

April 12, 2010

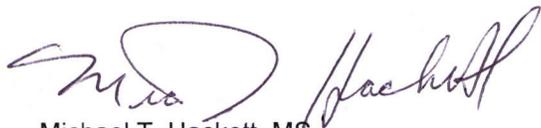
Regional Administrator
NRC Region III
2443 Warrenville Road
Lisle, Illinois 60532

Dear Sir,

Based on NRC Confirmatory Order (IA-09-026) issued to me on July 28, 2009, I have agreed within 45 days following completion of the next annual program review following issuance of the Confirmatory Order, to provide the results of the review to the permittee, the NHPP, and the NRC. This annual program review was presented at the Radiation Safety Committee (RSC) meeting on March 4. Minor changes to the annual program review were then made and sent out via e-mail to the RSC. Annual program review actions and changes were approved by the RSC. The annual program review was presented to the Environment of Care Council and was later approved by the Medical Center Director. Enclosed is a copy of the signed annual program review with attachments.

If you have any questions, please contact me at 859-381-5929.

Sincerely,

A handwritten signature in blue ink, appearing to read "Michael T. Hackett". The signature is written in a cursive style with a large initial "M".

Michael T. Hackett, MS

Enclosure

cc: Director, VA Medical Center, Lexington, Kentucky (electronic copy)
Director, National Health Physics Program (electronic copy)

Radiation Safety Committee (RSC)

Comprehensive Radiation Safety Program Annual Review for 2009

- The RSC met at least quarterly (see attached) to review the 2009 quarterly radiation safety audits and findings from these meetings have been/will be presented for review at the Environment of Care Council.
- Radiation safety training for radioactive materials (see attached) was available on the public drive. Some enhanced had been made but training materials for radiographic/fluoroscopic use still need to be developed.
- In April 2009, received a Notice of Violation (NOV) (see attached) from the Nuclear Regulatory Commission (NRC) concerning the September 2007, VHA National Health Physics Program (NHPP) unannounced inspection which included several other NOV's. In May, a reply to NOV was sent to the NRC through NHPP outlining corrective action that had been already taken shortly after the NHPP inspection and NOV's.
- Performance goals addressed in 2009 that have been completed:
 - Develop performance goals
 - Update patient instructions for I-131 therapies
 - Further develop radiographic-fluoroscopic use quarterly audit
- Performance goals addressed in 2009 that require completion in 2010:
 - Finalize closeout survey procedure for the Medical Center
 - Deactivation of several inactive labs in Research
 - Complete of the re-approval process of Authorized Users in Research
 - Further enhance radiation safety training to include radiographic-fluoroscopic use areas
- Performance goals addressed in 2009 that have not been completed & will no longer be addressed at this time (reason):
 - Develop core performance indicators (at this time, current trending reports provides adequate performance information)
 - Further develop access to radiation safety information (at this time, current access via the radiation safety public drive folder provides adequate radiation safety information)
- Additional performance goals in 2010:
 - Develop prostate brachytherapy (i.e., contracted services at local hospital) quarterly review
 - Develop a dose alert during cardiac cath procedures plus an automatic review of cases >10 Gy
 - Develop training for RSC concerning radiation emergency response
- Trending reports were used as part of this comprehensive radiation safety program annual review (see attached). Deficiency Summaries and Notable Changes & Updates for the year have been outlined in greater detail on pages 3-10 of this annual review.



RSC Dates for 2009 Reviews



2009 Radiation Safety Training



NRC NOV 04.2009



NRC NOV Reply 05.2009



Trending Report for 2009

Radiation Safety Committee (RSC)

Comprehensive Radiation Safety Program Annual Review for 2009

- See the following 2009 deficiency detailed summaries for:

- [Nuclear Medicine Service](#)
- [Research Service](#)
- [Radiographic-Fluoroscopic Use](#)
- [ALARA-Radiation Exposure](#)

Deficiency Summary KEY:
2009 deficiency with <i>no deficiency in 2008</i>; e.g., 1 time – 4Q (2008:0)
2009 deficiency with no improvement when compared to <i>deficiency in 2008</i>; e.g., 1 time – 1Q (2008:1)
2009 deficiency with improvement when compared to <i>deficiency in 2008</i>; e.g., 5 times – 1Q, 2Q, 4Q (2008:27)

- See the following 2009 notable changes & update detailed summaries for:

- [Nuclear Medicine Service](#)
- [Research Service](#)
- [Radiographic-Fluoroscopic Use](#)
- [ALARA-Radiation Exposure](#)

Notable Changes & Updates Key:
2009 notable change/update (i.e., no deficiency) <i>without issue in 2008</i>; e.g., In Feb (2008:N/A)
2009 notable change/update (i.e., no deficiency) when compared to same notable change/update in 2008; e.g., In Dec (2008:In Dec)
2009 notable change/update (i.e., no deficiency) when compared to <i>deficiency in 2008</i>; e.g., 2008: 0 (2008:1)

Radiation Safety Committee (RSC)

Comprehensive Radiation Safety Program Annual Review for 2009

Nuclear Medicine Service

Deficiency Summary:

Some deficiencies may include notable changes (i.e., decrease compared to 2008) as noted by the 2-color highlight (2009 in yellow with 2008 in green).

Radiation Safety Issue	Cause	Corrective Action & Any Other Notable Action Taken
<p>1. Daily Radiation Surveys:</p> <ul style="list-style-type: none"> Surveys greater than trigger level: 5 times – 1Q, 2Q, 4Q (2008:27) 	<p>Due to minor radioactive contamination. All initial readings although above trigger level (TL) were fairly low and were in areas where increased radiation levels may be seen.</p>	<ul style="list-style-type: none"> Prompt and appropriate action to lower these levels below TL was taken. <p>Special follow up from 2008 actions: In 2007, contamination in the stress area regular trash (monitored before being removed by EMS) and/or the non-radioactive sharps container (before being disposed as routine biohazard waste) had increased. These were due to minor back flow into IV items that should not normally be contaminated with radioactivity (e.g., IV tubing, used syringes). In 2008, corrective action (disposal of IV line & added shielding to sharps container) was phased into use in 1Q and was added to the quarterly trending data. Additional staff training on this subject was performed in February 2008 and again in October 2008. <ul style="list-style-type: none"> Surveys greater than trigger level within the Imaging Room - in regular trash and/or non-radioactive sharps: 2 times – 2Q, 4Q (2008:6) <p>In 2008, contamination on the injection table pad had increased; therefore, it was added to the quarterly trending data. Additional staff training on this subject was performed in October 2008 and was also discussed in the November 2008 staff meeting.</p> <ul style="list-style-type: none"> Surveys greater than trigger level within the Injection Room - on injection table pad 1 time – 1Q (2008:11) <ul style="list-style-type: none"> In review of the improvements seen in the 2009 data compared to 2008, corrective action taken in 2008 was very successful. </p>
<p>2. Weekly Radiation Wipes:</p> <ul style="list-style-type: none"> Wipes greater than trigger level: 4 times – 1Q, 2Q, 3Q (2008:5) 	<p>Due to minor radioactive contamination. All initial wipes although above trigger level (TL) were fairly low and were in areas where increased contamination levels may be seen.</p>	<ul style="list-style-type: none"> Prompt and appropriate action to lower these levels below TL was taken.

Radiation Safety Committee (RSC)

Comprehensive Radiation Safety Program Annual Review for 2009

Nuclear Medicine Service

Deficiency Summary:

Some deficiencies may include notable changes (i.e., decrease compared to 2008) as noted by the 2-color highlight (2009 in yellow with 2008 in green).

Radiation Safety Issue	Cause	Corrective Action & Any Other Notable Action Taken
<p>4. Daily Dose Calibrator (DC) Constancy Checks (2 dose calibrators):</p> <ul style="list-style-type: none"> Constancy checks not performed daily if used for pts as required: 1 time – 4Q (2008:0) 	<p>Daily constancy check was not completely done (i.e., only 1 of 5 settings documented as checked & it was within limits) on the non-Tc-99m dose calibrator (i.e., CRC-15R). Procedures were not followed.</p>	<ul style="list-style-type: none"> Based on the patient schedule that day, only one patient assay involving Xe-133 was performed on that dose calibrator on that day. The RSO discussed this issue with the nuclear medicine technologist involved and her supervisor. <p>Special follow up from 2008 actions: In 2008, several times on the non-Tc-99m dose calibrator which is used infrequently (i.e., not every day for patient doses), the constancy checks had not been performed or partially done on days <u>not</u> used for patients. Added reminder labels to the dose calibrator & L-shield concerning daily constancy checks in October 2008. Additional staff training concerning constancy checks was performed in November 2008. Tracking of this issue was added to the quarterly trending data to check how effective the above action was.</p> <ul style="list-style-type: none"> # of times constancy checks on non-Tc-99m DC not performed daily but not used for patients: 1 time – 2Q (2008:3)
<p>16. Reported Radioactive Spills:</p> <ul style="list-style-type: none"> Reported radioactive spill occurred: 1 time – 1Q (2008:1) 	<p>While disposing of a changed needle from a patient dose prior to its use, 1-2 drops of Tc-99m fell from the needle hub onto the edge of the counter top, cabinet drawer and floor by baseboard. The primary cause of this minor spill was the position of the shielded sharps container in reference to the L-shield where the needle change occurred. The counter top in front of the shielded sharps container is covered with an absorbent pad but the drops just missed this pad during the transfer process.</p>	<ul style="list-style-type: none"> The mini-spill kit that was available in the area was used and the staff immediately put on shoe covers and monitoring occurred of the staff and spill area. No staff contamination or contamination outside of immediate spill area was found via surveys and wipes. The spill area was decontaminated as much as possible then labeled after it was covered and shielded to background levels to allow for decay. Spill was minor and well contained. Good and prompt response to the spill (e.g., use of mini-spill kits). The position of the shielded sharps container was changed so it is closer to the L-shield, thus minimizing the possibility of contamination of uncovered area (e.g., cabinets or floor). This spill and the corrective action was discussed during the February staff meeting and was reviewed by the staff in April/May as part of the monthly radiation safety reminder presentation.

Radiation Safety Committee (RSC)

Comprehensive Radiation Safety Program Annual Review for 2009

Nuclear Medicine Service

Deficiency Summary:

Some deficiencies may include notable changes (i.e., decrease compared to 2008) as noted by the 2-color highlight (2009 in yellow with 2008 in green).

Radiation Safety Issue	Cause	Corrective Action & Any Other Notable Action Taken
17. Quarterly Review of In-coming Radionuclide Receiving Records:		
<ul style="list-style-type: none"> • # of times receiving records were missing pertinent info (e.g., survey/wipe results): 1 time – 1Q (2008:0) 	<p>Tc-99m shipment did not have wipe test results documented. Procedures were not followed.</p>	<ul style="list-style-type: none"> • External surveys were well within limits and typical for this package. The return package's (i.e., empty dose containers) external wipes and surveys done that same day again were well within limits and typical for this package. RSO spoke with technologist involved about verifying that all pertinent info has been recorded.
<ul style="list-style-type: none"> • # of times package receiving problems noted (e.g., contamination, wrong material): 6 times – 1Q (2008:3) 	<ul style="list-style-type: none"> • 3 shipments from local radiopharmacy were delivered very minor contamination noted for the inner package (i.e., foam securing the doses in place) although the external wipes and surveys were well within limits and typical for these packages. • 2 Tc-99m shipments from local radiopharmacy were delivered on the federal holiday in error. • 1 In-111 shipment was delivered in error by the courier to local radiopharmacy. 	<ul style="list-style-type: none"> • The return packages' (i.e., empty dose containers) external wipes and surveys again were well within limits and typical for those packages. The local radiopharmacy will handle these packages as contaminated depending on their monitoring. • Local radiopharmacy promptly delivered new radioactive material for our use while the doses from the 2 shipments sent in error were held for decay. • Local radiopharmacy repackaged the radionuclide and promptly delivered the radioactive material for our use.
18. Quarterly Review of Out-going Radionuclide/Return Package Records:		
<ul style="list-style-type: none"> • # of in-coming shipments from local radiopharmacy that did not have out-going documentation: 7 times – 2Q, 3Q, 4Q (2008:0) 	<p>Return documentation not recorded. Procedures were not followed.</p>	<ul style="list-style-type: none"> • In December 2009, the RSO discussed this issue about documentation problems with each nuclear medicine technologist. Combined local radiopharmacy shipment receipt and return documentation forms so there will be only one form and each shipment will have documentation of receipt and return on one line. RSO reviewed this new form with the nuclear medicine staff for first use in January 2010. • In February 2010, the RSO again discussed this issue about documentation problems with the nuclear medicine staff (i.e., individually and in the Nuclear Medicine staff meeting), setup a monthly review of the use of the new receipt/return form (no problems with the 64 shipments received & returned in January 2010), and staff reviewed radiation safety refresher presentation.

