12-11286-01

ADCO SERVICES, INC.

P.O. BOX 35 • TINLEY PARK, ILLINOIS 60477 • 312/429-1660

September 19, 1983

ATTACHMENT 6

U.S. Nuclear Regulatory Commission
Inspections and Enforcement
Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

Re: License #12-11286-01
Overexposure Report

Gentlemen:

This is a report of a radiation exposure to one of our employees in excess of limits in 10CFR 20.101.

1. Extent of exposure:

Whole body radiation exposure to Individual A (identified in Attachment 1) was 1280 millirems, whole body, for the second quarter of 1983. This exposure was for the period 7/1/83 to 8/31/83 and was measured by a film badge.

2. Levels of radiation and concentration of radioactive materials involved:

Six (6) Cesium-137 source rods containing approximately 300 mCi Cs-137 each. Measured exposure at surface of drum was 2000 mr/hr.

3. Cause of exposure:

ADCO employee (Individual A) picked up six (6) Cesium-137 source rods from client. An employee of the client removed the source rods from the lead shields and placed them in ADCO drums. Individual A completed the paperwork at a distance of about 100 yards. He then measured the exposure rate at surface and three (3) feet from the drums to be 2000 mr/hr and 200 mr/hr, respectively. Drums were then placed on the ADCO truck and Individual A drove truck to Ennis, TX where NSSI personnel placed sources in lead shields. The cause of the overexposure is that Individual A did not insist the rod sources be left in the lead pigs.

4. Corrective steps to prevent recurrence:

Individual A has been removed from duty and termination is pending. We will continue to instruct all employees in radiation safety, ALARA, and time-distance-shielding.

Sincerely,

James P. Bell
President

ATTACHMENT 1

Individual A:

Social Security No.:

Date of Birth:

Radiation Exposure:

7/1/83 to 8/31/83 = 1280 millirems
1983 year to date = 1350 millirems
Permanent total = 1690 millirems

ATTACHMENT 7

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

LABORATORY ANALYSIS REPORT

****

DATE: 02/14/85 15:04:39
TITLE: ADCO 85-045-050/MALLINCKRODT 85-067-074
INSTRUMENT: CANBERRA ALPHA/BETA SYSTEM
SAMPLES FROM: GIBBONS
SAMPLE TYPE: SMEAR
COLLECTED BY: GIBBONS
COLLECTED ON: 1/29 AND 2/1/85
ERRORS ARE AT THE 95% (2 SIGMA) CONFIDENCE LEVEL

****

	LIVE TIME(MIN)	ACTIVITY (DPM)	COUNTS ALPHA	COUNTS BETA	EFFICIENCY+/-ERROR		%ATT
BACKGROUND :	9.99999		1	9			
ALPHA SOURCE:	9.80587	8740	23296	2461	.300423	.0097	0
BETA SOURCE:	9.97294	25787	3247	97752	.39269	.0120	0

	ALPHA	BETA
LC: CRITICAL LEVEL (DPM)	.776978	1.78325
LD: DETECTION LIMIT (DPM)	2.46136	4.2607
LOSS DUE TO CROSSTALK	.0955452	.0320631

SAMPLE=85-045 DESCRIPTION:
POS. = 4 LIVE TIME(MIN)= 9.99998 VOLUME= 1 - SAMPLE
3.|< 1.4 |< 6.44E-07 * 53.| 11.6 4.1| 5.21E-06 1.0E-(

SAMPLE=85-046 DESCRIPTION:
POS. = 5 LIVE TIME(MIN)= 9.99988 VOLUME= 1 - SAMPLE
14.| 3.3 2.8| 1.48E-06 1.3E-06* 132.| 32.1 6.2| 1.45E-05 2.8E-(

SAMPLE=85-047 DESCRIPTION:
POS. = 6 LIVE TIME(MIN)= 9.99987 VOLUME= 1 - SAMPLE
16.|< 5.7 |< 2.56E-06 * 204.| 51.1 7.6| 2.30E-05 3.4E-(

