

Quest Diagnostics Incorporated

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May 17, 2005

Thomas K. Thompson  
Senior Health Physicist  
Commercial and R&D Branch  
Division of Nuclear Materials Safety  
U.S. Nuclear Regulatory Commission, Region 1  
475 Allendale Road  
King of Prussia, Pa. 19406-1415

J-6  
MS-16

RE: License 37-28294-01  
Docket No. 03030859  
Control No. 136478

Dear Mr. Thompson:

This letter is in response to your request for additional information to renew the Nuclear Regulatory License No. 37-28294-01 for Quest Diagnostics Incorporated.

1. Included in our Radiation Procedures and Safety SOP, section 7.3, states that all test kits are placed in a designated RIA storage refrigerator, which is secured by a lock. All licensed material included in the test kits are stored upon receipt in a locked refrigerator located in the RIA testing area. The RIA refrigerator is open and monitored by a technologist during the time of testing from 7AM to 3PM and locked when testing is completed from 3PM to the following morning at 7AM. All radioactive kit information, in addition to being logged into a supply log, is documented in a Mass Balance Log, see attached procedure titled Mass Balance Log. The Mass Balance Log is used to monitor and document when the licensed materials included in the kits are completely used in testing. Licensed materials are not stored in unrestricted areas. Solid radioactive waste associated with testing, such as gloves, paper and test tubes are placed in a metal drum after testing is completed and stored in the warehouse for monthly removal by ADCO Services. The warehouse is locked; access to the warehouse is limited to the RSO, warehouse supervisor and personnel via badge access.

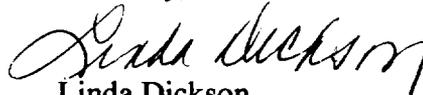
136478  
NMSS/RGNI MATERIALS-002

2. The correct legal name of the entity that operates the Horsham facility requesting the renewal of the license is Quest Diagnostics of Pennsylvania, Inc. The DBA (Doing Business As) name is Quest Diagnostics Incorporated. The ownership of the corporation did not change nor did the control of the license and the name is correct as stated on our existing license. The error was on my part as I used the DBA name and omitted the Incorporated. The items listed 2a through 2g are not applicable.

3. The amount of radioactive material disposed into the sewer system is monitored and recorded daily. It has been determined that 98% of the licensed material is disposed into the sewer system and 2% is disposed in conjunction with solid waste. The amount of licensed material disposed of into the sewer is calculated and recorded daily so that 100 uCi maximum is not exceeded per day. Please refer to Disposal of Radioactive Waste SOP and a copy of our daily radioactive material disposal log documenting the amount of liquid and solid radioactive waste for disposal.

Based on the average monthly water usage and not exceeding the maximum disposal limit of 100 uCi into the sewer system, the Horsham facility is under the limit of  $2 \times 10^{-6}$  uCi/mL per month; our calculated radioactivity for disposal is  $1.5 \times 10^{-6}$  uCi/mL per month. Please refer to the copy of Disposal of Radioactive Material into the Sewer System for the calculation.

Sincerely,

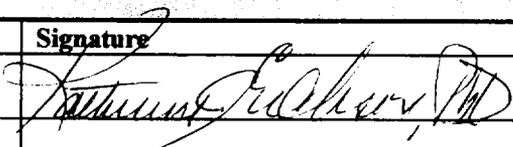


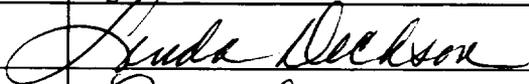
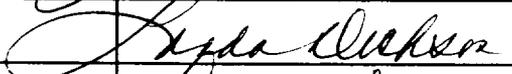
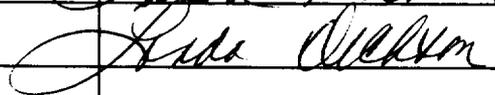
Linda Dickson  
Special Chemistry Manager  
Radiation Safety Officer

cc: D.Jenkins

Non-Technical SOP

<b>Title</b>	<b>DISPOSAL OF RADIOACTIVE WASTE</b>	
<b>Prepared by</b>	Linda Dickson	Date: 01/15/96
<b>Owner/BPT leader</b>	Linda Dickson	Date: 01/15/96

<b>Local Approval</b>		
Print Name and Title	Signature	Date
Katherine Erickson, Ph.D.		7/8/2008
Local Issue Date:		Local Effective Date:

12 month (or new) management review and approval Signature acknowledges SOP version remains in effect with NO revisions.		
Print Name	Signature	Date
LINDA DICKSON		7/10/2007
LINDA DICKSON		5/16/01
LINDA DICKSON		7/5/02
LINDA DICKSON		4/7/03
LINDA DICKSON		4/04/04
LINDA DICKSON		4/1/05

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**1. PURPOSE**

The purpose of this document is to monitor the amount of radioactive waste discarded into the sewer system and into the yellow waste drum for solid waste. Radioactive waste discarded into the sewer system may not exceed 100 uCi per day to yield final concentration into sewer system of  $2 \times 10^{-5}$  uCi/mL/month.

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**2. SCOPE**

This document applies to the amount of radioactive waste discarded into the sewer system and into the yellow waste drum for solid waste.

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**3. RESPONSIBILITY**

It is the responsibility of the Special Chemistry Department to monitor the disposal of radioactive waste.

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**4. PROCEDURE**

The only radioactive material used in the Special Chemistry Department is  $^{125}\text{I}$ .

<b>Step</b>	<b>Action</b>
1	Upon completion of a radioimmunoassay procedure, discard the liquid radioactive waste down the hepatitis sink. This is the <b>ONLY</b> sink designated for the disposal of radioactive material.
2	Discard the solid waste in the yellow drum for the disposal of radioactive waste.

