

August 19, 1982

In reply, please  
refer to LAC-8507

Mr. Robert L. Gregor, Chief  
Facilities Radiation Protection Section  
U. S. Nuclear Regulatory Commission - Region III  
799 Roosevelt Road  
Glen Ellyn, Illinois 60137

SUBJECT: DAIRYLAND POWER COOPERATIVE  
LA CROSSE BOILING WATER REACTOR (LACBWR)  
PROVISIONAL OPERATING LICENSE DPR-45  
APPARENT VIOLATION OF 49 CFR 173.393(J)(3) BY DPC  
RADIOACTIVE WASTE SHIPMENT, RADIOACTIVE LSA, N.O.S.  
No. 0782-033-A TO CHEM NUCLEAR SYSTEMS, INC.,  
BARNWELL WASTE MANAGEMENT FACILITY ON JULY 30, 1982

- REFERENCES: (1) Letter, Shealy to Zibung, South Carolina  
Department of Health and Environmental Control  
to DPC, dated August 4, 1982 (attached).  
(2) Letter, Shafer to Shealy, LAC-8475, DPC to  
S.C. D.H.E.C., dated August 10, 1982 (attached).  
(3) Letter, Shafer to Shealy, LAC-8504, DPC to S.C.  
D.H.E.C., dated August 16, 1982 (attached).  
(4) Letter, Still to Zibung, Chem Nuclear Systems,  
Inc. to DPC, dated August 10, 1982 (attached).

Dear Mr. Gregor:

In a letter (Reference 1), the State of South Carolina Department of Health and Environmental Control indicated that the radiation levels at six feet (2m) from the surface of the van containing 150 DOT 17H drums of compacted trash (Radioactive Waste Shipment No. 0782-033A) sent from LACBWR to Barnwell Waste Management Facility arriving on July 30, 1982 were in excess of the limits of 49 CFR 173.393(J)(3). According to reference 1, the receipt radiation survey revealed one location at six feet (2m) from the van's surface measuring 12mR/hr.

As indicated on our Radioactive Shipment Record 0782-033-A which accompanied this shipment and in our letter (Reference 2) the departure maximum radiation measurement at six feet (2m) from the surface of the van was 9.5 mR/hr as measured with a <sup>137</sup>Cs calibrated Eberline RO-3 Air Ionization Dose Rate Meter.

Mr. Robert L. Gregor, Chief  
U. S. Nuclear Regulatory Commission, III

August 19, 1982  
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A Chem Nuclear System's, Inc. Health Physics Technician, upon discovery of a six foot reading of 12.0 mR/hr, made additional readings at the same location, using independent instruments. These independent measurements are listed on Reference 4. As you can discern from the data, three Eberline PIC 6A dose rate instruments, each vendor calibrated to,  $^{137}\text{Cs}$  were used to measure the van's six foot gamma dose rates. Two of the PIC 6A's read 9 mR/hr, and one read 12 mR/hr. Additionally, a  $^{137}\text{Cs}$  calibrated Eberline R02A Air Ionization Dose Rate Meter was used to measure the six foot reading, and indicated 9 mR/hr.

A third type of instrument, a  $^{137}\text{Cs}$  calibrated Eberline E-520 GM dose rate instrument was used to measure the six foot reading and indicated 15 mR/hr. According to the Eberline I. C. Equipment Manual to E-520GM has an energy compensated GM tube, however, its energy response curve indicates a relative response ratio of approximately 0.85 at 600 KeV, indicating it may over respond to Co-60's gamma energies if calibrated to  $^{137}\text{Cs}$ 's gamma energy.

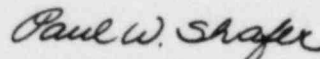
Since two PIC 6A and one R02A six foot measurements indicated 9 mR/hr, it appears that the one PIC 6A which read 12 mR/hr (Serial No. 1369) may have been out of calibration. If this was not the case, then the three instruments that read 9 mR/hr would have been out of calibration. The probability of the later case would seem to be much less.

According to Mr. Shealy, S.C.D.H.E.C., the South Carolina technician used his own instrument to get a reading of 12 mR/hr. In my letter (Reference 3) we asked South Carolina to send us more information as to the type of instrument and calibration data for the instrument used by South Carolina to measure the 12 mR/hr at six foot from the van's surface.

As we receive additional information we will provide you with copies. If you have any additional questions or comments, please call.