Radiation Safety Committee (RSC)

Comprehensive Radiation Safety Program Annual Review for 2009

Nuclear Medicine Service

Notable Changes & Updates:

Some notable changes may be on the Deficiency Summary as noted by the 2-color highlight.

Radiation Safety Issue	Notable Change/Update	Any Other Notable Action Taken
1. Daily Radiation Surveys: <ul style="list-style-type: none"> Surveys not performed daily as required: 	2009: 0 (2008:1)	<ul style="list-style-type: none"> Additional staff training concerning performing surveys daily was performed in October 2008.
3. Mo-99/Tc-99m Assays (discontinued use in June 2008 due revised USP <797>):	Mo-99/Tc-99m generators are not currently being used; therefore, this audit item will be dropped in 2010.	
4. Daily Dose Calibrator (DC) Constancy Checks (2 dose calibrators):	Mo-99 setting is not currently being used clinically; therefore, will no longer be checked daily starting 2010.	Special follow up from 2008 actions: In 2008, several times on the non-Tc-99m dose calibrator which is used infrequently (i.e., not every day for patient doses), the constancy checks had not been performed or partially done on days <u>not</u> used for patients. Added reminder labels to the dose calibrator & L-shield concerning daily constancy checks in October 2008. Additional staff training concerning constancy checks was performed in November 2008. Tracking of this issue was added to the quarterly trending data to check how effective the above action was. <ul style="list-style-type: none"> # of times constancy checks on non-Tc-99m DC incompletely performed daily but not used for patients: 2009: 0 (2008:2)
10. Monthly Xenon Machine Quality Control Checks: <ul style="list-style-type: none"> Quality control checks not within limits : 	2009: 0 (2008:1)	<ul style="list-style-type: none"> In 2008, xenon trap alarm's actual activation distance was not within the excepted limits. The xenon trap was removed and imaged to check to see if the trap needed to be replaced (i.e., 8 distinct spots seen). Two of the 8 chambers could be barely seen; therefore, the xenon trap replacement was not indicated. Troubleshooting guide suggested replacement of the detector board or the GM tube if the trap replacement was not needed. A new replacement xenon system had been received; therefore, repair of the old system's alarm was not warranted since its use would be limited (i.e., until activation of the new system pending testing & training which occurred in January 2009).

Radiation Safety Committee (RSC)

Comprehensive Radiation Safety Program Annual Review for 2009

Nuclear Medicine Service

Notable Changes & Updates:

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Radiation Safety Issue	Notable Change/Update	Any Other Notable Action Taken
18. Quarterly Review of Out-going Radionuclide/Return Package Records:		
<ul style="list-style-type: none"> • # of times out-going records were missing pertinent info (e.g., survey/wipe results): 	2009: 0 (2008: 1)	
21. Radiation Safety Improvements and/or Additional Comments/Problems:		
	in Feb	<ul style="list-style-type: none"> • Modified the position of the Tc-99m shielded sharps container in the hot lab & added splash guard to help prevent spills.
	in Feb	<ul style="list-style-type: none"> • Replaced Cs-137 dose calibrator standard's shielding and labeling.
	in May	<ul style="list-style-type: none"> • Raised & modified the position of the Tc-99m shielded sharps container in the hot lab to reduce radiation exposure.
	in Jun	<ul style="list-style-type: none"> • Mounted locked shielded sharps container in the imaging room (1) to the wall to better secure radioactive/biohazard waste.
	in Jul	<ul style="list-style-type: none"> • Mounted locked shielded sharps containers (2) in the injection & imaging rooms to the wall to better secure.
	in Oct/Nov	<ul style="list-style-type: none"> • Updated required annual radiation safety training (e.g., added slides & questions, electronic test with question hint slides & % correct).
	in Dec	<ul style="list-style-type: none"> • Restocked replacement items in the radiation spill kit and setup updated mini-radiation spill kits that were later distributed in Jan .

Radiation Safety Committee (RSC)

Comprehensive Radiation Safety Program Annual Review for 2009

Research Service		
Deficiency Summary:		
Some deficiencies may include notable changes (i.e., decrease compared to 2008) as noted by the 2-color highlight (2009 in yellow with 2008 in green).		
Radiation Safety Issue	Cause	Corrective Action & Any Other Notable Action Taken
N/A		

Research Service		
Notable Changes & Updates:		
Some notable changes may be on the Deficiency Summary as noted by the 2-color highlight.		
Radiation Safety Issue	Notable Change/Update	Any Other Notable Action Taken
3. Quarterly Record Audit of Weekly Radiation Wipes Performed by each Authorized User Labs:		
• Wipes not been performed as required:	2009: 0 (2008:4)	
• Wipes greater than trigger level:	2009: 0 (2008:2)	
13. Quarterly Review of In-coming Radionuclide Receiving Reports:		
• # of times package receiving problems noted (e.g., contamination, wrong material):	2009: 0 (2008:1)	
16. Radiation Safety Improvements and/or Additional Comments/Problems:		
	in Apr (2008: N/A)	• Worked w/ Research Safety Manager to update safety training for all research staff & lab entrance poster (both included radiation safety).
	in Aug (2008: in Aug)	• Restocked replacement items (i.e., due in August) in the radiation spill kits.
	in Nov (2008: N/A)	• Added annual radiation safety training for research administrative staff.

Radiation Safety Committee (RSC)

Comprehensive Radiation Safety Program Annual Review for 2009

Radiographic-Fluoroscopic Use

Deficiency Summary:

Some deficiencies may include notable changes (i.e., decrease compared to 2008) as noted by the 2-color highlight (2009 in yellow with 2008 in green).

Radiation Safety Issue	Cause	Corrective Action & Any Other Notable Action Taken
2. Patient radiation dose from Interventional Fluoroscopy (Specials B180):		
<ul style="list-style-type: none"> # of these exams with total dose > 3 Gy but < 10 Gy: 	Patient dose is dependent on length and complexity of the case.	<ul style="list-style-type: none"> Out of the 340 cases in Specials, only 2 cases (0.6%) had estimated doses > 3 Gy but < 10 Gy. This estimate assumes there was no movement of the x-ray beam during the procedure which in most cases there is beam movement; therefore, the dose in most cases is a conservative overestimation of the actual patient skin dose.
2 times – 3Q, 4Q (2008: 1 Dec Only)		
3. Patient radiation dose from Cardiac Cath (A233 & A235):		
<ul style="list-style-type: none"> # of these exams with total dose > 3 Gy but < 10 Gy: 	Patient dose is dependent on length and complexity of the case.	<ul style="list-style-type: none"> Out of the 842 cases for cardiac cath, 219 cases (26%) had estimated doses > 3 Gy but < 10 Gy. This estimate assumes there was no movement of the x-ray beam during the procedure which in most cases there is beam movement; therefore, the dose in most cases is a conservative overestimation of the actual patient skin dose.
219 times – 1Q, 2Q, 3Q, 4Q (2008: 14 Dec only)		
<ul style="list-style-type: none"> # of these exams with estimated dose > 10 Gy but < 15 Gy: 	Patient dose is dependent on length and complexity of the case.	<ul style="list-style-type: none"> Reviewed patient records and no reported skin injury at ~4 weeks post procedure. Working with Cardiology to institute sometime in 2010 a dose alert (e.g., "3-6-9" in Gy) during procedures plus an automatic review of cases >10 Gy (e.g., follow up with pt at ~4 & 14 wks).
2 times – 4Q (2008: 0 Dec only)		

Radiographic-Fluoroscopic Use

Notable Changes & Updates:

Some notable changes may be on the Deficiency Summary as noted by the 2-color highlight.

Radiation Safety Issue	Notable Change/Update	Any Other Notable Action Taken
1. Patient radiation dose from CT (B152 only):		
B. High Volume Exams (J-J)/Cases (J-D)	Changed from exam review (Jan-Jun) to case review (Jul-Dec)	
C. Average Volume Exams (J-J)/Cases (J-D)		
D. Low Volume Exams (J-J)/Cases (J-D)		
3. Patient radiation dose from Cardiac Cath (A233 & A235):		
<ul style="list-style-type: none"> Average estimated dose * (Gy) for these exams: 	Updated 2008-2009 data (i.e., from recorded dose to estimated dose).	* Estimated dose based on recorded dose overestimation (i.e., 19.4% CCL & 19.6% EPL)
4. Radiation Safety Improvements and/or Additional Comments/Problems:		
	in 1 Qtr (2008: N/A)	<ul style="list-style-type: none"> Additional monitoring started (i.e., pt radiation dose from CT from high to low volume exams: 1.B.-D.). Special dose (i.e., air kerma) evaluation done on Specials & Cardiac Cath equipment.
	in Jun (2008: N/A)	

Radiation Safety Committee (RSC)

Comprehensive Radiation Safety Program Annual Review for 2009

ALARA-Radiation Exposure

Deficiency Summary:

Some deficiencies may include notable changes (i.e., decrease compared to 2008) as noted by the 2-color highlight (2009 in yellow with 2008 in green).

Radiation Safety Issue	Cause	Corrective Action & Any Other Notable Action Taken
1. Personnel Exposure Records/ALARA Investigational Levels:		
B. Radiographic-Fluoroscopic Use:		
<ul style="list-style-type: none"> Exceeded the ALARA Quarterly Investigational Level I (10% of ¼ annual limit): 3 times – 1Q, 3Q (2008:10) 	Occupational radiation exposure from clinical use of x-rays.	<ul style="list-style-type: none"> These levels of exposure are not unusual in areas where radiographic/ fluoroscopic procedures are performed. No one monitored exceeded 10% of the annual occupational limits.

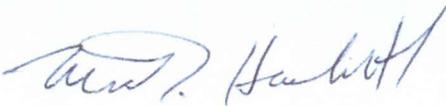
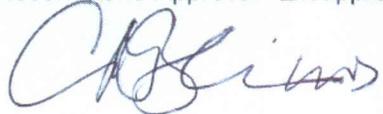
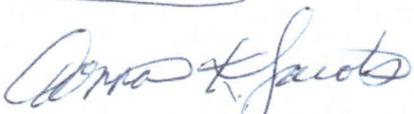
ALARA-Radiation Exposure

Notable Changes & Updates:

Some notable changes may be on the Deficiency Summary as noted by the 2-color highlight.

Radiation Safety Issue	Notable Change/Update	Any Other Notable Action Taken
1. Personnel Exposure Records/ALARA Investigational Levels:		
A. Radioactive Materials Use:		
<ul style="list-style-type: none"> Exceeded the ALARA Quarterly Investigational Level I (10% of ¼ annual limit): 	2009: 0 (2008:7)	<ul style="list-style-type: none"> Some of the reduction in radiation exposure primarily to the extremities can be contributed to the stoppage of in-house preparation of radiopharmaceuticals & Mo-99/Tc-99m generator use in June 2008 due to the revised USP <797> requirements and the start of purchasing unit dose radiopharmaceuticals.
2. I-125/I-131 Bioassay Results:		
<ul style="list-style-type: none"> Bioassays not performed within 6-72 hours post administration: 	2009: 0 (2008:1)	
4. Quarterly Area Monitors Involving Radioactive Materials:		
<ul style="list-style-type: none"> NM2 monitor - wall in main hallway outside Nuclear Medicine (i.e., outer wall of hot lab) qtrly total in mrem: 	2009: 25 (2008:71)	
<ul style="list-style-type: none"> # of area monitors with readings > 100 mrem for the current calendar year: 	2009: 0 (2008:0)	
6. Radiation Safety Improvements and/or Additional Comments/Problems:		
	in 2009 (in 2008)	<ul style="list-style-type: none"> Compliant with NRC's constraint of radioactive air effluents for the current calendar year.

