUAL REPORT FOR 1958 ON DISPOSAL OF CONTAMINATED SOLID WASTE

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1310 Report

Forward:

Attached to this report are data which compares the volumes and costs for disposal of contaminated waste materials for 1958 by quarters. A comparision is also made in summary form for 1956, 1957 and 1958.

The source of the information used was taken from LA Notebook #9593; 9293 and 8453. These notebooks are used to log information as to the nature, date, location and volume of waste material placed in the disposal pits. Other data on operational costs were obtained from Dale Coburn, ENG-4, and Don Rice, Zia Tech Janitoral Supervisor. SP-2 supplied cost figures on some of the packaging material used to contain contaminated trash. All cost figures quoted are close approximations only and should be considered as such if any conclusions from this report are to be made.

Packaging Trash:

At the CMR-Bldg. and at Sigma Bldg. loose office and change room trash is now being packaged in plastic bags. Seven six bushel capacity trash dollies have been purchased for this operation. 5 mil (thickness) 40" X 24" plastic bags are used as liners for the trash dollies. When these bags are filled they are sealed with masking tape and placed into the Dempster Dumpster containers. It is estimated that one plastic bag will hold more trash than four or five 13" X 13" X 24" cardboard boxes. The time spent by Zia janitors in preparing the bags, filling and sealing them is about one-half that needed to do the same operation using cardboard boxes. It has been observed that these bags are more easily emptied at the disposal pit from the Dempster Dumpster containers than are the cardboard boxes which have a tendency to hang up inside the containers. At the disposal pit the bags also withstand the effects of weathering much better than the cardboard boxes.

Since this packaging system is in use only at the CMR-Bldg. and Sigma and because it was started during the latter part of 1958 it would not effect the cost figure quoted for packaging trash to any appreciable extent. Therefore, the figures used are based on the time-study made by Pascual Chavez, H-1 and Don Rice, Zia Tech Janitorial Supervisor. If, in 1959, more of these trash dollies can be put into use the cost figure on packaging trash would be revised to a lower figure.

Prior to putting the trash dollies into use, the plastic bags used in the labs for holding contaminated trash were 2 mil thick. The bags were removed, sealed and placed into cardboard boxes. After the trash dolly system was started, these bags are also being placed into the trash dolly and because of this it was felt that an additional safety factor would be needed so 5 mil thick bags were issued as liners for the trash cans in the laboratories.

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Beta-Gamma Active Waste Disposal:

At infrequent intervals, CMB-DO-GS group at Ten Site has beta-gamma active waste material that must be buried. In the past the material was taken to the Disposal Pit where a hole was dug into the ground and the material thrown into the hole and covered with dirt. In February 1958, an order was submitted to have a dozen holes drilled measuring 2 feet in diameter and about 10 feet deep. The holes were located between Pit #4 and 5, Area C. These holes are now being used for disposal of the gamma active waste from Ten Site. Space is available at this location for at least 30 to 50 more holes for future disposal.

The technique used by CMB-DO-GS for handling this waste is briefly as follows: (1) The material to be thrown away is evaporated to dryness in a hot cell at Ten Site and then placed inside a Dural container. This container is then sealed and placed inside a steel container which is in turn sealed. (2) The steel container is then removed from the hot cell and placed into a lead transfer case which is thick enough to handle up to 40 curies of material. (3) The transfer case is positioned on the back of a $1\frac{1}{2}$ ton truck and fastened securely with chain. (4) The truck is then driven to the disposal area and positioned above one of the holes. (5) A tripod with a long boom arm attached is used to transfer the material from the transport case to the hole. The steel container is pulled up out of the case by means of a string to which is attached a rope that runs through a pulley on end of the boom. When the container is over the hole, the string is cut and a few shovels of dirt are shoveled on top of the container so as to reduce the gamma radiation at ground level to less than 1 mr/hr.

The deliveries are logged into the dump run log notebook (LA#9593). The information listed gives the date of delivery, hole number, amount of material and its identity. The gamma reading at the top of the hole in mr/hr is also recorded. A survey was made of the south side of Pit #5 which is about 8 feet from the line of holes. No detectable gamma activity was noticed.

Transportation Of Trash To the Disposal Pit:

Early in 1958 a comparative study was made of the use of Dempster Dumpster boxes versus the hauling by truck. The comparison indicated that the use of Dempster Dumpster containers for hauling routine packaged trash was a more econimical means of delivery of trash to the dump than the use of a truck. As a result of this study it was decided to purchase Dempster Dumpster boxes for use at the Sites where there was a need for them. At some sites the pick up is done on a "call in" basis. A listing was prepared showing the locations for the boxes at the various sites and the estimated frequency that the boxes would have to be emptied. The frequency study was based on records over the space of a year on the number of cardboard cartons picked up at each of the sites where contaminated trash originated.