Sincerely yours,

DAIRYLAND POWER COOPERATIVE



Paul W. Shafer  
Radiation Protection Engineer

PWS:eme

cc: Mr. Ron Paul/Mr. Charles Peck, Region III  
Resident Inspector  
Mr. J. D. Parkyn  
Mr. B. R. Zibung

*Handwritten signature*

REC'D AUG - 9 1982

# South Carolina Department of Health and Environmental Control

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2600 Bull Street  
Columbia, S.C. 29201

August 4, 1982

CERTIFIED MAIL

Mr. Bruce R. Zibung  
Health & Safety Supervisor  
Dairyland Power Cooperative  
La Crosse Boiling Water Reactor  
P.O. Box 275  
Genoa, Wisconsin 54632

Dear Mr. Zibung:

An investigation conducted on August 2, 1982 by the South Carolina Department of Health and Environmental Control revealed that a shipment of radioactive waste received at the Chem-Nuclear Systems, Inc. burial facility in Barnwell, South Carolina was in noncompliance with applicable state and federal regulations.

The violations are identified as follows:

Radioactive Waste Shipment No. 0782-033-A, classified as Radioactive, LSA, N.O.S., described as solid metal oxide on compacted trash, and contained in 150 55-gallon drums was found to have:

1. Radiation levels at 2 meters from the surface of the van were in excess of limits authorized pursuant to 49 CFR 173.393(J)(3). (12mR/hr)
2. Drums in the rear of the van were lying on their sides to serve as bracing contrary to the requirements of Paragraph 7.2.1.3.1 of the Disposal Site's Acceptance Criteria.

The above items constitutes separate violations of Section 1.2 of Department Regulation No. 61-83.

Please be informed that pursuant to Section 13.7-180, S.C. Code of Laws, 1976 (as amended) and Section 7.1 of the Department's Regulations for the Transportation of Radioactive Waste Into or Within South Carolina, your South Carolina Radioactive Waste Transport Permit No. 0049-48-82-X has been suspended, effective August 3, 1982, for a period of not less

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*Zibung/Nelson*  
*C27d*  
*w-1*

Mr. Bruce R. Zibung  
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August 4, 1982

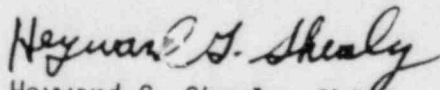
CERTIFIED MAIL

than thirty (30) days; and that you are hereby assessed a civil penalty of Two Thousand Dollars (\$2,000.00); and further that any radioactive waste generated by you are hereby prohibited from being transported into or delivered to this State until such time as you demonstrate to the satisfaction of the Department that adequate measures have been implemented to ensure compliance with all applicable provisions of federal and state law.

If you do not wish to appeal this decision, payment of the civil penalty shall be submitted no later than August 27, 1982, and made payable to the "S.C. Department of Health and Environmental Control." Information concerning corrective measures and procedural modifications shall be submitted accordingly.

You are entitled to a full administrative hearing upon request. However, should you wish to discuss this matter with us in an informal setting, representatives of this Bureau will be made available to meet with you at a mutually convenient time. Should you desire such a conference or wish to request a formal administrative hearing, please contact Mr. Virgil R. Autry of the Bureau of Radiological Health, (803) 758-5548.

Very truly yours,

  
Heyward G. Shealy, Chief  
Bureau of Radiological Health

HGS:kn

cc: Robert S. Jackson, M.D.  
Commissioner

Ms. Barbara Hamilton  
DHEC Legal Counsel

Mr. David M. Reid, Exec. Asst.  
Office of the Governor

Mr. Al Gibson, USNRC  
Region II

Mr. James E. Purvis  
Chem-Nuclear Systems, Inc.



August 10, 1982

In reply, please  
refer to LAC-8475

Mr. Heyward G. Shealy, Chief  
Bureau of Radiological Health  
South Carolina Department of Health  
and Environmental Control  
2600 Bull Street  
Columbia, South Carolina 29201

SUBJECT: Apparent violations of State of South Carolina D.H.E.C. Regulation No. 61-83, 49 CFR 173.393(J)(3) by Dairyland Power Cooperative's Radioactive LSA, N.O.S. Shipment No. 0782-033-A.

REFERENCE: (1) Letter, Shealy to Zibung, State of South Carolina Department of Health and Environmental Control to Dairyland Power Cooperative, dated August 4, 1982.

Dear Sir:

We received your letter (Reference 1) on August 9, 1982, which listed two apparent violations of Section 1.2 of the State of South Carolina Department of Health and Environmental Control Regulation No. 61-83. In addition, the first apparent violation would be a violation of 49 CFR 173.393(J)(3), in that "radiation levels at 2 meters (six feet) from the vertical planes projected by the vehicles outer lateral surface shall not exceed 10mR/hr."