Radiation Safety Committee (RSC)
Comprehensive Radiation Safety Program Annual Review for 2009

<p>Recommend Approval / Disapproval</p>  <p>Michael T. Hackett, M.S., Radiation Safety Officer</p>	<p>Recommend Approval / Disapproval</p>  <p>Cheryl D. Baker, M.D. Chief of Radiology/RSC Chair</p>
<p><u>Recommend Approval</u> / Disapproval</p>  <p>Donna K. Jacobs, FACHE, Associate Director/RSC Management Representative</p>	<p><u>Approved</u> / Disapproved</p>  <p>Sandy J. Nielsen, FACHE, Director</p>

Radiation Safety Committee Dates and Attendance Record for 2009 Reviews

Time period being reviewed at the Radiation Safety Committee (RSC) meeting (i.e., during 2009)	2009 Jan-Mar	2009 Apr-Jun	2009 Jul-Sep	2009 Oct-Dec	2009 Review	Total # of RSC Meetings	P = Present	R ^{AMR} = Represented By Alternate Management Representative (using member)	R = Represented By	E = Excused	A = Absent				
Scheduled Date of Radiation Safety Committee meeting (i.e., set up for the 4 th Thursday of 2 nd month of the quarter following the review period & as needed)	Scheduled for 05/28/09; Rescheduled for 06/04/09	Scheduled for 08/27/09	11/26/09 = Holiday; Rescheduled for 12/30/09	Scheduled for 02/25/10; Rescheduled for 03/04/10											
Actual Date of Radiation Safety Committee meeting	06/04/09	08/27/09	12/30/09	03/04/10											
Scheduled Date above RSC minutes presented to Environment of Care Council (i.e., set up for the 2 nd Thursday of 1 st month of the quarter following the above mentioned RSC meeting & as needed - e.g., annual review presented at the following Environment of Care Council meeting)	Scheduled for 07/09/09	Scheduled for 10/08/09	Scheduled for 01/14/10	Scheduled for 04/08/10	Scheduled for 03/11/10										
Actual Date above RSC minutes presented to Environment of Care Council	07/09/09	10/08/10	01/14/10	TBA	03/11/10										
Radiation Safety Committee (RSC) Membership															
Representing Service	Member Name/Title					RSC Attendance									
Chair, Member from Radiology Service (physician)	Cheryl D. Baker, M.D. Chief of Radiology Service					P	P	P	P	4	4	N/A	0	0	0
Radiation Safety Officer	Michael T. Hackett, MS Radiation Safety Officer					P	P	P	P	4	4	N/A	0	0	0
Member from Management	Donna Jacobs, FACHE Associate Director (AD)					R ^{AMR} by W. Divers, MD, Chief of Staff **	P	R ^{AMR} by J. Pellecchia, MD, Chief of Staff **	P	4	2	2	0	0	0
Member from Nuclear Medicine Service (physician)	Wei-Jen Shih, M.D. Service Chief, Clinical Authorized User					P	P	P	E	4	3	N/A	0	1	0
Member from Nuclear Medicine Service (technical staff)	Vickie Kiefer, CNMT Chief Technologist					P	P	P	P	4	4	N/A	0	0	0
Member from Patient Care Services (Nursing)	Shannon Hardin, R.N. Nurse Manager for 2 South/ Cardiac Cath					P	P	P	P	4	4	N/A	0	0	0
Member from Research Service	Steve Brown, Ph.D. Research: Chemist, Safety Manager, Authorized User					P	P	P	P	4	4	N/A	0	0	0
Member from Radiology Service (technical staff)	Bert D. Morgan, R.T. Administrative Officer					P	E	E	E	4	1	N/A	0	3	0
Member from NAGE	Jon Jones NAGE Safety Officer					A	A	A	A	4	0	N/A	0	0	4
# of RSC members present (P & R^{AMR})						8	7	7	6	* Quorum: at least one-half of the committee membership is in attendance and must include the Chair (or designee), Radiation Safety Officer and a management representative (or designee).					
# of RSC members represented by (R)						0	0	0	0						
# of RSC members excused (E)						0	1	1	2						
# of RSC members absent (A)						1	1	1	1						
Total # of RSC members						9	9	9	9						
Was a quorum* present?						Yes	Yes	Yes	Yes						

** Alternate Management Representative (AMR)

Section/Service	Training Title - Links are available for PowerPoint (PP) training	Type	# of Staff	Expected # of Staff for 2009 Annual Training	% Cmpl't'd in 2009	# RSO Lectures/ Training Sessions	# staff/ RSO Lecture/ Training Session	# hrs/ Training	# training hrs done by RSO via Lecture/ Training Sessions	Total # Training hrs for staff
MOD/HAS	2009 Annual Radiation Safety Training - AOD (included 2 new AOD)	PP/T	6	6	100%	N/A	N/A	1.00	N/A	6.00
EMS	2008 Annual Radiation Safety Training - EMS	PP/T	22			N/A	N/A	0.75	N/A	16.50
	2009 Annual Radiation Safety Training - EMS	PP/T	82	83	99%	N/A	N/A	1.00	N/A	82.00
	EMS Grand Totals:		104			N/A	N/A	1.75	N/A	98.50
Nuclear Medicine	2008 Annual Radiation Safety Training - Nuclear Medicine Administration	PP/T	1			N/A	N/A	1.00	N/A	1.00
	Pulmonex Xenon System - Hands-On-Training	P/E	5			N/A	N/A	0.50	N/A	2.50
	Radiation Safety - Nuclear Medicine Problem Solving Using Time, Distance and Shielding	OST/PP	4			1	4.0	1.00	1.00	4.00
	Monthly Reminders for Nuclear Medicine - 2009: Jan - Pulmonex Xenon System	PP/H	6			N/A	N/A	0.50	N/A	3.00
	Monthly Reminders for Nuclear Medicine - 2009: Feb - Radiation Spill Prevention	PP/H	6			N/A	N/A	0.25	N/A	1.50
	Monthly Reminders for Nuclear Medicine - 2009: Mar - Patient Instructions for I-131 Therapy	PP/H	6			N/A	N/A	0.25	N/A	1.50
	Monthly Reminders for Nuclear Medicine - 2009: Apr - Pulmonex Xenon System Update	PP/H	6			N/A	N/A	0.25	N/A	1.50
	2009 Annual Radiation Safety Training - Nuclear Medicine	PP/T	7	7	100%	N/A	N/A	1.00	N/A	7.00
	2009 Annual Radiation Safety Training - Nuclear Medicine Administration	PP/T	1	1	100%	N/A	N/A	1.00	N/A	1.00
	Nuclear Medicine 2009 Annual Training Totals:		8	8	100%	N/A	N/A	2.00	N/A	8.00
	Nuclear Medicine Grand Totals:		42			1	4.0	5.75	1.00	23.00
Research	2008 Annual Radiation Safety Training - Research	PP/T	3			N/A	N/A	0.75	N/A	2.25
	New Lab - Radiation Safety Record Keeping	P/E	2			1	2.0	1.00	1.00	2.00
	Practicing Safe Science (Howard Hughes Medical Institute) ** (FYI for Other Research Staff)	V	1			N/A	N/A	0.25	N/A	0.25
	Radionuclide Hazards (Howard Hughes Medical Institute) (FYI for Other Research Staff)	V	1			N/A	N/A	0.25	N/A	0.25
	Research Emergency & Safety Procedures * (FYI for Other Research Staff)	PP/H	24			N/A	N/A	0.25	N/A	6.00
	Initial Radiation Safety Training (2 New Authorized Users, 2 New Staff & 1 pending completion of training in 2010):									
	• Practicing Safe Science (Howard Hughes Medical Institute) ** (4 Counts for 2009 Annual Training)	V	5	See Below	See Below	N/A	N/A	0.25	N/A	1.25
	• Radionuclide Hazards (Howard Hughes Medical Institute) (4 Counts for 2009 Annual Training)	V	5	See Below	See Below	N/A	N/A	0.25	N/A	1.25
	• Research Emergency & Safety Procedures * (4 Counts for 2009 Annual Training)	PP/H	5	See Below	See Below	N/A	N/A	0.25	N/A	1.25
	• 2007 Annual Radiation Safety Training - Research	PP/H	5			N/A	N/A	1.50	N/A	7.50
	• 2008 Annual Radiation Safety Training - Research	PP/T	5			N/A	N/A	0.75	N/A	3.75
	• Initial Radiation Safety Training - Research	L	4			2	2.0	1.42	2.83	5.67
	2009 Annual Radiation Safety Training - Research:									
	• Practicing Safe Science (Howard Hughes Medical Institute) **	V	8	See Below	See Below	N/A	N/A	0.25	N/A	2.00
• Radionuclide Hazards (Howard Hughes Medical Institute)	V	8	See Below	See Below	N/A	N/A	0.25	N/A	2.00	
• Research Emergency & Safety Procedures *	PP/H	9	See Below	See Below	N/A	N/A	0.25	N/A	2.25	
2009 Annual Radiation Safety Training - Research (in 3 parts for each - see above for breakdown)	see above	25	27	93%	N/A	N/A	0.25	N/A	6.25	
2009 Annual Radiation Safety Training - Research Administration	PP/T	3	3	100%	N/A	N/A	1.00	N/A	3.00	
	Research 2009 Annual Training Totals:		28	30	93%		N/A	1.75	N/A	9.25
	Research Grand Totals:		88			3	2.0	8.67	3.83	40.67
VA Police	2008 Annual Radiation Safety Training - VA Police	PP/T	1			N/A	N/A	1.00	N/A	1.00
	2009 Annual Radiation Safety Training - VA Police (included 5 new Police Officers)	PP/T	34	34	100%	N/A	N/A	1.00	N/A	34.00
	VA Police Grand Totals:		35			N/A	N/A	2.00	N/A	35.00
Warehouse/A&LS	2009 Annual Radiation Safety Training - Warehouse (included 3 new warehouse staff)	PP/T	11	11	100%	N/A	N/A	1.00	N/A	11.00

Section/Service	Training Title - Links are available for PowerPoint (PP) training	Type	# of Staff	Expected # of Staff for 2009 Annual Training	% Cmp't'd in 2009	# RSO Lectures/ Training Sessions	# staff/ RSO Lecture/ Training Session	# hrs/ Training	# training hrs done by RSO via Lecture/ Training Sessions	Total # Training hrs for staff	
FYI Training (e.g., Radiation Safety, Safety Office)	Monthly Reminders for Nuclear Medicine/1st Qtr 2008 (Jan - Radiation Detectors: Gas-Filled; Feb - Stress Area IV Setup; Mar - Mo-99/Tc-99m Concentration)	PP/H	1			N/A	N/A	1.00	N/A	1.00	
	Monthly Reminders for Nuclear Medicine/Oct 2008 (Oct - Daily Close Out Survey plus Feb - Stress Area IV Setup Disposal)	PP/H	1			N/A	N/A	0.50	N/A	0.50	
	Monthly Reminders for Nuclear Medicine/Nov 2008 (Nov - Daily Dose Calibrator Constancy Checks)	PP/H	1			N/A	N/A	0.25	N/A	0.25	
	2008 Annual Radiation Safety Training - AOD	PP/T	1			N/A	N/A	1.00	N/A	1.00	
	2008 Annual Radiation Safety Training - EMS	PP/T	1			N/A	N/A	0.75	N/A	0.75	
	2008 Annual Radiation Safety Training - Nuclear Medicine	PP/T	2			N/A	N/A	1.00	N/A	2.00	
	2008 Annual Radiation Safety Training - Nuclear Medicine Administration	PP/T	1			N/A	N/A	1.00	N/A	1.00	
	2008 Annual Radiation Safety Training - Research	PP/T	1			N/A	N/A	0.75	N/A	0.75	
	2008 Annual Radiation Safety Training - VA Police	PP/T	1			N/A	N/A	1.00	N/A	1.00	
	2008 Annual Radiation Safety Training - Warehouse	PP/T	1			N/A	N/A	1.00	N/A	1.00	
	Monthly Reminders for Nuclear Medicine - 2009: Jan - Pulmonex Xenon System	PP/H	4			N/A	N/A	0.50	N/A	2.00	
	Monthly Reminders for Nuclear Medicine - 2009: Feb - Radiation Spill Prevention	PP/H	4			N/A	N/A	0.25	N/A	1.00	
	Monthly Reminders for Nuclear Medicine - 2009: Mar - Patient Instructions for I-131 Therapy	PP/H	3			N/A	N/A	0.25	N/A	0.75	
	Monthly Reminders for Nuclear Medicine - 2009: Apr - Pulmonex Xenon System Update	PP/H	2			N/A	N/A	0.25	N/A	0.50	
	Pulmonex Xenon System - Hands-On-Training	P/E	1			N/A	N/A	0.50	N/A	0.50	
	Radiation Safety - Nuclear Medicine Problem Solving Using Time, Distance and Shielding	OST/PP	1			N/A	N/A	1.00	N/A	1.00	
	Practicing Safe Science (Howard Hughes Medical Institute) **	V	2			N/A	N/A	0.25	N/A	0.50	
	Radionuclide Hazards (Howard Hughes Medical Institute)	V	1			N/A	N/A	0.25	N/A	0.25	
	Research Emergency & Safety Procedures *	PP/H	2			N/A	N/A	0.25	N/A	0.50	
	REAC-TS Hospital - 1018596 (Emergency Management of Radiation Accident Victims)	OST/PP	2			N/A	N/A	8.10	N/A	16.20	
	Radiological Emergencies (part of VHA Decontamination Train-the Trainer Course)	L	14			1	14.0	1.00	1.00	14.00	
	2009 Annual Radiation Safety Training - AOD	PP/T	1			N/A	N/A	1.00	N/A	1.00	
	2009 Annual Radiation Safety Training - EMS	PP/T	2			N/A	N/A	1.00	N/A	2.00	
	2009 Annual Radiation Safety Training - Nuclear Medicine	PP/T	1			N/A	N/A	1.00	N/A	1.00	
	2009 Annual Radiation Safety Training - Nuclear Medicine Administration	PP/T	1			N/A	N/A	1.00	N/A	1.00	
	2009 Annual Radiation Safety Training - Research Administration	PP/T	1			N/A	N/A	1.00	N/A	1.00	
	2009 Annual Radiation Safety Training - VA Police	PP/T	2			N/A	N/A	1.00	N/A	2.00	
	2009 Annual Radiation Safety Training - Warehouse	PP/T	1			N/A	N/A	1.00	N/A	1.00	
	FYI Training (e.g., Radiation Safety, Safety Office) Grand Totals:			56			N/A	N/A	27.85	N/A	55.45
	2009 Annual Training Totals:			169	172	98%	N/A	N/A	7.75	N/A	150.25
Grand Totals:			342			5	4.8	48.02	5.83	269.62	

* Note of the 60 minutes of this research safety training, about 15 minutes would pertain to radiation safety.

