THE STATE UNIVERSITY OF NEW JERSEY
RUTGERS

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June 13, 2007

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U.S. Nuclear Regulatory Commission
Region I
Attn: Licensing Assistance Team
475 Allendale Road
King of Prussia, PA 19406

Attn: Michelle Beardsley, Senior Health Physicist

Re: Rutgers, The State University of New Jersey, Response to Request for Additional Information Concerning Application for Renewal, License Number 29-05218-28

03000883

Mail Control No: 140034

Dear Ms. Beardsley:

Detailed below is our response to your letter of April 23, 2007 and subsequent discussion with Patrick J. McDermott, RSO on May 7, 2007. For clarity, the first sentence of each numbered request from the Commission's letter is provided in bold text preceding our response. Please note that for items 5 & 6, we have not included a response regarding leak tests, inventories or dosimetry as these are already incorporated under our radiation safety program.

1.) Your renewal application is written in such a way that it includes excerpts from your Radiation Safety Guide, 9th Edition, May 2004, which supply information needed to complete our review.

Rutgers does not wish to include our radiation safety guide as a part of our application. These excerpts have been provided to present the Commission with a picture of current aspects of our radiation safety program. As a broad scope licensee, Rutgers requires the flexibility to make minor programmatic changes and to reflect these changes in our radiation safety guide without requesting an amendment from the Commission.

Therefore, Rutgers requests permission to make minor changes to our radiation safety program provided these changes are:

- Presented to the radiation safety committee (RSC) by the RSO or other members of the radiation safety staff;
- Critically debated by the RSC, insuring any potential impacts regarding radiation safety are discussed;

140034

NMSS/RGN1 MATERIALS-002

- The RSC discussion and results of any votes are to be recorded in the minutes of the meeting and available for Commission review;
- Not in conflict with current Commission regulations; and
- Not in conflict with specific license requirements.

2.) Please note that your request to change your RSO from Michael Quinlan to Patrick McDermott has been separated from your renewal application in an effort for the NRC to expedite this request.

Thank you for expediting the change of our RSO.

3.) Attachment #5 of your application does not list the following radionuclides currently listed on your license:

Yes, Rutgers would like to remove these sealed sources from our license. The Cobalt-60 sealed sources were disposed of to the Barnwell, SC, Waste Management Facility operated by Ecology Services, Inc. Additionally, the Cesium-137 source was transferred to Ludlum Measurements, Inc. of Sweetwater, TX, Texas Department of State Health Services License # L01963. Attached, please find documents regarding the disposition of these sources. Should the Commission require more information regarding their disposition, do not hesitate to contact Mr. Patrick McDermott, RSO at 732-445-2550.

4.) Please provide the criteria used by your Radiation Safety Committee and/or Radiation Safety Officer, as appropriate, to review and approve radiation monitoring instrumentation to assure that appropriate radiation monitoring equipment will be used during licensed activities.

The RSO is responsible for the review of the proper use of radiation monitoring equipment. The vast majority of radiation monitoring equipment utilized during licensed activities falls within standard accepted practices for most academic and research licenses. Instrument capabilities, emitter characteristics and experimental design are all considered during any review. Standard instrument guidelines include, but are not limited to: Geiger-Mueller "pancake" style detectors for qualitative surveys of most beta emitters, NaI detectors for low to moderate energy gamma emitters, liquid scintillation counting for removable contamination surveys and well-type gamma counters for selected removable contamination surveys.

The appropriate use of radiation detection instruments is verified by REHS staff during laboratory inspections. Hand held meters are operationally checked by REHS staff annually.

The selection of appropriate detection equipment for applications that are not standard practice will rely on the expertise of our RSO.

5.) Condition No. 9 of your license authorizes the use of Sealed Sources for use in a self-shielded irradiator for the irradiation of materials.

Regarding the use of sealed sources in a self-shielded irradiator:

- The isotope, maximum activity, manufacturer and model number were provided in attachment #5 of our application dated January 29, 2007.
- The ORNL Model RAMCO-50 is registered as an approved sealed source or device by the Commission.
- The self-shielded irradiator will be used for the purposes described in the respective 'Sealed Source and Device Registration Certificate' (SSD Registration Certificate).
- Our current RSO has completed training over and above that described in Appendix G in NUREG – 1556, Vo. 5 dated October 1998 (NUREG – 1556, Vol. 5). Additionally, before being named RSO, future RSO's will have successfully completed the training described above. Within 30 days of naming a new RSO, Rutgers will submit the RSO's name to the Commission for inclusion in our license.
- Before using the self-shielded irradiator, authorized users will receive the training described in Appendix G in NUREG – 1556, Vol. 5.
- Rutgers will insure that each area where a self-shielded irradiator is located corresponds to the 'Conditions of Normal Use' and 'Limitations and/or Other Considerations of Use' on the applicable irradiator's SSD Registration Certificate.
- The floor beneath the self-shielded irradiator is adequate to support the weight of the irradiator and the irradiator is secured to prevent unauthorized access or removal.
- While no automatically operated fire suppression system is in place, Rutgers prohibits the irradiation of any flammable materials and will insure that the University's Emergency Services Personnel are trained in the appropriate response measures in the event of a fire in the building housing the irradiator.
- Operating and emergency procedures will be developed, implemented, maintained, and distributed and will meet the criteria in the section entitled 'Radiation Safety Program – Operating and Emergency Procedures' in NUREG – 1556, Vol. 5.