SAMPLE=85-048 DESCRIPTION:
POS. = 7 LIVE TIME(MIN)= 10 VOLUME= 1 - SAMPLE
0.|< 0.9 |< 3.93E-07 * 11.|< 2.5 |< 1.11E-06

SAMPLE=85-049 DESCRIPTION:
POS. = 8 LIVE TIME(MIN)= 9.99998 VOLUME= 1 - SAMPLE
2.|< 1.4 |< 6.27E-07 * 5.|< 1.9 |< 8.34E-07

SAMPLE=85-050 DESCRIPTION:
POS. = 9 LIVE TIME(MIN)= 9.99998 VOLUME= 1 - SAMPLE
2.|< 1.4 |< 6.43E-07 * 9.|< 1.9 |< 8.34E-07

SAMPLE=85-067 DESCRIPTION:
POS. = 10 LIVE TIME(MIN)= 9.99998 VOLUME= 1 - SAMPLE
2.|< 1.2 |< 5.19E-07 * 32.| 6.0 3.3| 2.72E-06 1.5E-(

SAMPLE=85-068 DESCRIPTION:
POS. = 11 LIVE TIME(MIN)= 9.99998 VOLUME= 1 - SAMPLE
2.|< 1.4 |< 6.34E-07 * 69.| 15.8 4.6| 7.12E-06 2.1E-(

SAMPLE=85-069 DESCRIPTION:
POS. = 12 LIVE TIME(MIN)= 9.99993 VOLUME= 1 - SAMPLE
9.|< 2.8 |< 1.28E-06 * 178.| 44.4 7.1| 2.00E-05 3.2E-

SAMPLE=85-070 DESCRIPTION:
POS. = 13 LIVE TIME(MIN)= 9.99995 VOLUME= 1 - SAMPLE
6.|< 4.5 |< 2.01E-06 * 250.| 63.5 8.3| 2.86E-05 3.8E-

SAMPLE=85-071 DESCRIPTION:
POS. = 14 LIVE TIME(MIN)= 9.99998 VOLUME= 1 - SAMPLE
3.|< 1.3 |< 5.73E-07 * 66.| 15.0 4.5| 6.75E-06 2.0E-

SAMPLE=85-072 DESCRIPTION:
POS. = 15 LIVE TIME(MIN)= 9.99998 VOLUME= 1 - SAMPLE
3.|< 1.6 |< 6.99E-07 * 79.| 18.4 4.9| 8.30E-06 2.2E-

SAMPLE=85-073 DESCRIPTION:
POS. = 16 LIVE TIME(MIN)= 9.99998 VOLUME= 1 - SAMPLE
2.|< 1.4 |< 6.16E-07 * 14.|< 3.4 |< 1.52E-06

SAMPLE=85-074 DESCRIPTION:
POS. = 17 LIVE TIME(MIN)= 9.99998 VOLUME= 1 - SAMPLE
2.|< 1.4 |< 6.16E-07 * 14.|< 3.4 |< 1.52E-06

ACCOUNT NO	SUBDIV CODE
4255	

PROCESS NO	DATE	REPORT		
N8584	12285	11485	6	2

JDW

Landauer

R. S. Landauer, Jr. & Co.
Division of Tech/Ops, Inc. Tech/Ops
2 Science Road, Glenwood, Illinois 60425-1586
(312) 755-7000