** Note of the 30 minutes of this research safety video, about 15 minutes would pertain to radiation safety.

Key: Type of training

- A/T = Article & Test - Self Review
- H/T = Handout & Test - Self Review
- L = Lecture
- OST/PP = Off Site Training PowerPoint presentation
- P/E = Procedure and/or Equipment Review
- PP/H = PowerPoint presentation/Handout - Self Review
- PP/T = PowerPoint presentation/Handout - Self Review with Test
- R = Review of Records and Procedures - Self Review
- V = Video - Self Review

N/A = if not a RSO lecture/training session (e.g., viewed video, special lecture, review material, or read

2009 Radiation Safety Training Review - By Date

#	Date	Time	# of Staff	# hrs/ Staff	Total # hrs	Type	Section/Service	Training Title - Links are available for PowerPoint (PP) training
N/A	Jan	N/A	1	0.50	0.50	PP/H	Safety Office	Monthly Reminders for Nuclear Medicine/Oct 2008 (Oct - Daily Close Out Survey plus Feb - Stress Area IV Setup Disposal)
N/A	Jan	N/A	1	0.25	0.25	PP/H	Safety Office	Monthly Reminders for Nuclear Medicine/Nov 2008 (Nov - Daily Dose Calibrator Constancy Checks)
N/A	Jan	N/A	22	0.75	16.50	PP/T	EMS	2008 Annual Radiation Safety Training - EMS
N/A	Jan	N/A	1	1.00	1.00	PP/T	Nuclear Medicine	2008 Annual Radiation Safety Training - Nuclear Medicine Administration
N/A	Jan	N/A	3	0.75	2.25	PP/T	Research	2008 Annual Radiation Safety Training - Research
N/A	Jan	N/A	1	1.00	1.00	PP/T	VA Police	2008 Annual Radiation Safety Training - VA Police
N/A	Jan	N/A	5	0.50	2.50	P/E	Nuclear Medicine	Pulmonex Xenon System - Hands-On-Training
N/A	Jan	N/A	1	0.50	0.50	P/E	Radiation Safety	Pulmonex Xenon System - Hands-On-Training
N/A	Jan	N/A	6	0.50	3.00	PP/H	Nuclear Medicine	Monthly Reminders for Nuclear Medicine - 2009: Jan - Pulmonex Xenon System
N/A	Jan	N/A	1	0.50	0.50	PP/H	Radiation Safety	Monthly Reminders for Nuclear Medicine - 2009: Jan - Pulmonex Xenon System
N/A	Feb	N/A	1	1.00	1.00	PP/T	Safety Office	2008 Annual Radiation Safety Training - AOD
N/A	Feb	N/A	1	0.75	0.75	PP/T	Safety Office	2008 Annual Radiation Safety Training - EMS
N/A	Feb	N/A	2	1.00	2.00	PP/T	Safety Office	2008 Annual Radiation Safety Training - Nuclear Medicine
N/A	Feb	N/A	1	1.00	1.00	PP/T	Safety Office	2008 Annual Radiation Safety Training - Nuclear Medicine Administration
N/A	Feb	N/A	1	0.75	0.75	PP/T	Safety Office	2008 Annual Radiation Safety Training - Research
N/A	Feb	N/A	1	1.00	1.00	PP/T	Safety Office	2008 Annual Radiation Safety Training - VA Police
N/A	Feb	N/A	1	1.00	1.00	PP/T	Safety Office	2008 Annual Radiation Safety Training - Warehouse
N/A	Feb	N/A	2	0.50	1.00	PP/H	Safety Office	Monthly Reminders for Nuclear Medicine - 2009: Jan - Pulmonex Xenon System
N/A	Mar	N/A	1	1.00	1.00	PP/H	Safety Office	Monthly Reminders for Nuclear Medicine/1st Qtr 2008 (Jan - Radiation Detectors; Gas-Filled; Feb - Stress Area IV Setup; Mar - Mo-99/Tc-99m Concentration)
1	03/28/09	11:30A	4	1.00	4.00	OST/PP	Nuclear Medicine	Radiation Safety - Nuclear Medicine Problem Solving Using Time, Distance and Shielding
N/A	03/28/09	11:30A	1	1.00	1.00	OST/PP	Radiation Safety	Radiation Safety - Nuclear Medicine Problem Solving Using Time, Distance and Shielding
N/A	Apr	N/A	5	0.25	1.25	PP/H	Nuclear Medicine	Monthly Reminders for Nuclear Medicine - 2009: Feb - Radiation Spill Prevention
N/A	Apr	N/A	1	0.25	0.25	PP/H	Radiation Safety	Monthly Reminders for Nuclear Medicine - 2009: Feb - Radiation Spill Prevention
N/A	May	N/A	1	0.25	0.25	PP/H	Nuclear Medicine	Monthly Reminders for Nuclear Medicine - 2009: Feb - Radiation Spill Prevention
N/A	May	N/A	1	0.50	0.50	PP/H	Safety Office	Monthly Reminders for Nuclear Medicine - 2009: Jan - Pulmonex Xenon System
N/A	May	N/A	3	0.25	0.75	PP/H	Safety Office	Monthly Reminders for Nuclear Medicine - 2009: Feb - Radiation Spill Prevention
N/A	May	N/A	3	0.25	0.75	PP/H	Nuclear Medicine	Monthly Reminders for Nuclear Medicine - 2009: Mar - Patient Instructions for I-131 Therapy
N/A	May	N/A	3	0.25	0.75	PP/H	Radiation Safety/ Safety Office	Monthly Reminders for Nuclear Medicine - 2009: Mar - Patient Instructions for I-131 Therapy
N/A	May	N/A	2	0.25	0.50	PP/H	Nuclear Medicine	Monthly Reminders for Nuclear Medicine - 2009: Apr - Pulmonex Xenon System Update
N/A	May	N/A	2	0.25	0.50	PP/H	Radiation Safety/ Safety Office	Monthly Reminders for Nuclear Medicine - 2009: Apr - Pulmonex Xenon System Update
N/A	May	N/A	1	0.25	0.25	PP/H	Research	Research Emergency & Safety Procedures * (Counts for 2009 Annual Training)
N/A	May	N/A	2	0.25	0.50	PP/H	Research	Research Emergency & Safety Procedures * (FYI for Other Research Staff)
N/A	May	N/A	2	0.25	0.50	PP/H	Radiation Safety/ Safety Office	Research Emergency & Safety Procedures *
N/A	Jun	N/A	3	0.25	0.75	PP/H	Radiation Safety/ Safety Office	Monthly Reminders for Nuclear Medicine - 2009: Mar - Patient Instructions for I-131 Therapy
N/A	Jun	N/A	4	0.25	1.00	PP/H	Nuclear Medicine	Monthly Reminders for Nuclear Medicine - 2009: Apr - Pulmonex Xenon System Update
N/A	Jul	N/A	4	0.25	1.00	PP/H	Research	Research Emergency & Safety Procedures * (FYI for Other Research Staff)
N/A	Aug	N/A	2	0.25	0.50	V	Research	Initial Radiation Safety Training: <ul style="list-style-type: none"> • Practicing Safe Science (Howard Hughes Medical Institute) ** (Counts for 2009 Annual Training)
N/A	Aug	N/A	2	0.25	0.50	V	Research	<ul style="list-style-type: none"> • Radionuclide Hazards (Howard Hughes Medical Institute) (Counts for 2009 Annual Training)
N/A	Aug	N/A	3	0.25	0.75	PP/H	Research	<ul style="list-style-type: none"> • Research Emergency & Safety Procedures * (Counts for 2009 Annual Training)
N/A	Aug	N/A	2	1.50	3.00	PP/H	Research	<ul style="list-style-type: none"> • 2007 Annual Radiation Safety Training - Research
N/A	Aug	N/A	2	0.75	1.50	PP/T	Research	<ul style="list-style-type: none"> • 2008 Annual Radiation Safety Training - Research
2	08/26/09	2:00 PM	2	1.50	3.00	L	Research	<ul style="list-style-type: none"> • Initial Radiation Safety Training - Research
N/A	Aug	N/A	2	0.25	0.50	V	Radiation Safety/ Safety Office	Practicing Safe Science (Howard Hughes Medical Institute) **
N/A	Aug	N/A	1	0.25	0.25	V	Radiation Safety	Radionuclide Hazards (Howard Hughes Medical Institute)
N/A	Sep	N/A	2	0.25	0.50	V	Research	Initial Radiation Safety Training: <ul style="list-style-type: none"> • Practicing Safe Science (Howard Hughes Medical Institute) ** (Counts for 2009 Annual Training)
N/A	Sep	N/A	2	0.25	0.50	V	Research	<ul style="list-style-type: none"> • Radionuclide Hazards (Howard Hughes Medical Institute) (Counts for 2009 Annual Training)
N/A	Sep	N/A	1	0.25	0.25	PP/H	Research	<ul style="list-style-type: none"> • Research Emergency & Safety Procedures * (Counts for 2009 Annual Training)
N/A	Sep	N/A	2	1.50	3.00	PP/H	Research	<ul style="list-style-type: none"> • 2007 Annual Radiation Safety Training - Research
N/A	Sep	N/A	2	0.75	1.50	PP/T	Research	<ul style="list-style-type: none"> • 2008 Annual Radiation Safety Training - Research
3	09/08/09	1:00 PM	2	1.33	2.67	L	Research	<ul style="list-style-type: none"> • Initial Radiation Safety Training - Research
N/A	Sep	N/A	2	0.25	0.50	PP/H	Research	Research Emergency & Safety Procedures * (Counts for 2009 Annual Training)
N/A	Sep	N/A	4	0.25	1.00	PP/H	Research	Research Emergency & Safety Procedures * (FYI for Other Research Staff)
N/A	09/09/09	8:00 AM	2	8.10	16.20	OST/PP	Radiation Safety/ Radiology	REAC-TS Hospital - 1018596 (Emergency Management of Radiation Accident Victims)
4	09/29/09	4:00 PM	14	1.00	14.00	L	DECON Team	Radiological Emergencies (part of VHA Decontamination Train-the Trainer Course)