In July of 1958, most of the Dempster Dumpster boxes had been received, painted on the interior and given a site designation in black lettering on a yellow band around the tops of the boxes. The access doors were also painted with the wording: "For Radioactive Trash Only". The boxes located at DP Laundry and HRL Building were provided with padlocks so as

to prevent unauthorized entry into the boxes.

The Zia Refuse Dept. is called when a box is full and arranges to have it picked up and emptied. Thus far this system has worked fairly well. A charge for this work is made on a mileage basis and is in fact a much more economical means of transporting the trash to the dump. An H-1 Monitor still unlocks the gate at the disposal pit and logs each delivery into the dump run log book.

The 55 gallon drums from TA-45 and Bldg. 35, DPW waste treatment plants are still being picked up by truck. On the day these drums are picked up other non-routine contaminated material is also picked up. An H-1 Monitor escorts the truck to the disposal pit and logs each delivery into the dump run log book.

A request has been submitted to acquire two skip-type Dempster Dumpster containers for the purpose of hauling the 55 gallon drums to the dump. To date these boxes have not been delivered. It is not known at present just why there has been such a delay in delivery of these boxes. It is reasonably certain that a changeover to Dempster Dumpster type of hauling of these drums would be a more economical means of transporting them to the dump.

Disposal Pits:

Pit #6, Area C, was used for receiving routine contaminated trash in 1958. In fact, the last routine delivery was made during the last week in December. After the exposed trash was covered the pit is to be used to receive contaminated concrete and acid sewer lines which are to be removed from TA-1. Other non-routine material will also be placed in this pit until the filled area comes to within three feet of the ground surface.

Pit #1, Area G, started to receive routine contaminated trash on January 2, 1959. This pit had been used for disposal of non-routine material. The remains of M Bldg., ML Bldg., H Bldg., portions of Q Bldg. and J-2 Bldg. have been put in this pit. A fire trench in the center of the pit was used for burning wooden portions of the above mentioned buildings. A large number of dryboxes from the General Tank Area between DP East and DP West sites were hauled to this pit and buried along the west wall.

Due to the rapid rate that Pit #1 was being filled a request was made to have pit #2 dug in Area G. The digging operation was started late in December of 1958 and should be completed by February, 1959.

Documentation Of Trash Disposal:

A paper entitled: "Solid Radioactive Waste Disposal At Los Alamos" was prepared and presented at the annual meeting of the Rocky Mountain Section of the A.I.H.A. An invitation has been made to present the paper at the annual meeting of the A.I.H.A. in Chicago in April, 1959. The paper, with photographs and a comparative data sheet, presents the problem of waste packaging, handling transportation and ultimate disposal in burial pits at Los Alamos.

EXPLANATION OF VOLUME AND COST DATA

Boxes:

A record is kept of the number of boxes taken to the dump. The data sheet records the quarter totals and the 1958 total. The boxes cost 19¢ each. 25,401 x .19 = $4,826.19.

The volume of one box equals 0.087 cubic yards so 25,401 x 0.087= 2,210 cubic yards. Very slight differences in quarter and annual totals may occur due to figures being rounded off.

Barrels:

The cost per barrel is $2.60 and the volume per barrel is 0.368. During 1958 a total of 908 barrels were taken to the dump. This represents a volume of (908 x 0.368) 334 cubic yards, and a cost of)908 x $2.60) $2, 360.80.

2 Mil Plastic Bags:

These bags were used as liners for the trash cans at the CMR-Bldg. During the latter part of 1958 a changeover to 5 mil bags was started. An estimated total of 9,500 were used in 1958. At 0.054¢ each, 9,500 bags would cost $513.00.

5 Mil Plastic Bags:

These 13" x 13" x 24" bags are now being used as liners for trash cans at the CMR-Bldg. The cost per bag is $0.14. In 1958, 2,716 bags were used so the total cost would be (2,716 x 0.014) $380.24. .037 cubic yards per bag x 2,716 = 100 cubic yards.

Large 5 Mil Plastic Bags:

These are used as liners for trash dollies at the CMR-Bldg. and Sigma Bldg. During 1958, 896 were sent to the dump. At 51¢ per bag, this would amount to (896 x .51) $456.96 for 1958.

The estimated volume per bag is 0.46 cubic yards. 896 bags x 0.46 = 412 cubic yards for 1958.

2 Inch Masking Tape:

An estimated 10 feet of tape is used to seal cardboard boxes and 2 feet for sealing plastic bags. Additional tape was used in wrapping other material. An estimated 2,000 rolls were used in 1958. At 65¢ per roll this amounts to 1,300.00.