Accredited by the
National Bureau of Standards
through NVLAP

RADIATION DOSIMETRY REPORT

1 - PR 3025 - 32195

PARTICIPANT ID NUMBER	NAME	SOCIAL SECURITY NUMBER	NOTE (SEE REVERSE SIDE)	DOSIMETER TYPE	USE	RADIATION QUALITY	EXPOSURE TO BADGE (MILLIREMS) FOR PERIOD(S) INDICATED BELOW		CUMULATIVE TOTALS (MILLIREMS)						ADJUSTMENTS	SINCE PART OF PERMISSIBLE ACCUMULATED DOSE (MILLIREMS)	SEX	BIRTH DATE			NUMBER BADGE REPORTS		INCEPTION DATE OF PRESENT MFG TYPE	
							DEEP	SHALLOW	CALENDAR QUARTER DEEP	CALENDAR QUARTER SHALLOW	YEAR TO DATE DEEP	YEAR TO DATE SHALLOW	PERMANENT DEEP	PERMANENT SHALLOW				MO	DA	YR	TO DATE	QTR	MO	YR
	FOR EXPOSURE PERIOD 12/01/84 TO 12/31/84								FOURTH		1984													
[redacted]				G	1	P	50	50	350	350	470	470	470	470								6	3	784
				G	1	P	30	30	100	100	240	240	240	240								6	3	784
				G	1	P	40	40	110	110	250	250	250	250								6	3	784
				G	1	P	50	50	150	150	300	300	300	300								6	3	784
			DD	G	1	P	280	280	430	430	610	620	610	620								6	3	784
				G	1	P	20	20	170	170	310	310	310	310								6	3	784
				G	1	P	40	40	210	210	360	360	360	360								6	3	784
				G	1		M	M	30	30	50	50	50	50								6	3	784
				T	1	P	20	20	40	40	60	60	60	60								6	3	784
				T	1	P	20	20	40	40	90	90	90	90								6	3	784
				G	1		M	M	M	M	M	M	M	M			M	9	24	66	2	2	1	84

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

7 OTHER EXTREMITY

8 9 IN HIGH ENERGY RADIATION FIELDS ONLY LOW ENERGY EXPOSURE IS POSSIBLE MAY INDICATE THAT THE FILM PACKET

A IMPORTANT: SEE REVERSE SIDE FOR ADDITIONAL EXPLANATIONS

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

February 8, 1985

MEMORANDUM FOR: Leo B. Higginbotham, Chief
Low-Level Waste and Uranium Recovery Projects Branch, NMSS

FROM: Leonard I. Cobb, Chief
Safeguards and Materials Programs Branch, IE

SUBJECT: REQUEST FOR VIEWS ON A SPECIFIC APPLICATION OF WASTE FORM AND STABILITY REQUIREMENTS OF 10 CFR 61.56(b)

This refers to the provisions of §§10 CFR 20.311 and 61.56(b). During a recent inspection of a licensed radioactive waste broker (ADCO Services, Tinley Park, IL) by Region III, accompanied by A. W. Grella of my staff, a question arose regarding §61.56(b) requirements and their intended objective of ensuring stability of the waste such that "... the waste does not structurally degrade ..... etc...."

Specifically, this licensee has been packaging and transporting certain Class B/C wastes to the Washington-Licensed low level burial site (U.S. Ecology) in the form of millicurie quantities, nominally several hundred mCi of encapsulated Cs-137 and Co-60 sealed sources contained typically within density gauges. Other licensees are routinely transferring such gauges to the licensee for disposal. In some cases, the gauges are encased in cement within steel drums, or alternatively, the sources are removed by the licensee from the gauges, and then aggregated within a shielded container, which is in turn encased in cement within a steel drum.

The attached statement has been developed by the licensee and is used by them in support of the §61.56(b) requirements. You will note that it makes claim to fulfillment of the subject requirements on the basis that §61.56(b) requirements are met or exceeded due to the fact that the sealed sources meet the DOT "special form" requirements. The licensee stated that to date, no objections to the above have been taken by either U.S. Ecology or the State of Washington.

It appears to us that perhaps a very strong case could be made, intuitively, supporting the licensees contention that either of the above-described packaging configurations might in fact meet all of the requirements of both 61.56(a) and (b). We feel however, that the brief statement on the attached is not quite sufficient. We believe that the statement should be supported by a written analysis which specifically includes the licensee's rationale for concluding that the waste form will generally maintain its physical dimensions and its form ".... under the expected disposal conditions such as weight of overburden and compaction equipment, the presence of moisture and microbial activity, and internal factors such as radiation effects and chemical changes."