6.) Condition No. 9 of your license authorizes the use of Sealed Sources for use in portable gauges.

Regarding the use of sealed sources in portable gauges:

- Rutgers currently possesses a Troxler Electronic Laboratories, Inc. Model 3411-B portable surface moisture and density gauge. It contains Cs-137 and Am-241 in amounts not to exceed the maximum activity per device as specified in the SSD Registration Certificate.
- Rutgers will use the gauge only as listed in the SSD Registration Certificate.
- Rutgers current RSO has the requisite qualifications. Before changing RSO's, the proposed RSO will have successfully completed one of the training courses described in the section entitled "Individual(s) Responsible for Radiation Safety Program and Their Training and Experience- Radiation Safety Officer" in NUREG – 1556, Vol. 1, Rev. 1, dated November 2001 (NUREG – 1556, Vol. 1).
- Before using portable gauges, authorized users will have successfully completed one of the training courses described in the section entitled "Training for

Individuals Working In or Frequenting Restricted Areas" in NUREG – 1556, Vol. 1.

- Rutgers possesses and will use a radiation survey meter that meets the criteria in the section entitled "Radiation Safety Program – Instruments" in NUREG – 1556, Vol. 1.
- Rutgers will implement and maintain the operating and emergency procedures in Appendix H of NUREG – 1556, Vol. 1 and provide copies of these procedures to all gauge users and at each job site.

7.) 10 CFR 30.35(e) requires the licensee to review/adjust the cost estimates used in the formulation of the Decommissioning Funding Plan (DFP) at intervals not to exceed 3 years.

Rutgers has structured our license limits such that we are not authorized to possess unsealed byproduct materials in quantities requiring a DFP. Rutgers has previously submitted to the Commission, in accordance with 10 CFR 30.35, appropriate assurances that funds will be available for decommissioning.

I appreciate your attention to this matter. Should you have questions or require more information, please do not hesitate to contact Mr. Patrick McDermott, RSO at 732-445-2550 or mcdermot@rehs.rutgers.edu.

Sincerely,

Philip Furmanski

c: P. McDermott, RSO

CHEM-NUCLEAR SYSTEMS, LLC
Subsidiary of Duratek
740 Osborn Road • Barnwell, South Carolina 29812

August 12, 2005

ATTN: Carlos Santiago
ECOLOGY SERVICES, INC.
10220 OLD COLUMBIA ROAD
SUITE I
COLUMBIA, MD 21046

Reference: Radioactive Waste Shipment - Shipment ID Number 12771

Dear Carlos Santiago,

As required by 10 CFR Part 20, South Carolina Title A (3.55.3.4.1), and Barnwell Waste Management Facility Disposal Criteria (S20-AD-010), this letter is notification that the shipment referenced above has been disposed of at the Barnwell Waste Management Facility. This waste meets all the Barnwell Waste Management Facility criteria for acceptance and was disposed of in accordance with the Barnwell Site's License.

If you have any questions regarding this letter, please contact the Prior Notification Plan Department at (803) 541-5017.

Sincerely,

James W. Latham
Vice President, Barnwell Operations

AS# 73870

FORM 540 — BARNWELL WASTE MANAGEMENT FACILITY

UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST
SHIPPING PAPER

1. EMERGENCY TELEPHONE NUMBER (Include Area Code): 410-377-3742

ORGANIZATION: Ecology Services, Inc.

