

3323

A. Tammaro, Manager, Chicago

February 4, 1949

R. W. Cook, Deputy Manager, Oak Ridge

CHICAGO WASTE SHIPMENTS

REFER TO
 SYMBOL: SMDT:AMH

RHTG # 91,861
 BOX # 969 #154

Another incident has occurred in the routine shipment of Argonne Redox liquid waste to Oak Ridge in the trucks of the Oak Ridge Shipment Security Section. In a memorandum to your office dated September 18, 1948, same subject, it was pointed out that the leakages at that time were attributable to mechanical failure rather than to human failure. The most recent incident can only be attributed to negligence in loading drums onto the truck. It is hoped that the report of the incident that follows will serve to prevent any future recurrences of such a serious nature in the safe shipment of radioactive waste solutions to Oak Ridge for disposal.

Several months ago, efforts were started by the Oak Ridge Office to obtain greater efficiency in the movement and handling of Chicago waste solutions inasmuch as all monetary and labor costs were borne by the Oak Ridge Office and the Oak Ridge National Laboratory. One of the moves made was to design a semi-trailer truck for the movement of the shipment. This truck was expected to replace two or three of the smaller trucks then in use. The truck bed was constructed of all welded steel to form a leak proof pan with sides of 1 1/2 feet in height. Two drainage outlets were installed in the bottom and capped with pipe plugs to allow for decontamination. The truck was equipped with six lead shielded pot holding devices and with angle iron cleats in the floor to hold six 55-gallon drums which were to be strapped to the cleats with metal tape banding. Special facilities were constructed at Oak Ridge National Laboratory to handle the unloading of the trailer truck. The design of the truck received the approval of ORNL after visual inspection and of ANL after verbal description. The truck left Oak Ridge for the first shipment on January 25, 1949.

The shipment arrived in Oak Ridge on the evening of January 27, 1949, at which time it was discovered that a 55-gallon drum containing $Al(NO_2)_3$ solution had released its entire content into the bed of the truck resulting in a liquid depth of several inches in the bed. The truck load consisted of one 400 lb. pot, one 2500 lb. pot, two laptops carriers, and five bags of laundry.

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
1st Review - Date: <u>4/27/97</u>	Determination [Circle Number(s)]
Authority: <input type="checkbox"/> ADC <input checked="" type="checkbox"/> ADD	1. Classification Retained
Name: <u>m. h...</u>	2. Classification Changed To:
2nd Review - Date: <u>2/28/97</u>	3. Contains No DOE Classified Information
Authority: <u>ADD</u>	4. Coordinate With: <u>SECRET</u>
Name: <u>John Downing</u>	5. Classification Cancelled
	6. Classified Information Bracketed
	7. Other (Specify): <u>R. W. Cook</u>

~~CAUTION~~

This document contains information affecting the National Defense of the United States. Its transmission or the disclosure of its contents in any manner to an unauthorized person is prohibited and may result in severe criminal penalties under applicable Federal laws.

~~SECRET~~

February 4, 1948

A. Tammara

H. W. Cook

CHICAGO WASTE SHIPMENTS

REFER TO
SYMBOL: HMBT:KMM

The last inspection of the load was made about two hours out of Oak Ridge, at which time no leak was evident. Contamination survey of the outside surfaces of the truck indicated that none of the solution had left the truck while in transit and it is, therefore, assumed that no contaminated spots were deposited on the highway.

The truck was parked overnight in the shipment security enclosure which is located within the city. The next morning enroute to the Oak Ridge National Laboratory, the truck was unavoidably jacked, setting up a wave motion in the 55 gallons of liquid in the bed and thus caused several gallons of solution to wash over the end and onto the road in front of the Municipal Market. The spill on the road was widely dispersed and gave Ct readings one inch from the road of between 5 and 10 mr/hr . While the Oak Ridge police blocked off the road, the fire department washed down the section of road for several hours with fire hoses, removing and diluting the activity with the run-off going into the storm sewer. The residual activity on the road when dry was down to approximately 1 mr/hr at all points and declared safe for resumption of traffic.

Upon arrival of the truck at ORNL, radiation surveys were conducted and the radiation field at the outside surfaces of the truck was approximately 5 to 10 mr/hr which is normal operating condition and at one inch from the surface of liquid in the bed, the radiation measured 100 mr/hr . The five bags of laundry were lying on the floor of the bed and completely soaked with the solution. The bags of laundry gave readings of approximately 100 mr/hr and were disposed of by burial to prevent high contamination of our laundry system. The solution in the bed was jettied out into the waste tanks along with several water washdowns prior to the normal unloading operation.

Examination of the loading of the two 55-gallon drums showed that metal tags circled one of the drums and was then fastened to both sides of the trailer in one horizontal plane. The second drum was strapped to the first drum which was about a foot away. Due to this

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PKF # TO

SYMBOL: RMBT, KMH

method of strapping, the first drum could have motion in a vertical direction and in a direction lengthwise to the truck, the second drum could have motion in all three directions. Markings on the floor indicated the drums were inside of each of their four cleats in the floor prior to departure but upon arrival in Oak Ridge both drums had bounced out of this position and onto the top of the cleats where they remained. The action between the cleats and the bottoms of the drums was sufficient to puncture a hole in the second drum and nearly so the same to the first drum.

The cleats on the inside of the angle have welded loops provided to fasten the drums down with metal banding. In a telephone call to Mr. Kendall of Oak Ridge shipment security prior to departure of the shipment from Chicago, Mr. E. A. Allen, Chief, Chicago Traffic Branch, mentioned the fact, along with other conversation, that their metal tape was too large for the loops in the cleats but did not elaborate further. The fact that the only available metal tape in Chicago did not fit in the provided cleat loops would have seemed to be ample reason for not having made the shipment of the two drums to which no urgency is attached. Oak Ridge would have gladly modified the cleat loops to take the larger tape if they had been so informed and picked up the drums on another trip.

Inasmuch as the Oak Ridge National Laboratory takes care of all handling of the Chicago Waste Shipments, the Oak Ridge Office only occasionally has the opportunity to inspect these shipments. In addition to the punctured drum, it was found that the 4500 lb. pot was placed in the floor ring and no attempt was made to fasten it down with the lugs provided. In case of a sudden stop or an accident this heavy pot almost certainly would cause great damage. One of the drums was equipped with a pressure relief valve which both Chicago and Oak Ridge agreed last September should be removed from all drums because they were unnecessary and hazardous. The two wooden isotope carrier cases were also disposed of by burial because they cannot be decontaminated. It has been suggested to Chicago several times in the past that these cases be returned by Railway Express in the same manner as off-project users.

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- 4 -

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R. W. Cook

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REFER TO

SYMBOL: RMBT;LMB

In view of this incident Mr. Kendall has requested Mr. Allen not to ship any additional drums until provisions have been made to provide a holding device which will be fool-proof for holding the drums securely. When this has been accomplished, the cooperation of all members of your staff and the Argonne National Laboratory is urgently requested in order to prevent similar difficulties in the future.

R. W. Cook

CC: C. M. Rucker (trip.)
R. G. Kendall
Albert H. Holland, Jr., M. D.

Raythorn:cc

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9/3/49