Region III has currently left the above matter as an open inspection item. We are currently planning to recommend that they leave it as such until the next inspection, but advise the licensee in their report of the inspection that they perform and document a supporting evaluation as described above.

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I would appreciate hearing from you as soon as possible as to whether you concur with the above, as well as any specific comments or recommendations.

Leonard I. Cobb, Chief
Safeguards and Materials Programs Branch, IE

Enclosure
As stated

cc: W. Axelson, RIII
D. Gibbons, RIII
D. Wiedeman, RIII
A. Grella, IE
T. Johnson, NMSS
K. Schneider, SP

ADCO SERVICES, INC.

P.O. BOX 35 • TINLEY PARK, ILLINOIS 60477 • 312/429-1660

10,861

6/2/84
Shipment #84-035

TO WHOM IT MAY CONCERN:

The waste that is classified B and C on this shipment meets and exceeds the requirements for stability set forth in 10CFR61.56(b) using 10CFR173.465 and 10CFR173.469 as documented results.

G. Wrzesinski
Operations Manager

ADCO SERVICES, INC.

P.O. BOX 35 • TINLEY PARK, ILLINOIS 60477 • 312/429-1660

April 1, 1985

Mr. D. G. Wiedeman, Chief
Nuclear Materials Safety
US Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Dear Mr. Wiedeman:

In response to your letter dated March 1, 1985 regarding inspection of our facility on January 12-19 and February 4, 1985, we offer the following statement of explanation and/or corrective action concerning items 1 and 2 of the "Notice of Violation":

ITEM 1: We have notified the Tinley Park Fire Department of this violation and have reiterated that our sprinkler system must be inspected and tested at least once every six (6) months. A copy of our letter to them is enclosed.

ITEM 2: Although we admit that there may have been isolated cases of drums classed as Special Form or Normal Form in 7A drums and containing in excess of 350 lbs. of waste being shipped in 1983 and 1984, we are at a loss to understand why we are being cited for shipping over 350 lbs. in drums labelled as "Radioactive-LSA." It is our understanding that 49CFR 173.425 (b) specifically states that material labelled LSA and transported "Exclusive Use" is excepted from specification packaging, marking and labelling. To correct the deficiency of the 350 lb. weight limit on our 7A drums, we will either have our drums retested by a testing lab or we will test and certify them ourselves. As this decision has not been made as yet due to the wide variety of containers involved, we ask that we be given more time to develop this procedure further. In the meantime, we will not ship Normal Form or Special Form material in weights in excess of 350 lbs. We do expect to have this new testing procedure in place shortly and feel confident that there will be no recurrance of this violation.

Item 2(b): This violation appears to have been the result of a computer entry error. The drum was labelled correctly and the pick-up technician listed it correctly on our RSR, but when the information was entered into inventory, it was listed as a YELLOW II label instead of a YELLOW III label. It is also the general consensus of opinion that a correction to our RSR to U. S. Ecology was sent. We have asked them to send us a copy of this paperwork and although they have asked their home office to comply with this request, we haven't, as yet received this information. We now have a new computer entry clerk and feel strongly that mistakes of this type will not recur. We are also checking all paperwork going to the site much more closely than before.

In answer to your request that we submit a stronger written analysis for our rationale for concluding that Class B/C wastes that we ship for disposal will maintain their form, please be informed of the following:

> As wastes of this type are now encased in concrete inside of a steel drum and become virtually a solid block of concrete, it is inconceivable to imagine these containers being affected to a greater degree from "weight of overburden and compaction equipment, the presence of moisture and microbial activity and internal factors such as radiation effects and chemical changes," than other less solid package configurations placed in the same burial trench.

We feel that waste packaged in this manner represents one of the strongest package forms available and are well within the limits of 10CFR61.56(b)(1). The structural stability has been assured, both by the waste form itself and by the fact that it has been processed (solidified) to a stable form by placing the waste in a disposal container that will definitely provide stability after disposal.

If you feel that our rationale in this case is insufficient, we will go ahead and have tests performed to substantiate our claims.