2. IS THIS AN "EXCLUSIVE USE SHIPMENT? [X] YES [ ] NO

3. TOTAL NUMBER OF PACKAGES IDENTIFIED ON THIS MANIFEST ======> 1

4. DOES EPA REGULATED WASTE REQUIRING A MANIFEST ACCOMPANY THIS SHIPMENT? [ ] YES [X] NO
If "Yes," provide Manifest Number ======>

EPA MANIFEST NUMBER: N/A

5. SHIPPER - NAME AND FACILITY
Ecology Services, Inc. C/O
Rutgers University
ESB, BLDG 3892 Davidson Road
Piscataway, NJ 08854-8036

S.C. TRANSPORT PERMIT NUMBER: 1881-19-05X
SHIPMENT NUMBER: 50808
CONTACT: Carlos Santiago
TELEPHONE NUMBER (Include Area Code): (732) 445-2550

SHIPMENT ID NUMBER: 0805-12771
COLLECTOR:
PROCESSOR:
GENERATOR TYPE (Specify): O

6. CARRIER - Name and Address
Ecology Services, Inc.
10220 Old Columbia Rd
Columbia, MD 21040

EPA I.D. NUMBER: N/A
SHIPPING DATE: 8/9/2005

CONTACT: Brett Daniels
TELEPHONE NUMBER (Include Area Code): 410-381-2600

SIGNATURE - Authorized carrier acknowledging waste receipt: Brett Daniels
DATE: 08-09-05

7. FORM 540 AND 540A / FORM 541 AND 541A / FORM 542 AND 542A / ADDITIONAL INFORMATION — PAGE 1 OF 1 PAGE(S); 1 PAGE(S); 1 PAGE(S); PAGE(S)

8. MANIFEST NUMBER (Use this number on all continuation pages): 50808-01

9. CONSIGNEE -- Name and Facility Address
Barnwell Waste Management Facility
Operated By Chem - Nuclear Systems, Inc.
Osborne Road
Barnwell, SC 29812

CONTACT: LICENSING DEPARTMENT
TELEPHONE NUMBER (Include Area Code): 803-259-1781

SIGNATURE -- Authorized consignee acknowledging waste receipt: [signature]
DATE: 8/12/05

10. CERTIFICATION
This is to certify that the herein-named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. This also certifies that the materials are classified, packaged, marked, and labeled and are in proper condition for transportation and disposal as described in accordance with the requirements of 10 CFR Parts 20 and 61, or equivalent state regulations.

AUTHORIZED SIGNATURE: Carlos Santiago
TITLE: H+S Specialist
DATE: 08/09/05

11. U.S. DEPARTMENT OF TRANSPORTATION DESCRIPTION (including proper shipping name, hazard class, UN ID number, and any additional information)	12. DOT LABEL "RADIOACTIVE"	13. TRANSPORT INDEX	14. PHYSICAL AND CHEMICAL FORM	15. INDIVIDUAL RADIONUCLIDES	16. TOTAL PACKAGE ACTIVITY MBq	mCi	17. LSA/SCO CLASS	18. TOTAL WEIGHT OR VOLUME (Use appropriate units)	19. IDENTIFICATION NUMBER OF PACKAGE
Radioactive Material, 7, UN2915, Type A Package	YELLOW III	47	Sealed Sources Solid	Ba-133 Cs-137	208602.556	5637.906	N/A	1700 lb	RUT 50808-01 USA DOT 7A TYPE A
ENCAPSULATED SEALED SOURCES				Sm-151 Co-60					

FOR CONSIGNEE USE ONLY

'05 AUG 11 AM 9

INIT. [initials]
ON-SITE INSPECTOR
SC DEPT. OF HEALTH & ENVIRON. CONTROL

20. "Certification is hereby made to the South Carolina Department of Health and Environmental Control that this shipment of low-level radioactive waste has been prepared in accordance with a radioactive waste management program which has been approved by the Nuclear Regulatory Commission or an Agreement State regulatory agency and has been inspected in accordance with the requirements of South Carolina radioactive Materials License No. 097 as amended, and the effective Barnwell Site Disposal Criteria within 48 hours prior to shipment, and further certification is made that the inspection revealed no items of non-compliance with all applicable laws, rules and regulations."

Date 8/9/05 — Signature: Carlos Santiago

Title H+S Specialist and Organization: Rutgers University

FORM 540 (10-96)

LUDLUM MEASUREMENTS, INC.
501 OAK STREET
P.O. BOX 810
SWEETWATER, TEXAS 79556
WEBSITE: WWW.LUDLUMS.COM

DESIGNER AND MANUFACTURER OF
Scientific and Industrial Instruments

800-622-0828(US & CANADA) **325-235-5494** **325-235-4672(FAX)** **E-mail:rharris@ludlums.com**

08 May 2007

To Whom It May Concern;
My name is Rhonda Harris and I am the Radiation Safety Officer for Ludlum Measurements Inc. On 16 June 2005 we received from Rutgers University, one(1) Cs137 source. It was 45Ci in activity and the serial number for this source is 109.
If you have any questions, please contact me at one of the numbers above.

Sincerely,

Rhonda Harris

Rhonda Harris
Radiation Safety Officer
Ludlum Measurements Inc.