3	Refer to the <sup>125</sup> I vials used in testing for the total amount of radioactive material used in the procedure. Calculate the total amount used and log this amount in the Radioactive Disposal Log under the column for total radioactivity used in uCi. This log is located on the yellow drum for solid waste disposal.
4	It has been determined that approximately 98% of the radioactive waste is liquid and disposed of into the sewer system and 2% in solid.
5	Multiply the total radioactivity disposed of by 0.98. This is the approximate amount in uCi disposed of into the sewer system, log this amount under the column for sink disposal.
6	Multiply the total radioactivity disposed of by 0.02. This is the approximate amount in uCi disposed of into the yellow drum, log this amount under the column for solid disposal.
7	At the end of the day, add the amounts in uCi disposed of down the sink. This amount must not exceed 100 uCi. If the amount does exceed 100 uCi, notify the RSO and Technical Director.

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**5. RELATED DOCUMENTS**

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**6. REFERENCES**

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**7. REVISION HISTORY**

Version	Date	Revision Purpose	Name of reviser

Total radioactivity disposed of  
into sewer for March 05 = 289.6 uCi

*L. Miller 3/10/05*

**RADIOACTIVE MATERIAL DISPOSAL LOG**

KIT	DATE OF DISPOSAL	TOTAL ACTIVITY U/CI	DISPOSAL (SINK) u/CI	DISPOSAL (SOLID) u/CI	TECH INITIALS
Aldos	2/25/05	23.5	23.4	20.1	MF
170H	2/25/05	24.0	23.9	20.1	MF
170H	2/25/05	24.4	24.3	20.1	MF 2dl/05
E2S	2/27/05	23.5	23.4	20.1	JJ
ALDOS	2/28/05	23.5	23.4	20.1	KL
170H	2/28/05	24.0	24.3 <sup>23.9</sup>	20.1	KL
E2S	3/1/05	23.5	23.4	20.1	SD
Andro	3/1/05	25.0	24.9	20.1	SD
ACTH	3/1/05	26.5	26.4	20.1	SD
ALDOS	3/2/05	23.5	23.4	20.1	SP
E2S	3/2/05	23.5	23.4	20.1	SP
170H	3/2/05	24.0	23.9	20.1	SP
E2S	3/3/05	23.5	23.4	20.1	SD
ACTH	3/3/05	26.5	26.4	20.1	SD
ACTH	3/3/05	26.5	26.4	20.1	SD
E2S	3/4/05	23.5	23.4	20.1	SD
Aldos	3/4/05	23.5	23.4	20.1	SD
170H	3/4/05	24.0	23.9	20.1	SD
170H	3/4/05	24.0	23.9	20.1	SD
E2S	3-6-05	23.5	23.4	20.1	Tm
Aldos	3/7/05	23.5	23.4	20.1	SD
Aldos	3/7/05	23.5	23.4	20.1	SD
170H	3/7/05	24.0	23.9	20.1	SD
E2S	3/8/05	23.5	23.4	20.1	SD
Andro	3/8/05	25.0	24.9	20.1	SD
ACTH	3/8/05	26.5	26.4	20.1	SD
ACTH	3/8/05	26.5	26.4	20.1	SD
Aldos	3/9/05	23.5	23.4	20.1	SD
Almond	3/9/05	23.5	23.4	20.1	SD
170H	3-9-05	24.0	23.9	20.1	MB
E2S	3-10-05	24.0	23.9	20.1	MB

*uCi*  
*day*  
*2/25/05*  
*11.6 uCi*  
*2/27/05*  
*3.4 uCi*  
*2/28/05*  
*7.3 uCi*  
*3/1/05*  
*14.7 uCi*  
*3/2/05*  
*10.7 uCi*  
*3/3/05*  
*16.2 uCi*  
*3/4/05*  
*14.6 uCi*  
*3/6/05*  
*3.4 uCi*  
*3/7/05*  
*10.7 uCi*  
*3/8/05*  
*21.1 uCi*  
*3/9/05*  
*10.7 uCi*

DISPOSAL OF RADIOACTIVE MATERIAL INTO SEWER SYSTEM

**Calculation of Maximum Allowable Radioactivity for Disposal**

Revised Calculation per NRC (Pamela Henderson, Senior Health Physicist)  
November 1997

**Calculations derived from US NRC Rules and Regulations  
Title 10, Chapter 1, Part 20, Section 20.2003 (a)(2)**

Data based on Water Usage from Horsham Water Authority  
Bill from 11/29/04 to 2/24/05 is 1,494,500 gal.

Limit:  $2 \times 10^{-5}$  uCi/mL per month

Average monthly water usage as of 2/05 = 498,167 gal/mo.

$$498,167 \text{ gal/month} \times 3.785 \text{ l/gal} = 1,885,562 \text{ l/month}$$

100 uCi I125 disposed to sink/day – Maximum allowable

$$100 \text{ uCi} \times 30 \text{ days/month} = 3,000 \text{ uCi/month}$$

$$\frac{3000 \text{ uCi/month}}{1,885,562 \text{ l/month}} = 0.001591 \text{ uCi/l}$$

$$0.001591 \text{ uCi/l} \times \frac{1 \text{ L}}{1000 \text{ mL}} = 1.5 \times 10^{-6} \text{ uCi/mL/month}$$

Section 20.2003 (a) (4)

Limit: 1 Ci of I125 is the allowable limit for disposal in sewer/ year.

Actual disposal into sewer system for 2002 5817.8 uCi or 0.0058 Ci  
Actual disposal into sewer system for 2003 5004.8 uCi or 0.0050 Ci  
Actual disposal into sewer system for 2004 3644.0 uCi or 0.0036 Ci