#	Date	Time	# of Staff	# hrs/ Staff	Total # hrs	Type	Section/Service	Training Title - Links are available for PowerPoint (PP) training
N/A	Oct	N/A	2	1.00	2.00	PP/T	AOD/HAS	2009 Annual Radiation Safety Training - AOD
N/A	Oct	N/A	1	1.00	1.00	PP/T	Radiation Safety	2009 Annual Radiation Safety Training - AOD
N/A	10/21/09	9:30 AM	30	1.00	30.00	PP/T	EMS	2009 Annual Radiation Safety Training - EMS
N/A	10/28/09	3:30 PM	10	1.00	10.00	PP/T	EMS	2009 Annual Radiation Safety Training - EMS
N/A	Oct	N/A	2	1.00	2.00	PP/T	Radiation Safety/ Nuclear Medicine	2009 Annual Radiation Safety Training - EMS
N/A	Oct	N/A	2	0.25	0.50	PP/H	Research	Research Emergency & Safety Procedures * (Counts for 2009 Annual Training)
N/A	Oct	N/A	3	0.25	0.75	PP/H	Research	Research Emergency & Safety Procedures * (FYI for Other Research Staff)
N/A	Nov	N/A	4	1.00	4.00	PP/T	AOD/HAS	2009 Annual Radiation Safety Training - AOD
N/A	11/18/09	9:30 AM	18	1.00	18.00	PP/T	EMS	2009 Annual Radiation Safety Training - EMS
N/A	11/25/09	11:30 PM	12	1.00	12.00	PP/T	EMS	2009 Annual Radiation Safety Training - EMS
N/A	Nov	N/A	3	1.00	3.00	PP/T	EMS	2009 Annual Radiation Safety Training - EMS
N/A	Nov	N/A	7	1.00	7.00	PP/T	Nuclear Medicine	2009 Annual Radiation Safety Training - Nuclear Medicine
N/A	Nov	N/A	1	1.00	1.00	PP/T	Radiation Safety	2009 Annual Radiation Safety Training - Nuclear Medicine
N/A	Nov	N/A	1	1.00	1.00	PP/T	Nuclear Medicine	2009 Annual Radiation Safety Training - Nuclear Medicine Administration
N/A	Nov	N/A	1	1.00	1.00	PP/T	Radiation Safety	2009 Annual Radiation Safety Training - Nuclear Medicine Administration
N/A	Nov	N/A	2	0.25	0.50	PP/H	Research	Research Emergency & Safety Procedures * (Counts for 2009 Annual Training)
N/A	Nov	N/A	6	0.25	1.50	PP/H	Research	Research Emergency & Safety Procedures * (FYI for Other Research Staff)
N/A	Nov	N/A	3	1.00	3.00	PP/T	Research	2009 Annual Radiation Safety Training - Research Administration
5	11/10/09	2:00 PM	2	1.00	2.00	P/E	Research	New Lab - Radiation Safety Record Keeping
N/A	Nov	N/A	1	1.00	1.00	PP/T	Radiation Safety	2009 Annual Radiation Safety Training - Research Administration
N/A	Nov	N/A	31	1.00	31.00	PP/T	VA Police	2009 Annual Radiation Safety Training - VA Police
N/A	Nov	N/A	2	1.00	2.00	PP/T	Radiation Safety/ Safety Office	2009 Annual Radiation Safety Training - VA Police
N/A	Nov	N/A	10	1.00	10.00	PP/T	Warehouse/A&LS	2009 Annual Radiation Safety Training - Warehouse
N/A	Nov	N/A	1	1.00	1.00	PP/T	Radiation Safety	2009 Annual Radiation Safety Training - Warehouse
N/A	Dec	N/A	9	1.00	9.00	PP/T	EMS	2009 Annual Radiation Safety Training - EMS
N/A	Dec	N/A	8	0.25	2.00	V	Research	Practicing Safe Science (Howard Hughes Medical Institute) ** (FYI for Other Research Staff)
N/A	Dec	N/A	8	0.25	2.00	V	Research	Radionuclide Hazards (Howard Hughes Medical Institute) (FYI for Other Research Staff)
N/A	Dec	N/A	4	0.25	1.00	PP/H	Research	Research Emergency & Safety Procedures * (Counts for 2009 Annual Training)
N/A	Dec	N/A	5	0.25	1.25	PP/H	Research	Research Emergency & Safety Procedures * (FYI for Other Research Staff)
N/A	Dec	N/A	1	0.25	0.25	V	Research	Initial Radiation Safety Training (pending completion of training in 2010): • Practicing Safe Science (Howard Hughes Medical Institute) **
N/A	Dec	N/A	1	0.25	0.25	V	Research	• Radionuclide Hazards (Howard Hughes Medical Institute)
N/A	Dec	N/A	1	0.25	0.25	PP/H	Research	• Research Emergency & Safety Procedures *
N/A	Dec	N/A	1	1.50	1.50	PP/H	Research	• 2007 Annual Radiation Safety Training - Research
N/A	Dec	N/A	1	0.75	0.75	PP/T	Research	• 2008 Annual Radiation Safety Training - Research
N/A	Dec	N/A	3	1.00	3.00	PP/T	VA Police	2009 Annual Radiation Safety Training - VA Police
N/A	Dec	N/A	1	1.00	1.00	PP/T	Warehouse/A&LS	2009 Annual Radiation Safety Training - Warehouse

Grand Total of # of Staff: 342 269.62 Grand Total of # Training Hrs.

* Note of the 60 minutes of this research safety training, about 15 minutes would pertain to radiation safety.

** Note of the 30 minutes of this research safety video, about 15 minutes would pertain to radiation safety.

N/A = if not a RSO

Lecture/Training Session (e.g., viewed video, special lecture, review material, or read article and took test)

Key: Type of training

A/T = Article & Test - Self Review

H/T = Handout & Test - Self Review

L = Lecture

OST/PP = Off Site Training PowerPoint presentation

P/E = Procedure and/or Equipment Review

PP/H = PowerPoint presentation/Handout - Self Review

PP/T = PowerPoint presentation/Handout - Self Review with Test

R = Review of Records and Procedures - Self Review

V = Video - Self Review

**DEPARTMENT OF
VETERANS AFFAIRS**

Memorandum

Date: **APR 27 2009**

From: Director, VHA National Health Physics Program (NHPP) (115HP/NLR)

Subj: Nuclear Regulatory Commission (NRC) Inspection Report (EA-09-014, dated April 15, 2009)

To: Director (596/00), VA Medical Center, Lexington, Kentucky

1. I am attaching subject NRC inspection report for your review and response. The report cites a Severity Level IV violation for a failure to provide the Radiation Safety Officer adequate time to perform required duties.
2. You must respond to the four questions in the NRC Notice of Violation (NOV) to include providing a statement of the reason for the violation, corrective steps, and the date of full compliance. Since the circumstances for a similar violation and corrective steps were previously resolved during the NHPP inspection process, the response must address the status for the previous NHPP inspection results, this new NRC violation, and evaluation of the radiation safety program and performance of duties by the Radiation Safety Officer as currently viewed by executive management.
3. Your response should be received by NHPP not later than May 12, 2009, to be forwarded to NRC. The response may refer to previously submitted correspondence.
4. Please note the NOV must be posted for five working days per 10 CFR 19.11.
5. Please contact Gary E. Williams at 501-257-1572, if you have any questions or comments about the NRC inspection report or required response.


E. Lynn McGuire

Attachment

cc: Chair, National Radiation Safety Committee
Network Director, VISN 9 (10N9)



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, ILLINOIS 60532-4352

April 15, 2009

04-24-09 A10:07 IN

EA-09-014

Mr. E. Lynn McGuire, Director
National Health Physics Program (115HP/NLR)
Department of Veterans Affairs
Veterans Health Administration
2200 Fort Roots Drive
North Little Rock, AR 72114

SUBJECT: NRC REVIEW OF NHPP INSPECTION REPORT AND NOTICE OF VIOLATION DATED JANUARY 24, 2008 – DEPARTMENT OF VETERANS AFFAIRS MEDICAL CENTER, LEXINGTON KY AND NRC INVESTIGATION REPORT 3-2008-013

Dear Mr. McGuire:

This letter refers to the inspection conducted by the Department of Veterans Affairs (DVA) National Health Physics Program (NHPP) on September 17, 2007, with continued in-office review through December 21, 2007, at the DVA Medical Center in Lexington Kentucky. On January 24, 2008, the NHPP reported the Severity Level III violation to the NRC, in accordance with the NRC Master Materials License, Letter of Understanding, Condition No. 23. In addition, on January 24, 2008, the DVA issued an Inspection Report and Notice of Violation. The Notice of Violation documented a Severity Level III problem for the willful failure of the Radiation Safety Officer to perform required duties.

Because the DVA concluded that the violation involved wrong-doing, the NRC followed its internal processes and conducted an investigation by the NRC Office of Investigations (OI). The OI completed its investigation and issued its conclusion in an investigation report dated December 18, 2008. A factual summary of the results of their investigation is included in Enclosure 2. On April 8, 2009, a telephone exit meeting was held between you and Patricia Pelke, Chief, Materials Licensing Branch, to discuss the result of NRC's review.

The NRC evaluated the information provided in your inspection report, the information obtained from the OI investigation and the information provided by the permittee in response to your inspection report. The NRC concluded that the violations were correctly categorized as a Severity Level III problem, as stated in the inspection report, although the violation cited against 10 CFR 71 and 49 CFR 172.704 would have been more correctly cited against 10 CFR 71.5 invoking 49 CFR 172.704(c)(2).

Additionally, based on the results of the investigation, the NRC has determined that a Severity Level IV violation of NRC requirements occurred. The violation was evaluated in accordance with the NRC Enforcement Policy. The current Enforcement Policy is included on the NRC's Web site at (<http://www.nrc.gov/about-nrc/regulatory/enforcement/enforc-pol.pdf>). The violation is cited in the enclosed Notice of Violation (Notice). The violation is being cited in the

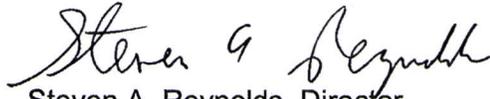
Notice because it was identified by the NRC during our review of your inspection and the OI investigation results.

The violation involved the non-willful failure of the permittee to ensure that the Radiation Safety Officer had sufficient time and resources to perform his NRC-required duties as required by 10 CFR 35.24(g) when the collateral duty of Controlled Substance Coordinator was assigned to him and when the duties associated with that position expanded in 2005.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. For your consideration and convenience, an excerpt from NRC Information Notice 96-28, "Suggested Guidance Relating to Development and Implementation of Corrective Action," is enclosed. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if you choose to provide one, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

Sincerely,



Steven A. Reynolds, Director
Division of Nuclear Materials Safety

Docket No. 030-34325
License No. 03-23853-01VA
Permit No. 16-08896-04

Enclosures:

1. Notice of Violation
2. Summary of Office of Investigations
Report 3 2008 013
3. Excerpt from NRC Information
Notice 96-28

cc: State of KY

NOTICE OF VIOLATION

Department of Veterans Affairs
Lexington, Kentucky

Docket No. 030-34325
License No. 03-23853-01VA

As a result of an NRC investigation documented in Investigation Report 3-2008-013, dated December 18, 2008, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

Title 10 of the Code of Federal Regulations (CFR) Section 35.24(g) requires the licensee to provide the Radiation Safety Officer sufficient authority, organizational freedom, time, resources, and management prerogative, to (1) Identify radiation safety problems; (2) Initiate, recommend, or provide corrective actions; (3) Stop unsafe operations; and, (4) Verify implementation of corrective actions.

Contrary to the above, the licensee did not provide the Radiation Safety Officer sufficient authority, time, and resources to identify radiation safety problems; initiate, recommend, or provide corrective actions; stop unsafe operations; and verify implementation of corrective actions, in that, around September 2005, the licensee assigned a collateral duty to the RSO (Controlled Substance Coordinator) which compromised his ability to successfully perform radiation safety responsibilities from September 2005 until September 2007.

This is a Severity Level IV violation (Supplement VI)

Pursuant to the provisions of Title 10 of the Code of Federal Regulations (CFR) 2.201, the Department of Veterans Affairs is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, Region III, 2443 Warrenville Road, Lisle IL 60532, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation" and should include for each violation: (1) the reason for the violation, or, if contested, the basis for disputing the violation or severity level, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance will be achieved. Your response may reference or include previous docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an order or a Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time.

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> to the extent possible, it should not

include any personal privacy, proprietary or safeguards information so that it can be made available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days.

Dated this 15th day of April, 2009

SUMMARY OF OFFICE OF INVESTIGATIONS REPORT 3-2008-013

The Office of Investigations report involves a radiation safety officer (RSO) who acknowledged that, over the course of approximately two years, he deliberately failed to (1) perform required annual reviews of the radiation safety program; (2) hold required periodic Radiation Safety Committee meetings for approximately a two year period; and (3) provide required Hazardous Material (HAZMAT) training to Nuclear Medical Technicians involved in the transportation of radioactive materials.