Pickup Of 55 Gallon Drums:

This charge includes wages for one driver and one laborer plus overhead and maintenance charges on the one ton truck used for this job.

Dempster Dumpster Charge:

This charge is made by the Zia Refuse Dept. for emptying the Dempster Dumpster boxes used for holding contaminated trash. The charge is made on a mileage basis. The cost per mile includes wages, overhead and maintenance.

Covering Exposed Trash:

Wages, maintenance and overhead is included in this charge. The total time needed to complete the job determines fairly closely how much the charge for the work will be.

Escort Vehicle (H-1):

The 1/2 ton pickup (#0325) is used to escort the 1 ton truck when it is used to pick up the 55 gallon drums from TA-45 and Bldg. 35,DP West. It is also used by the monitor to drive to the disposal pit when the gate is to be unlocked.

H-1 Monitor Charge:

The charge is based on an estimated 20 hours per week being needed to perform the nexessary escort duties and opening the gate at the pit to admit Dempster Dumpster trucks. This amounts to 230 man hours per quarter. Wages and an arbitrary overhead figure, total $4.35 per hour. 230 man hours x $4.35 = $1,000.00.

Fencing Around Pit #6:

The original cost ($3,866.92) is being written off at the rate of 1/10 per year. This amounts to $97.00 per quarter. The balance remaining at the end of 1958 equals $2,705.00.

Protective Clothing:

This charge is an arbitrary figure based on the number of times protective clothing is required to either dispose of material or cover exposed material in the Pit.

Dozer Rental:

This charge is for the use of the D-7 Caterpillar tractor which, because it is contaminated, is kept at the disposal area. Recently, the Zia Company has reduced their charge rate on this tractor.

During the fourth quarter the tractor was used at the gravel pit. Permission to use the tractor was based on the requirement that the operator wear protective clothing.

In 1959, it is hoped that H-1 Decontamination section can decontaminate this tractor to a level that will permit its use at other locations without requiring the operator to wear protective clothing. If this can be done, then the charge for this tractor would be based on the actual time it is used for covering exposed trash at the dump.

1958 Packaging Material:	1st.Qtr.	2nd.Qtr.	3rd.Qtr.	4th.Qtr.	1958 Total
# Of boxes	6860	6785	6400	5356	25401
# of Drums	159	262	232	255	908
# of 2 mil plastic bags	4000	2500	1500	1500	9500
# of 5 mil plastic bags (small)	555	474	900	787	2716
# of 5 mil plastic bags (large)	-	-	75	821	896
# rolls of 2" masking Tape	500	400	700	400	2000
Volume Of Trash:					
(in cu.yds.) Boxes	597	590	557	466	2210
Drums	58	96	85	94	334
Large 5 mil plastic bags	-	-	35	378	412
Small " " " "	20	17	33	29	99
Property, etc.	35	115	110	144	404
Total:	710	818	820	1111	3459
Tabulation Of Costs:					
Boxes	$1303.40	$1289.15	$1216.00	$1017.64	$4826.19
Drums	413.40	681.20	603.20	663.00	2360.80
2 mil plastic bags	216.00	135.00	81.00	81.00	513.00
5 " " " (Small)	77.70	66.36	126.00	110.18	380.24
" " " " (large)	-	-	38.25	418.71	456.96
Trash pick up (truck)	3589.00	3698.48	506.81	640.61	8434.90
" " " (Dempster Dumpster)	167.00	153.59	783.82	937.94	2042.35
Cover exposed trash at dump	497.00	478.82	530.00	838.75	2344.57
H-1 escort vehicle	113.00	122.45	129.25	37.45	402.15
H-1 monitor	1993.00	1993.00	1000.00	1000.00	5986.00
Fencing, Pit #6, Area C	97.00	97.00	97.00	97.00	388.00
Protective clothing	50.00	50.00	25.00	50.00	175.00
D-7 Bulldozer rental	753.00	646.09	514.43	136.43	2049.95
Janitor charge	7535.00	7535.00	7535.00	7535.00	30140.00
Masking tape	325.00	260.00	455.00	260.00	1300.00
Total:	$17129.50	$17206.14	$13640.76	$13823.71	$61800.11
Cost per cubic yard:	$24.00	$21.00	$17.00	$12.00	$18.00

COMPARISON OF COSTS AND VOLUME BY YEAR

	1958	1957	1956
Total volume in cubic yards:	3459	3164	2537
Total trash disposal cost:	$61800.11	75548.51	71745.27
Cost per cubic yard:	$18.00	$24.00	$28.00