We hope this letter resolves questions that arose during our inspection and trust you will find our corrective actions sufficient. If you should require any further information, however, please do not hesitate to contact us.

Sincerely,

James P. Bell
President

JPB/se

ADCO SERVICES, INC.

P.O. BOX 35 • TINLEY PARK, ILLINOIS 60477 • 312/429-1660

April 1, 1985

Mr. Ken Dunn
Tinley Park Fire Department
Village of Tinley Park
Tinley Park, Illinois 60477

RE: Testing Frequency of Sprinkler System

Dear Ken:

On January 28, 1985, we had an inspection of our facility by the U.S. Nuclear Regulatory Commission. We received a "Notice of Violation" because according to our records, the sprinkler system in our facility was not inspected and tested by your personnel every six (6) months as required by our NRC license.

We show that tests were performed September 15, 1983, May 15, 1984, June 21, 1984 and January 25, 1985. Will you please check your records and verify that these were the correct dates of inspection of the sprinkler system and advise me if you show any additional inspections were done on it.

Also, please note that we must have this inspection done at least once every six (6) months, so that violations of this type will not occur again. Thanks.

Sincerely,

James P. Bell
President

JPB/se

✓ cc: US NRC
Region III
Glen Ellyn, IL

License file

MAR 1 - 1985

ADCO Services, Incorporated
ATTN: J. P. Bell
President
Post Office Box 35
Tinley Park, IL 60477

License No. 12-11286-01

Gentlemen:

This refers to the routine safety inspection conducted by Mr. D. R. Gibbons of this office and Mr. A. W. Grella from the NRC Headquarters office on January 28-29 and February 4, 1985, of activities authorized by NRC Byproduct Material License No. 12-11286-01 and to the discussion of our findings with Mr. Robert Bassett at the conclusion of the inspection.

The inspection was an examination of activities conducted under your license as they relate to radiation safety and to compliance with the Commission's rules and regulations and with the conditions of your license. The inspection consisted of a selective examination of procedures and representative records, observations, independent measurements, and interviews with personnel.

In addition to the above areas, the inspectors examined actions described in your letters dated November 14, 1983 and September 10, 1984, regarding apparent items of noncompliance found during special inspections conducted by the State of Washington, Department of Social and Health Services, on September 15, 1983 and June 6, 1984, respectfully, regarding the shipments of radioactive waste shipped from your facility to the U.S. Ecology, Inc., Richland, Washington disposal site. We have no further questions regarding these matters.

The inspectors also examined your procedures for assuring compliance with 10 CFR 20.311 and 61.56(a) (Waste Form and Stability Requirements). A question arose regarding 61.56(b) and your method of classifying certain low level waste. We feel that your brief statement is not sufficient to support your contention that the wastes meet or exceed the requirements for stability set forth in 10 CFR 61.56(b). Consequently, in your reply please submit a written analysis to include your rationale for concluding that the waste form will generally maintain its physical dimensions and its form "...under the expected disposal conditions such as weight of overburden and compaction equipment, the presence of moisture and microbial activity, and internal factors such as radiation effects and chemical changes."

8503260592

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1

During this inspection, certain of your activities appeared to be in noncompliance with NRC requirements, as described in the enclosed Appendix. With respect to item three (3), the inspection showed that action had been taken to correct the identified noncompliance and to prevent recurrence. Consequently, no reply to this item of noncompliance is required and we have no further questions regarding this matter at this time. Regarding the remaining items, a written response is required.

The responses directed by this letter (and the accompanying Notice) are not subject to the clearance procedures of the Office of Management and Budget as required by the Paperwork Reduction Act of 1980, PL 96-511.