On July 28, 1982, one hundred fifty (150) DOT Spec 17H 55 gallon drums containing dry active waste (compacted trash) were double-tier loaded onto a Tri-State Motor Transit closed semi-trailer. Radioactive Material Shipping Records, including van survey records, Chem-Nuclear Systems, Inc. waste management records, PNC forms and driver's instructions, in compliance with Dairyland Power Cooperative's Health and Safety Procedure HSP-4.1, (attached) and 49 CFR accompanied the shipment. These records were completed and signed by our Health and Safety Supervisor, B. R. Zibung, who is one of two authorized Radioactive Waste Managers. Radiation surveys at contact, at six feet (= 2m) from the vertical planes of the surface of the van, and inside the cab were made in accordance with procedure and 49 CFR, after the van was loaded, just prior to shipment. These radiation surveys were made by a Health Physics Technician who used a <sup>137</sup>Cs calibrated Eberline RO-3 Air Ionization Dose Rate Meter. This dose rate meter had been last calibrated to our 10 Curie <sup>137</sup>Cs source on 3/16/82. This dose rate meter had been source checked satisfactorily to a <sup>90</sup>Sr check source on 8/1/82.

The maximum contact reading on the side of the van had been determined to be 39 mR/hr. The maximum reading at 6 feet from the side of the van along the vertical plane had been determined to be 9.5 mR/hr. The maximum reading inside the cab "sleeper area" had been determined to be 1.2 mR/hr.

August 10, 1982  
LAC-8475

In addition, I, an authorized Radioactive Waste Manager, checked the loaded van's radiation levels using a  $^{137}\text{Cs}$  calibrated Eberline RO-3 Air Ionization Dose Rate Instrument. This survey indicated that the maximum in cab "sleeper area" reading was 1.75 mR/hr, and the maximum van six foot reading was 8.5 mR/hr with an average reading of approximately 7 mR/hr along the sides. Given the inherent 15% error associated with the Eberline RO-3A instruments due to energy response and variations in atmospheric pressure, temperature and humidity, the 8.5 mR/hr could have been as low as 7.2 mR/hr or as high as 9.8 mR/hr. Mr. Zibung was present when I conducted this survey check.

On Friday, July 30, 1982, in the late afternoon, our shipment arrived at the Barnwell Waste Management Site. Mr. Jimmy Steele of CNSI's staff contacted Mr. Zibung and told him that one radiation measurement (part of receipt survey), at 2 meters from the side of the loaded van was 12.0 mR/hr. On Monday, August 2, 1982, Mr. Jimmy Steele of CNSI's staff called Mr. Zibung to tell him that 4 independent 2 meter surveys with 4 independent radiation dose rate meters were made, and that the resultant measured dose rates were 9, 9, 12, and 15 mR/hr. Mr. Steele indicated that the average reading would be reported as 10 mR/hr; the shipment as received would be considered to be in compliance with applicable state and federal regulations, except for the drums found laying on their sides.

Eight (8) DOT Spec. 17H drums containing radioactive waste were placed on their sides on the second tier of drums to serve as bracing to prevent drum movement during transit. This practice is not in violation of 49 CFR but is in violation of Paragraph 7.2.1.3.1 of Barnwell Waste Management's Disposal Site Acceptance Criteria.

We realize now that we should not have placed drums on their sides to serve as bracing after the shipment had departed. The van was inspected to determine if wood planks could have been attached to vertical supports on the inside of the van, and determined that there were no van interior vertical supports to attach temporary wooden bracing.

The doors of the van were locked using a padlock.

In the future, for shipments of DOT 17H drums containing dry active waste (compacted trash), we will not use drums laying on their sides as bracing material, but will place adequate wooden braces attached to the van's floor to retain the drums in position, or use pallets with steel bands to hold the drums in place during shipment, which should also facilitate handling at the Disposal Site. Additionally, the dose rates in the future will be determined using two (2) separate surveys with 2 different instruments. The most conservative value will be used. The instruments will be source-checked within 24 hours prior to the shipment and following the release of the shipment.

In conclusion, this letter serves as a further explanation of circumstances surrounding Radioactive Waste Shipment No. 0782-033-A, and does not constitute a request for a full administrative hearing nor an informal meeting.

Mr. Heyward G. Shealy, Chief  
South Carolina Department of Health

August 10, 1982  
LAC-8475

We would appreciate any additional comments that you could provide to us at this time, and are hopeful that we have demonstrated that we have adequate measures to ensure compliance with all applicable provisions of the regulations.

We sincerely wish to cooperate with the South Carolina Department of Health and Environmental Control in this matter.