During an inspection conducted by the National Health Physics Program (NHPP) under the Department of Veterans Affairs (DVA) Master Material license (MML), the RSO admitted to the NHPP inspector that he had not been performing all of the duties required of an RSO. On January 24, 2008, the NHPP issued its inspection report which included a Severity Level III violation for the RSO's willful failure to perform his required duties.

The Office of Investigations interviewed the RSO and his supervisor. The RSO acknowledged that, in his duties as the RSO, he was responsible for conducting annual reviews of the radiation safety program, holding periodic Radiation Safety Committee meetings, and conducting required HAZMAT training for Nuclear Medical Technicians involved in the transportation of radioactive materials. He also acknowledged that he failed to perform these duties for approximately a two-year period because of other workload and that he did not inform his management that required RSO duties were not being performed. The RSO stated that he knew that the required duties were NRC requirements and that he was not meeting those requirements, but thought that he could get "caught up" on the duties.

EXCERPT FROM INFORMATION NOTICE (IN) 96-28, "SUGGESTED GUIDANCE
RELATING TO DEVELOPMENT AND IMPLEMENTATION OF CORRECTIVE ACTION"

The corrective action process should involve the following three steps:

1. Conduct a complete and thorough review of the circumstances that led to the violation. Typically, such reviews include:
 1. Interviews with individuals who are either directly or indirectly involved in the violation, including management personnel and those responsible for training or procedure development/guidance. Particular attention should be paid to lines of communication between supervisors and workers.
 2. Tours and observations of the area where the violation occurred, particularly when those reviewing the incident do not have day-to-day contact with the operation under review. During the tour, individuals should look for items that may have contributed to the violation as well as those items that may result in future violations. Reenactments (without use of radiation sources, if they were involved in the original incident) may be warranted to better understand what actually occurred.
 3. Review of programs, procedures, audits, and records that relate directly or indirectly to the violation. The program should be reviewed to ensure that its overall objectives and requirements are clearly stated and implemented. Procedures should be reviewed to determine whether they are complete, logical, understandable, and meet their objectives (i.e., they should ensure compliance with the current requirements). Records should be reviewed to determine whether there is sufficient documentation of necessary tasks to provide an auditable record and to determine whether similar violations have occurred previously. Particular attention should be paid to training and qualification records of individuals involved with the violation.
2. Identify the root cause of the violation.

Corrective action is not comprehensive unless it addresses the root cause(s) of the violation. It is essential, therefore, that the root cause(s) of a violation be identified so that appropriate action can be taken to prevent further noncompliance in this area, as well as other potentially affected areas. Violations typically have direct and indirect cause(s). As each cause is identified, ask what other factors could have contributed to the cause. When it is no longer possible to identify other contributing factors, the root causes probably have been identified. For example, the direct cause of a violation may be a failure to follow procedures; the indirect causes may be inadequate training, lack of attention to detail, and inadequate time to carry out an activity. These factors may have been caused by a lack of staff resources that, in turn, are indicative of lack of management support. Each of these factors must be addressed before corrective action is considered to be comprehensive.

3. Take prompt and comprehensive corrective action that will address the immediate concerns and prevent recurrence of the violation.

It is important to take immediate corrective action to address the specific findings of the violation. For example, if the violation was issued because radioactive material was found in an unrestricted area, immediate corrective action must be taken to place the material under licensee control in authorized locations. After the immediate safety concerns have been addressed, timely action must be taken to prevent future recurrence of the violation. Corrective action is sufficiently comprehensive when corrective action is broad enough to reasonably prevent recurrence of the specific violation as well as prevent similar violations.

In evaluating the root causes of a violation and developing effective corrective action, consider the following:

1. Has management been informed of the violation(s)?
2. Have the programmatic implications of the cited violation(s) and the potential presence of similar weaknesses in other program areas been considered in formulating corrective actions so that both areas are adequately addressed?
3. Have precursor events been considered and factored into the corrective actions?
4. In the event of loss of radioactive material, should security of radioactive material be enhanced?
5. Has your staff been adequately trained on the applicable requirements?
6. Should personnel be re-tested to determine whether re-training should be emphasized for a given area? Is testing adequate to ensure understanding of requirements and procedures?
7. Has your staff been notified of the violation and of the applicable corrective action?
8. Are audits sufficiently detailed and frequently performed? Should the frequency of periodic audits be increased?
9. Is there a need for retaining an independent technical consultant to audit the area of concern or revise your procedures?
10. Are the procedures consistent with current NRC requirements, should they be clarified, or should new procedures be developed?
11. Is a system in place for keeping abreast of new or modified NRC requirements?
12. Does your staff appreciate the need to consider safety in approaching daily assignments?

13. Are resources adequate to perform, and maintain control over, the licensed activities? Has the radiation safety officer been provided sufficient time and resources to perform his or her oversight duties?
14. Have work hours affected the employees' ability to safely perform the job?
15. Should organizational changes be made (e.g., changing the reporting relationship of the radiation safety officer to provide increased independence)?
16. Are management and the radiation safety officer adequately involved in oversight and implementation of the licensed activities? Do supervisors adequately observe new employees and difficult, unique, or new operations?
17. Has management established a work environment that encourages employees to raise safety and compliance concerns?
18. Has management placed a premium on production over compliance and safety? Does management demonstrate a commitment to compliance and safety?
19. Has management communicated its expectations for safety and compliance?
20. Is there a published discipline policy for safety violations, and are employees aware of it? Is it being followed?

The complete Information Notice may be found on the NRC's web site in the Electronic Reading Room, Collections of Documents by Type, Generic Communications, Information Notices, 1996 or directly from <http://www.nrc.gov/reading-rm/doc-collections/gen-comm/info-notices/1996/> and then selecting the Information Notice.



DEPARTMENT OF VETERANS AFFAIRS
Veterans Health Administration
National Health Physics Program
2200 Fort Roots Drive
North Little Rock, AR 72114

MAY 14 2009

In Reply Refer To: 598/115HP/NLR

Nuclear Regulatory Commission (NRC)
Attn: Document Control Desk
Washington, DC 20555-0001

Re: NRC License No. 03-23853-01VA; NRC Docket No. 030-34325; EA-09-014

Dear Sir or Madame:

This letter is a response to your letter dated April 15, 2009, and includes a "Reply to a Notice of Violation."

Our response is provided by the enclosed memorandum dated May 11, 2009, from VA Medical Center, Lexington, Kentucky. The memorandum has specific details to address the questions in the Notice of Violation.

We accept the violation as cited. We consider the corrective actions and the current status for the radiation safety program as stated in the memorandum to be adequate to close the violation. We will confirm continued compliance during future inspections.

If you have any questions, please contact Gary E. Williams at 501-257-1572.

Sincerely,

A handwritten signature in black ink, appearing to read "E. Lynn McGuire".

E. Lynn McGuire
Director, National Health Physics Program

Enclosure

cc: Regional Administrator, NRC Region III

Department of
Veterans Affairs

Memorandum

Date: May 11, 2009
From: Director (596/00), VA Medical Center, Lexington, Kentucky
Subj: Reply to a Notice of Violation, Docket No. 030-34325
To: Director, VHA National Health Physics Program (115HP/NLR)

Below provides our written response to the Nuclear Regulatory Commission investigation and Notice of Violation dated April 15, 2009.

(1) The reason for the violation:

The administrative controls and policies governing the Radiation Safety Officer (RSO) and Radiation Safety Committee (RSC) during the period from September 2005 until September 2007 were not strict enough to provide the RSO sufficient authority, time, and resources to successfully perform all of his radiation safety responsibilities which in part was due to the RSO's assigned collateral duty as the Controlled Substance Coordinator.

(2) The corrective steps that have been taken and the results achieved:

- (a) The RSO was relieved from his collateral duties as the Controlled Substance Coordinator (CSC) effective at the end of September 2007. This has provided the RSO the time to successfully perform all of his radiation safety responsibilities which has included performing required annual reviews of the radiation safety program, holding required periodic RSC meetings and providing required DOT Hazardous Materials training to Nuclear Medicine staff involved in the transportation of radioactive materials. The CSC duties were removed from the RSO's position description and performance plan.
- (b) The RSO was re-assigned from the Chief of Nuclear Medicine Service to report to the Associate Director in July 2007. Since the hiring of the Chief of Radiology Service, the RSO has been re-assigned effective April 2009 to report to the Chief of Radiology who also is the current RSC Chair.
- (c) The RSC was re-established in September 2007 which included the appointment of the Associate Director as the management representative. The Chief of Staff was appointed as the interim Chair effective November 2007 and the Chief of Radiology was made the Chair effective May 2008. The policy governing the Committee was re-defined effective October 2007. This policy clarified the responsibilities of the RSO and the RSC along with other reporting requirements (e.g., meetings scheduled on a recurring date each quarter, minutes to be presented at a higher level safety committee, i.e., Environment of Care). As of today, the RSC has met at least quarterly since September 2007 and has reviewed the required annual reviews of the radiation safety program.
- (d) The Environment of Care Committee (ECC) has updated its committee policy effective January 2008 which now includes the RSO responsibility to present the RSC minutes to the ECC. As of today, the RSC minutes since September 2007 have been presented to the ECC at least quarterly.

(3) The corrective steps that have been taken to avoid further violations:

As noted above the RSC and ECC policies have been updated to provide stricter control over the RSO as it pertains to his radiation safety responsibilities. Both committees now include tracking measures to assure that these duties are being performed (e.g., RSC meeting timetables, quarterly trending reports, DOT training due dates, ECC reporting matrix)

(4) The date when full compliance will be achieved:

We were in full compliance as of August 28, 2008 based on our last unannounced VHA National Health Physics Program (NHPP) that occurred on that date when no violations were identified and the previous violations (i.e., from September 2007 NHPP inspection) were closed. See attached NHPP inspection report.

For questions regarding this response, please contact Michael. T. Hackett, MS, Radiation Safety Officer, at (859) 381-5929 or via e-mail at michael.hackett@va.gov.



Sandy J. Nielsen, FACHE

Attachment

**DEPARTMENT OF
VETERANS AFFAIRS**

Memorandum

Date: **AUG 26 2008**

From: Director, VHA National Health Physics Program (115HP/NLR)

Subj: Radiation Safety Program Inspection - Inspection Report 596-08-I01

To: Director (596/00), VA Medical Center, Lexington, Kentucky

1. Gary E. Williams, VHA National Health Physics Program, inspected the radiation safety program at VA Medical Center, Lexington, Kentucky, on August 21, 2008.
2. The inspection report is attached and consists of an NHPP Form 591 with no violations cited and a decommissioning worksheet completed during this inspection.
3. You are not required to respond to this memorandum or return a signed NHPP Form 591.
4. Please contact Mr. Williams at (501) 257-1572, if you have any questions or comments about the inspection.


E. Lynn McGuire

Attachment

cc: Chair, National Radiation Safety Committee
Network Director, VISN 9 (10N9)

SAFETY INSPECTION REPORT AND COMPLIANCE INSPECTION

<p>1. PERMITTEE/PERMIT NUMBER:</p> <p>VA Medical Center Lexington, Kentucky 16-08896-04</p>	<p>2. LOCATION(S) INSPECTED:</p> <p>1101 Veterans Drive Lexington, Kentucky 40502-2236</p>
<p>3. INSPECTION DATES: August 21, 2008</p>	<p>4. INSPECTION REPORT NUMBER: 596-08-101</p>

PERMITTEE:

The inspection was an examination of activities under your permit as they relate to radiation safety and compliance with Nuclear Regulatory Commission rules and regulations and your permit conditions. The inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and performance-based observations by the inspector. The inspection findings are as follows:

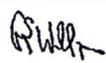
- 1. Based on the inspection findings, no violations were identified.
- 2. Previous violation(s) closed.
- 3. The violation(s), specifically described to you by the inspector as non-cited, are not being cited because they were self-identified, non-repetitive, corrective action was or is being taken, and the remaining criteria in the NRC Enforcement Policy, NUREG-1600, to exercise discretion, were satisfied.

Non-cited violation(s) were discussed involving the following requirement(s) and corrective action(s):

- 4. During this inspection certain of your activities, as described below and/or attached, were in violation of Nuclear Regulatory Commission requirements and are being cited. This form is a NOTICE OF VIOLATION, which may be subject to posting per 10 CFR 19.11. The violations and corrective actions are as follows:

STATEMENT OF CORRECTIVE ACTIONS

I hereby state that, within 30 days, the actions described by me to the inspector will be taken to correct the violations identified. This statement of corrective actions is made per 10 CFR 2.201 (corrective steps already taken, corrective steps which will be taken, date when full compliance will be achieved). I understand no further written response to the VHA National Health Physics Program will be required, unless specifically requested.