Sincerely,

D. G. Wiedeman, Chief
Nuclear Materials Safety
Section 1

Enclosure:
1. Appendix, Notice of Violation
2. Memorandum Dated February 8, 1985 from Leonard I. Cobb for Leo B. Higginbotham

cc w/encls:
DMB/Document Control Desk (RIDS)

RIII
Gibbons/ld
02/27/85

RIII
Wiedeman
3/1/85

Appendix

NOTICE OF VIOLATION

ADCO Services, Incorporated License No. 12-11286-01

As a result of the inspection conducted on January 28-29 and February 4, 1985, and in accordance with the General Policy and Procedure for NRC Enforcement Action, (10 CFR Part 2, Appendix C), the following violations were identified:

1. License Condition No. 20 requires that the licensee perform tests at six month intervals on the sprinkler system in the storage facility, including tests of the alarm and pressure gauge to assure satisfactory operation.

   Contrary to the above, it was learned from statements of licensee representatives and a review of records that this requirement was not met. Specifically, the required tests were performed on September 15, 1983, May 15, 1984, June 21, 1984 and January 25, 1985, periods exceeding the six month intervals.

   This is a Severity Level IV violation (Supplement VI).

2. 10 CFR 71.5(a) requires that no licensee shall transport any licensed material outside of the confines of it's plant or other place of use unless the licensee complies with the applicable regulations of the Department of Transportation in 49 CFR Parts 170-189.

   a. 49 CFR 173.415(a) requires that each shipper of a specification 7A package maintain on file for at least one year after the latest shipment, and shall provide the DOT on request, a complete documentation of tests and an engineering evaluation or comparative data showing that the construction methods, packaging design, and materials of construction comply with that specification. 49 CFR 173.465(a) requires that the proposed packaging with the proposed contents must be capable of withstanding the prescribed tests.

      Contrary to this requirement, you transported Radioactive Material, Special Form and Radioactive Material, L.S.A in drums that had not been properly tested or evaluated. Specifically, the tests and evaluations of your drums completed on October 15, 1976 were performed on drums with a maximum weight of 350 pounds, and on numerous occasions in 1983 and 1984 you transported drums with maximum weights that exceeded the proposed weight of 350 pounds.

      This is a Severity Level IV violation (Supplement V).

App 2b

b. 49 CFR 172.403(a) (b) (c) and (f) requires that each package containing radioactive material must be labeled with two Yellow III labels when the radiation levels exceed 50 mrem/hr at the surface of the package, or the transport index exceeds 1.0. 49 CFR 173.401(bb) defines the transport index as the number expressing the maximum radiation level in millirem per hour at one meter (3.3 feet) from the external surface of the package.

Contrary to this requirement, you transported a package with Yellow II labels affixed to the package when Yellow III labels were required. Specifically, your shipping papers dated June 27, 1984 regarding Lot No. 44858 indicated that the radiation levels at the surface (90 mrem/hr) and the transport index (3.5) assigned to Box No. 3 of that shipment exceeded the limits specified for Yellow II labels.

This is a Severity Level IV violation (Supplement V).

3. 10 CFR 20.101(a) limits the whole body exposure of an individual in a restricted area to one and one quarter (1.25) rems per calendar quarter, except as provided by 10 CFR 20.101(b). Paragraph (b) allows a whole body exposure of three (3.0) rems per calendar quarter provided certain specified conditions are met.

Contrary to this requirement, an individual working in your restricted area received a whole body radiation dose of 1280 millirems during the third calendar quarter of 1983 and the conditions of paragraph (b) were not met.

This is a Severity Level IV violation (Supplement IV).

With respect to item three, the inspection showed that action had been taken to correct the identified item of noncompliance and to prevent recurrence. Consequently, no reply to this item of noncompliance is required and we have no further questions regarding this matter. With respect to items one and two, pursuant to the provisions of 10 CFR 2.201, you are required to submit to this office within thirty days of the date of this Notice a written statement or explanation in reply, including for each item of noncompliance: (1) corrective action taken and the results achieved; (2) corrective action to be taken to avoid further noncompliance; and (3) the date when full compliance will be achieved. Consideration may be given to extending your response time for good cause shown.

MAR 1 - 1985

Dated

D. G. Wiedeman, Chief
Nuclear Materials Safety
Section 1