Sincerely yours,

DAIRYLAND POWER COOPERATIVE

*Paul W. Shafer*  
P. W. Shafer  
Radiation Protection  
Engineer/Manager

PWS:eme

cc: Mr. J. W. Taylor  
Mr. J. D. Parkyn  
Mr. B. R. Zibung

AUGUST 11, 1982

TO: FILE W-1

FROM: H & S SUPERVISOR

SUBJECT: DIALOG CONCERNING EVENTS LEADING TO 8/3/82  
SUSPENSION OF TRANSPORT PERMIT AND CIVIL PENALTY

The allocation for 1125 cubic feet of burial volume had been arranged some 3 months earlier by P. W. Shafer. I told him then that approx. 150 drums was a full load for a truck. We required a 3-month lead time due to the CNSI's volume allocation plan. I planned to dispose of the drummed waste toward the end of July because we had radioactive shipments to Vallecitos and to Hatch Nuclear Power Station earlier that month. The paperwork accompanying the radioactive shipments is time consuming in its preparation and having the drummed waste prepared at the same time as the cut-up control rod and the tools from G. E. would have been difficult.

The truck was due to arrive at LACBWR at 0800, July 26. We were to have it in Barnwell on July 29. I received a telephone call from Bill Guthrow, in transportation at Barnwell CNSI, on July 26, saying that the truck would be there on Tuesday because of some delay on Tri-State's part. We received a call on Tuesday saying that the truck was going to be there on Wednesday. It was then too late to order a van from Barnwell, S.C.

The truck arrived on Wednesday, July 28, and we immediately set about loading the truck. By about 0930, the truck had about 77 drums on. At approx. 1030, the truck was 9 drums from being full. A routine radiation survey in the cab revealed 3-4 mR/hr in the cab. The loading process was stopped and the front end of the truck was rearranged to lower the dose rate in the cab. We managed to lower the dose rate to approx. 1½ mR/hr.

The trailer was loaded with 150 drums at approx. 1300 and I asked about bracing for the load. M. Holmes suggested that we lay 2 rows of drums down so that the drums would be solidly packed side to side and fore and aft. With two rows of drums on their sides, the top layer of drums was solidly in place. They were up against the front wall of the trailer and, because the drums on their sides took more room front to back, the top row of drums was up against the door in the rear. There was no way, in my thinking, that the load could have shifted because it was solidly packed. Sardines don't shift in transit, do they?



MEMO, H&S SUPERVISOR TO FILE  
August 11, 1982

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The final radiation survey was made outside of the P.A. gate in a low background area. The highest reading we found was  $9\frac{1}{2}$  mR/hr. I realized that the dose rate was near the limit, but I was confident that we were within the limit when the shipment left LACBWR.

The truck that we received had no provision for tie-downs or lock bars that I could see. Nelson, Holmes and the others that loaded the truck would verify that. We laid the drums down in order to prevent the load from shifting.

The truck arrived at Barnwell on the 30th, approx. 1700, and was immediately surveyed. I received a telephone call from Jimmy Steele, an HP Tech. in CNSI's compliance dept., and he told me that we had approx. 12 mR/hr at one point on the truck.

On Monday, August 2, I received a phone call from Steele again saying that the State of South Carolina asked CNSI to remeasure the dose rate on the truck and they made 4 separate measurements with 4 different instruments. Two instruments indicated 9 mR/hr, one 12 mR/hr and one 15 mR/hr. The 15 mR/hr was determined with a G-M tube type instrument and the two measurements of 9 mR/hr were with ion chamber type instruments.

I was advised by J. Steele that the state inspector at the site recommended that the dose rate be recorded as 10 mR/hr. I was relieved to hear that. I received a call from J. Steele again on the 5th of August (or the 6th) saying that the 10 mR/hr average might not hold up after the state office in Columbia reviewed it.

On 8/9/82, I was told by M. Branch that there was a civil penalty forthcoming as well as a suspension of burial privileges in South Carolina, because of the 12 mR/hr dose rate and because drums were laid on their sides in violation of site disposal criteria.

I called J. Steele late in the afternoon of August 9 to ask him if I could get copies of their survey results, plus their calibration records for the instruments. He said he would have to ask his supervisor and would get back to me.

If I was going to fight this, I would ask them to produce the instrument they used to cite us with, plus past calibration, plus a current calibration. My instruments were within their calibration period.