TITLE	PRINTED NAME	SIGNATURE	DATE
PERMITTEE			
NHPP INSPECTOR	Gary E. Williams		August 22, 2008

Decommissioning Review

Permittee: Lexington, Kentucky (August 21, 2008)

Decommissioning Issue	Yes	No
General decommissioning files (per 10 CFR 30.35(g)(1) and (2))		
Does the permittee have records of spills, or other occurrences, where residual contamination remains or has spread to inaccessible areas? (spills have not occurred where residual contamination remains)	NA	
Does the permittee have records of as-built diagrams/modifications of structures/equipment in locations of use?	X	
Specific decommissioning files and updated documents (per 10 CFR 30.35(g)(3))		
Does the permittee have locations of use where sealed sources leaked and residual contamination remains? (no leaking sources)		X
Does the permittee have locations of use and adjacent areas for radioactive material with $T^{1/2} = 65$ days?	X	
Does the permittee have a document listing these locations of use and adjacent areas that require approval for unrestricted use?	X	
Is the permittee's document updated at least every two years? (in process of being updated)	X	
Footprint management (for changes to locations of use since the last inspection, not involving a permit action)		
Has the permittee's footprint changed (i.e., added or deleted a location of use)?		X
Have principal activities ceased in a location of use for a period approaching 24 months (10 CFR 30.36(d)(4))?	X	
Has the permittee begun decommissioning, or closeout surveys of, locations of use in which principal activities have ceased for a period greater than 24 months (10 CFR 30.36(d))?		X
Has the permittee conducted closeout surveys to release locations of use for which a permit action is not required, but is subject to review during inspections (10 CFR 20.1501 and 30.36(j)(2))?		X
Has the Radiation Safety Committee approved footprint changes, closeout surveys results, or a pending notification for 10 CFR 35.100 or 35.200 locations of use?		X
Is a permit action required, but not yet submitted, for any footprint change?		X

Note: Facility in process of reviewing research locations of use to complete closeout surveys; RSO agreed to consult with NHPP for best practices.

Radiation Safety Committee

Trending Report for 2009

Deficiency Summary

Click on the highlighted area links below for more information concerning these deficiencies via the area trending and/or detailed audits.

Some deficiencies may include notable changes (i.e., decrease compared to 2008) as noted by the 2-color highlight (2009 in yellow with 2008 in green).

	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	2009 Qtrly Average	2009 Total	2008 Qtrly Average	2008 Total	
Deficiency Summary KEY:									
2009 deficiency with no deficiency in 2008 ; e.g.,	D	0	0	0	1	0.3	1	0.0	0
2009 deficiency with no improvement when compared to deficiency in 2008 ; e.g.,	D	1	0	0	0	0.3	1	0.3	1
2009 deficiency with improvement when compared to deficiency in 2008 ; e.g.,	D	2	2	0	1	1.3	5	6.8	27
Nuclear Medicine Service									
1. Daily Radiation Surveys:									
# of times surveys greater than trigger level	D	2	2	0	1	1.3	5	6.8	27
<i>Within the Imaging Room - in regular trash and/or non-radioactive sharps</i>	D	0	1	0	1	0.5	2	1.5	6
<i>Within the Injection Room - on injection table pad</i>	D	1	0	0	0	0.3	1	2.8	11
2. Weekly Radiation Wipes:									
# of times wipes greater than trigger level	D	2	1	1	0	1.0	4	1.3	5
4. Daily Dose Calibrator (DC) Constancy Checks (2 dose calibrators):									
# of times constancy checks not performed daily if used for pts as required	D	0	0	0	1	0.3	1	0.0	0
<i># of times constancy checks on non-Tc-99m DC not performed daily but not used for patients</i>	D	0	1	0	0	0.3	1	0.8	3
16. Reported Radioactive Spills:									
# of times a reported radioactive spill occurred	D	1	0	0	0	0.3	1	0.3	1
17. Quarterly Review of In-coming Radionuclide Receiving Records:									
# of times receiving records were missing pertinent info (e.g., survey/wipe results)	D	1	0	0	0	0.3	1	0.0	0
# of times package receiving problems noted (e.g., contamination, wrong material)	D	6	0	0	0	1.5	6	0.8	3
18. Quarterly Review of Out-going Radionuclide/Return Package Records:									
# of in-coming shipments from local radiopharmacy that did not have out-going documentation	D	0	1	2	4	1.8	7	0.0	0
Research Service									
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Radiographic-Fluoroscopic Use									
2. Patient radiation dose from Interventional Fluoroscopy (Specials B180):									
# of these exams with total dose \geq 3 Gy but < 10 Gy	D	0	0	1	1	0.5	2	N/A	1 Dec Only
3. Patient radiation dose from Cardiac Cath (A233 & A235):									
# of these exams with estimated dose \geq 3 Gy but < 10 Gy	D	45	51	61	62	54.8	219	N/A	14 Dec Only
# of these exams with estimated dose \geq 10 Gy but < 15 Gy	D	0	0	0	2	0.5	2	N/A	0 Dec Only
ALARA-Radiation Exposure									
1. Personnel Exposure Records/ALARA Investigational Levels (see below):									
B. Radiographic-Fluoroscopic Use:									
b) # of times ALARA Quarterly Investigational Level I (10% of ¼ annual limit) was exceeded	D	2	0	1	0	0.8	3	2.5	10

D = Discrepancy/Problem Indicator

V = Volume Indicator

Radiation Safety Committee

Trending Report for 2009

Notable Changes & Updates

Click on the highlighted area links below for more information concerning these notable changes & updates via the area trending and/or detailed audits. Some notable changes may be on the Deficiency Summary as noted by the 2-color highlight (2009 in yellow with 2008 in green).

	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	2009 Qtrly Average	2009 Total	2008 Qtrly Average	2008 Total
Notable Changes & Updates KEY:								
2009 notable change/update (i.e., no deficiency) <i>without any issue in 2008</i> ; e.g.,	N/A	in Feb	N/A	N/A	N/A	in Feb	N/A	N/A
2009 notable change/update (i.e., no deficiency) when compared to <i>same notable change/update in 2008</i> ; e.g.,	N/A	N/A	N/A	in Dec	N/A	in Dec	N/A	in Dec
2009 notable change/update (i.e., no deficiency) when compared to <i>deficiency in 2008</i> ; e.g.,	D	0	0	0	0.0	0	0.3	1
Nuclear Medicine Service								
1. Daily Radiation Surveys:								
# of times surveys not performed daily as required	D	0	0	0	0.0	0	0.3	1
3. Mo-99/Tc-99m Assays (discontinued use in June 2008 due revised USP <797>):								
* Mo-99/Tc-99m generators are not currently being used; therefore, this audit item will be dropped in 2010								
4. Daily Dose Calibrator (DC) Constancy Checks (2 dose calibrators):								
* Mo-99 setting is not currently being used clinically; therefore, will no longer be checked daily starting 2010								
# of times constancy checks on non-Tc-99m DC incompletely performed but not used for patients	D	0	0	0	0.0	0	0.5	2
10. Monthly Xenon Machine Quality Control Checks:								
# of times quality control checks not within limits	D	0	0	0	0.0	0	0.3	1
18. Quarterly Review of Out-going Radionuclide/Return Package Records:								
# of times out-going records were missing pertinent info (e.g., survey/wipe results)	D	0	0	0	0.0	0	0.3	1
21. Radiation Safety Improvements and/or Additional Comments/Problems:								
Modified the position of the Tc-99m shielded sharps container in the hot lab & added splash guard to help prevent spills	N/A	in Feb	N/A	N/A	N/A	in Feb	N/A	N/A
Replaced Cs-137 dose calibrator standard's shielding and labeling	N/A	in Feb	N/A	N/A	N/A	in Feb	N/A	N/A
Raised & modified the position of the Tc-99m shielded sharps container in the hot lab to reduce radiation exposure	N/A	N/A	in May	N/A	N/A	in May	N/A	N/A
Mounted locked shielded sharps container in the imaging room (1) to the wall to better secure radioactive/biohazard waste	N/A	N/A	in Jun	N/A	N/A	in Jun	N/A	N/A
Mounted locked shielded sharps containers (2) in the injection & imaging rooms to the wall to better secure radioactive/biohazard waste	N/A	N/A	N/A	in Jul	N/A	in Jul	N/A	N/A
Updated required annual radiation safety training (e.g., added slides & questions, electronic test with question hint slides & % correct)	N/A	N/A	N/A	in Oct/Nov	N/A	in Oct/Nov	N/A	N/A
Restocked replacement items in the radiation spill kit and setup updated mini-radiation spill kits that were later distributed in January	N/A	N/A	N/A	in Dec	N/A	in Dec	N/A	in Dec
Research Service								
3. Quarterly Record Audit of Weekly Radiation Wipes Performed by each Authorized User Labs:								
# of times wipes not performed weekly as required	D	0	0	0	0.0	0	1.0	4
# of times wipes greater than trigger level	D	0	0	0	0.0	0	0.5	2
13. Quarterly Review of In-coming Radionuclide Receiving Records:								
# of times package receiving problems noted (e.g., contamination, wrong material)	D	0	0	0	0.0	0	0.3	1
16. Radiation Safety Improvements and/or Additional Comments/Problems:								
Worked w/ Research Safety Manager to update safety training for all research staff & lab entrance poster (both included radiation safety)	N/A	N/A	in Apr	N/A	N/A	in Apr	N/A	N/A
Restocked replacement items (i.e., due in August) in the radiation spill kits	N/A	N/A	N/A	in Aug	N/A	in Aug	N/A	in Aug
Added annual radiation safety training for research administrative staff	N/A	N/A	N/A	in Nov	N/A	in Nov	N/A	N/A

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Notable Changes & Updates

Click on the highlighted area links below for more information concerning these notable changes & updates via the area trending and/or detailed audits. Some notable changes may be on the Deficiency Summary as noted by the 2-color highlight (2009 in yellow with 2008 in green).									
	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	2009 Qtrly Average	2009 Total	2008 Qtrly Average	2008 Total	
Notable Changes & Updates KEY:									
2009 notable change/update (i.e., no deficiency) <i>without any issue in 2008</i> ; e.g.,	N/A	in Feb	N/A	N/A	N/A	N/A	in Feb	N/A	N/A
2009 notable change/update (i.e., no deficiency) when compared to <i>same notable change/update in 2008</i> ; e.g.,	N/A	N/A	N/A	N/A	in Dec	N/A	in Dec	N/A	in Dec
2009 notable change/update (i.e., no deficiency) when compared to <i>deficiency in 2008</i> ; e.g.,	D	0	0	0	0	0.0	0	0.3	1
Radiographic-Fluoroscopic Use									
1. Patient radiation dose from CT (B152 only):									
B. High Volume Exams (Jan-Jun)/Cases (Jul-Dec)					Changed from exam review (Jan-Jun) to case review (Jul-Dec)				
C. Average Volume Exams (Jan-Jun)/Cases (Jul-Dec)									
D. Low Volume Exams (Jan-Jun)/Cases (Jul-Dec)									
3. Patient radiation dose from Cardiac Cath (A233 & A235):									
Average estimated dose * (Gy) for these exams * Estimated dose based on recorded dose overestimation (i.e., 19.4% CCL & 19.6% EPL) Updated 2008-2009 data (i.e., from recorded dose to estimated dose).									
V	1.9	2.1	2.2	2.7	2.2	2.2	N/A	1.7	
4. Radiation Safety Improvements and/or Additional Comments/Problems:									
Additional monitoring started (i.e., pt radiation dose from CT from high to low volume exams: 1.B.-D.)									
N/A	in Jan-Mar	N/A	N/A	N/A	N/A	in 1 Qtr	N/A	N/A	N/A
Special dose (i.e., air kerma) evaluation done on Specials & Cardiac Cath equipment									
N/A	N/A	in Jun	N/A	N/A	N/A	in Jun	N/A	N/A	N/A
ALARA-Radiation Exposure									
1. Personnel Exposure Records/ALARA Investigational Levels (see below):									
A. Radioactive Materials Use:									
b) # of times ALARA Quarterly Investigational Level I (10% of ¼ annual limit) was exceeded									
D	0	0	0	0	0.0	0	1.75	7	
2. I-125/I-131 Bioassay Results:									
# of times bioassays not performed within 6-72 hours post administration									
D	0	0	0	0	0.0	0	0.3	1	
4. Quarterly Area Monitors Involving Radioactive Materials:									
NM2 monitor - wall in main hallway outside Nuclear Medicine (i.e., outer wall of hot lab) qtrly total in mrem									
V	8	6	10	1	6.3	25	17.8	71	
# of area monitors with readings > 100 mrem for the current calendar year (i.e., 2009)									
D	N/A	N/A	N/A	0	N/A	0	N/A	0	
6. Radiation Safety Improvements and/or Additional Comments/Problems:									
Compliant with NRC's constraint of radioactive air effluents for the current calendar year (i.e., 2009)									
N/A	N/A	N/A	N/A	in 2009	N/A	N/A	N/A	in 2008	