BRZ:dh

cc - P. Shafer  
J. Parkyn  
Files H-1, T-5  
Reading File

August 16, 1982

In reply, please  
refer to LAC-8504

Mr. Heyward G. Shealy, Chief  
Bureau of Radiological Health  
South Carolina Department of Health  
and Environmental Control  
2600 Bull Street  
Columbia, S. C. 29201

SUBJECT: APPARENT VIOLATIONS OF S.C. REGULATION NO. 61-83 AND  
49CFR173.393(J) (3) BY DPC SHIPMENT NO. 0782-022-A TO  
BARNWELL

Reference: 1) Letter, Shealy to Zibung, dated  
August 4, 1982.  
2) Letter, LAC-8475, Shafer to Shealy,  
dated August 10, 1982.

Dear Sir:

In my letter (Reference 2), I indicated that I was sending you a copy of our procedure HSP 04.1, "Radioactive Material Shipments". This procedure was inadvertently not sent to you with the August 10, 1982 transmittal. It is enclosed with this letter, along with procedure HSP 04.6.

The U. S. Nuclear Regulatory Commission Region III Inspection and Enforcement inspector indicated that "the measured gamma dose rate reading of 12 mR/hr at six feet (2m) from the surface of the van" (Reference 1) is a "potential item of non-compliance". Because of this, it would be to our best interest to obtain survey data in order to complete the necessary response to the NRC which includes a detailed summary of events and future corrective actions. We have copies of our shipment departure radiation surveys, which were sent with the vehicle as part of the shipment records in compliance with 49CFR. We do not have copies of the receipt radiation surveys performed by Chem-Nuclear Systems, Inc., Health Physics Technicians, nor receipt radiation surveys performed by State of South Carolina Radiological Health personnel. Would it be possible for you to send me copies of receipt survey maps for shipment No. 0782-033-A?

These survey maps overlaid with our survey map would assist us in ascertaining whether or not some of the 17H drums shifted during transit, thus increasing gamma dose rates. This would help us determine what would constitute adequate bracing for 17H drums for future D.A.W. shipments.

Mr. Heyward G. Shealy, Shief  
Bureau of Radiological Health

LAC-8504  
August 16, 1982

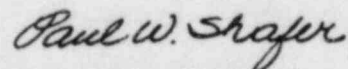
Also, do your technicians calibrate their air ionization dose rate meters to  $^{137}\text{Cs}$  or  $^{60}\text{Co}$ , or to a combination of the two radionuclides. It may be desirable for us to calibrate our air ionization dose rate meters to the same effective gamma energies that you do.

I would appreciate any information you could provide.

Once again, Dairyland Power Cooperative wishes to cooperate with South Carolina Department of Health and Environmental Control in this matter.

Very truly yours,

DAIRYLAND POWER COOPERATIVE



Paul W. Shafer  
Radiation Protection Engineer/Manager

PWS:af

cc: Mr. Jackson B. Harrison  
Chem-Nuclear Systems, Inc.  
1 Greystone West Building  
240 Stoneridge Dr., Suite 100  
Columbia, S. C. 29210

J. D. Parkyn

B. R. Zibung

bcc: PWS  
File T5I, W1  
S-20  
Rcg. File



# CHEM-NUCLEAR SYSTEMS INC.

P.O. Box 726 • Barnwell, South Carolina 29812 • (803) 259-1781

REC'D AUG 17 1982

August 10, 1982

Mr. Bruce Zibung  
Health and Safety Supervisor  
Dairyland Power Corporation  
LaCrosse Boiling Water Reactor  
P.O. Box 275  
Genoa, Wisconsin 54632

Dear Mr. Zibung:

The following is the information you requested on August 9, 1982.

Shipper - Dairyland Power Corp.  
Shipment No. - 07-82-033-A  
Arrival Date at CNSI - July 30, 1982

Survey Instruments Used (CNSI)	MODEL	SERIAL NO.	mR/hr at 2 meters	Calibration Due Date
Eberline	PIC 6 A	1369	12	10-29-82
Eberline	PIC 6 A	2051	9	1-29-83
Eberline	PIC 6 A	453	9	10-15-82
Eberline	RO 2 A	802	9	1-15-83
Eberline	E 520 (GM)	1845	15	9-18-82

All instruments are calibrated by Eberline Instrument Corporation, Columbia, South Carolina, on a six (6) month basis. Per Eberline, calibration is performed by the use of a Cs137 source traceable to NBS.

If you have any questions regarding the above, please do not hesitate to contact me.

Sincerely yours,

*Jimmy Still*  
Jimmy Still, Supervisor,  
Regulatory Affairs

JJS/cb

cc: Jim Purvis  
Mike Benjamin

*Copies  
C-27d  
Rdg  
Zibung  
Shater*