D = Discrepancy/Problem Indicator

V = Volume Indicator

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1. Daily Radiation Surveys:									
# of times surveys not performed daily as required	D	0	0	0	0	0.0	0	0.3	1
# of times surveys greater than trigger level	D	2	2	0	1	1.3	5	6.8	27
By area:									
Hot Lab	D	0	0	0	0	0.0	0	0.0	0
Imaging Room	D	0	2	0	1	0.8	3	3.8	15
<i>Within the Imaging Room - in regular trash and/or non-radioactive sharps</i>	D	0	1	0	1	0.5	2	1.5	6
Injection Room	D	2	0	0	0	0.5	2	3.0	12
<i>Within the Injection Room - on injection table pad</i>	D	1	0	0	0	0.3	1	2.8	11
# of times appropriate action was not taken to decrease levels below trigger level	D	0	0	N/A	0	0.0	0	0.0	0
2. Weekly Radiation Wipes:									
# of times wipes not performed weekly as required	D	0	0	0	0	0.0	0	0.0	0
# of times wipes greater than trigger level	D	2	1	1	0	1.0	4	1.3	5
By area:									
Hot Lab	D	1	1	0	0	0.5	2	0.8	3
Imaging Room	D	1	0	1	0	0.5	2	0.3	1
Injection Room	D	0	0	0	0	0.0	0	0.3	1
# of times appropriate action was not taken to decrease levels below trigger level	D	0	0	0	N/A	0.0	0	0.0	0
3. Mo-99/Tc-99m Assays (discontinued use in June 2008 due revised USP <797>):									
<i>* Mo-99/Tc-99m generators are not currently being used; therefore, this audit item will be dropped in 2010</i>						<i>* (see Oct-Dec detailed audit)</i>			
# of times Mo-99m/Tc-99m assays not performed for each pt.-use elution	D	N/A	N/A	N/A	N/A	N/A	N/A	0.0	0
# of times Mo-99m/Tc-99m concentration not within limits	D	N/A	N/A	N/A	N/A	N/A	N/A	0.0	0
# of Tc-99m elutions	V	N/A	N/A	N/A	N/A	N/A	N/A	67.0	134
Total Tc-99m activity in mCi from all elutions	V	N/A	N/A	N/A	N/A	N/A	N/A	51,786.4	103,572.7
4. Daily Dose Calibrator (DC) Constancy Checks (2 dose calibrators):									
<i>* Mo-99 setting is not currently being used clinically; therefore, will no longer be checked daily starting 2010</i>						<i>* (see Jul-Sep detailed audit)</i>			
# of times constancy checks not performed daily if used for pts as required	D	0	0	0	1	0.3	1	0.0	0
<i># of times constancy checks on non-Tc-99m DC not performed daily but not used for patients</i>	D	0	1	0	0	0.3	1	0.8	3
<i># of times constancy checks on non-Tc-99m DC incompletely performed but not used for patients</i>	D	0	0	0	0	0.0	0	0.5	2
# of times quarterly full constancy check not performed	D	0	0	0	0	0.0	0	0.0	0
# of times constancy checks not within limits	D	0	0	0	0	0.0	0	0.0	0
5. Quarterly Dose Calibrator Linearity Checks (2 dose calibrators):									
# of times linearity checks not performed quarterly/post repair as required	D	0	0	0	0	0.0	0	0.0	0
# of times linearity checks not within limits	D	0	0	0	0	0.0	0	0.0	0
6. Annual Dose Calibrator Accuracy Checks (2 dose calibrators):									
# of times accuracy checks not performed annually (Sep)/post repair as required	D	N/A	N/A	0	N/A	0.0	0	0.0	0
# of times accuracy checks not within limits	D	N/A	N/A	0	N/A	0.0	0	0.0	0
7. Dose Calibrator Geometry Checks (2 dose calibrators):									
# of times geometry checks not performed post repair as required	D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of times geometry checks not within limits	D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8. Daily Thyroid Probe/Well & Multi-Well Counters Constancy Checks:									
# of times constancy checks not performed daily (i.e., when used) as required	D	0	0	0	0	0.0	0	0.0	0
# of times constancy checks not within limits	D	0	0	0	0	0.0	0	0.0	0
9. Quarterly Thyroid Probe/Well Counter & Multi-Well Counter Checks:									
# of times quarterly checks not performed as required	D	0	0	0	0	0.0	0	0.0	0
# of times quarterly checks not within limits	D	0	0	0	0	0.0	0	0.0	0
10. Monthly Xenon Machine Quality Control Checks:									
# of times monthly/quarterly quality control checks not performed as required	D	0	0	0	0	0.0	0	0.0	0
# of times quality control checks not within limits	D	0	0	0	0	0.0	0	0.3	1

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11. Semi-Annual Air Flow Measurements (AFM) & Xenon Spill Clearance Time Calculations/ Annual Fume Hood Certification									
# of times semi-annual (Jun & Dec) AFM not performed as required	D	N/A	0	N/A	0	0.0	0	0.0	0
# of times imaging room & hot lab found not to be under negative pressure based on above AFM	D	N/A	0	N/A	0	0.0	0	0.0	0
# of times smoke test did not confirm that the room was under negative pressure	D	N/A	0	N/A	0	0.0	0	0.0	0
# of times Xenon spill clearance times not calculated and not posted for above AFM	D	N/A	0	N/A	0	0.0	0	0.0	0
# of times annual (Feb) fume hood certification not performed as required	D	0	N/A	N/A	N/A	0.0	0	0.0	0
# of times fume hood sash level not noted for above certification	D	0	N/A	N/A	N/A	0.0	0	0.0	0
12. Annual Survey Meter Calibrations:									
# of times annual calibration (Mar)/post repair not performed as required	D	0	N/A	N/A	N/A	0.0	0	0.0	0
# of survey meters calibrated	V	6	N/A	N/A	N/A	6.0	6	3.5	7
13. Quarterly/Annual Radionuclide Sealed Source Inventory:									
# of times quarterly inventories not performed as required	D	0	0	0	0	0.0	0	0.0	0
# of unaccounted for sealed sources	D	0	0	0	0	0.0	0	0.0	0
# of sealed sources on inventory	V	138	137	137	137	137.3	N/A	136.0	N/A
# of sealed sources added to inventory during the quarter (may/may not be in above total due to when received)	V	0	0	0	0	0.0	0	0.3	1
# of sealed sources removed from inventory during the quarter (may/may not be in above total due to when shipped)	V	1	0	0	0	0.3	1	1.5	6
# of times monthly check of Cs-137 calibration source not performed	D	0	0	0	0	0.0	0	0.0	0
# of times annual (Mar) NHPP sealed source verification not performed as required	D	0	N/A	N/A	N/A	N/A	0	N/A	0
# of sealed sources on NHPP inventory	V	2	N/A	N/A	N/A	N/A	2	N/A	4
14. Semi-Annual Radionuclide Sealed Source Leak Testing:									
# of times semi-annual (Jan & Jul) leak test not performed as required	D	0	N/A	0	N/A	0.0	0	0.0	0
# of sealed sources leak tested	V	4	N/A	3	N/A	3.5	N/A	6.0	N/A
# of leak tests with leakage detected above required limits	D	0	N/A	0	N/A	0.0	0	0.0	0
15. Reportable or Recordable Events/Incidents:									
# of times a reportable or recordable event/incident occurred	D	0	0	0	0	0.0	0	0.0	0
16. Reported Radioactive Spills:									
# of times a reported radioactive spill occurred	D	1	0	0	0	0.3	1	0.3	1
# of times appropriate action to the spill was not taken	D	0	0	0	0	0.0	0	0.0	0
17. Quarterly Review of In-coming Radionuclide Receiving Records:									
# of times receiving records were missing pertinent info (e.g., survey/wipe results)	D	1	0	0	0	0.3	1	0.0	0
# of times package receiving problems noted (e.g., contamination, wrong material)	D	6	0	0	0	1.5	6	0.8	3
Total # of in-coming shipments (note some non-Tc-99m may be included within Tc-99m shipments - see detailed audit)	V	200	237	195	204	209.0	836	132.5	530
# of in-coming shipments noted above that were from the local radiopharmacy	V	181	192	159	183	178.8	715	107.5	430
# of C-14 in-coming shipments	V	0	0	0	0	0.0	0	0.3	1
# of C-14 in-coming shipments noted above that were from the local radiopharmacy	V	0	0	0	0	0.0	0	0.3	1
Total C-14 activity in mCi contained in the above shipments	V	0.000	0.000	0.000	0.000	0.0000	0.000	0.0005	0.002
# of Co-57 in-coming shipments	V	0	0	0	0	0.0	0	0.3	1
Total Co-57 activity in mCi contained in the above shipments	V	0.0	0.0	0.0	0.0	0.0	0.0	3.8	15.0
# of Ga-67 in-coming shipments	V	1	0	2	0	0.8	3	2.0	8
# of Ga-67 transfers from UK (i.e., not included as a shipment)	V	0	0	0	0	0.0	0	0.3	1
Total Ga-67 activity in mCi contained in the above shipments/transfers	V	12.2	0.0	31.7	4.0	12.0	47.9	27.3	109.3
# of I-123 in-coming shipments	V	0	0	0	0	0.0	0	0.3	1
Total I-123 activity in mCi contained in the above shipments	V	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6

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	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	2009 Qtrly Average	2009 Total	2008 Qtrly Average	2008 Total	2008 Total					
# of I-131 (C = capsule) in-coming shipments	V	10	5	2	2	4	4	5.3	5.3	21	21	10.8	43	43
# of I-131 (C) in-coming shipments noted above that were from the local radiopharmacy	V	10	5	2	2	4	4	5.3	5.3	21	21	10.8	43	43
Total I-131 (C) activity in mCi contained in the above shipments	V	304.2	175.6	19.5	39.9	134.8	539.2	260.4	1,041.5					
# of I-131 (S = solution) in-coming shipments	V	0	0	0	0	0	0	0.0	0.0	0	0	0.3	1	1
# of I-131 (S) in-coming shipments noted above that were from the local radiopharmacy	V	0	0	0	0	0	0	0.0	0.0	0	0	0.3	1	1
Total I-131 (S) activity in mCi contained in the above shipments	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	5.1	5.1
# of In-111 in-coming shipments	V	1	5	3	3	3	3	3.0	12	12	12	1.0	4	4
# of In-111 in-coming shipments noted above that were from the local radiopharmacy	V	1	5	3	3	3	3	3.0	12	12	12	1.0	4	4
Total In-111 activity in mCi contained in the above shipments	V	6.5	11.8	3.2	8.9	7.6	30.4	3.2	12.8					
# of Mo-99 in-coming shipments	V	0	0	0	0	0	0	0.0	0	0	0	5.5	22	22
# of Mo-99 in-coming shipments noted above that were from the local radiopharmacy	V	0	0	0	0	0	0	0.0	0	0	0	5.5	22	22
Total Mo-99 activity in mCi contained in the above shipments	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10,080.0	40,320.0	40,320.0
# of Sm-153 in-coming shipments	V	0	0	0	0	0	0	0.0	0	0	0	0.5	2	2
# of Sm-153 in-coming shipments noted above that were from the local radiopharmacy	V	0	0	0	0	0	0	0.0	0	0	0	0.5	2	2
Total Sm-153 activity in mCi contained in the above shipments	V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	54.9	219.5	219.5
# of Tc-99m in-coming shipments	V	168	192	151	176	176	176	171.8	687	687	687	94.0	376	376
# of Tc-99m in-coming shipments noted above that were from the local radiopharmacy	V	168	192	151	176	176	176	171.8	687	687	687	94.0	376	376
Total Tc-99m activity in mCi contained in the above shipments	V	24,578.6	27,402.7	19,425.3	25,356.3	24,190.7	96,762.9	14,367.2	57,468.6					
# of Tl-201 in-coming shipments	V	6	15	27	5	5	5	13.3	53	53	53	3.5	14	14
# of Tl-201 in-coming shipments noted above that were from the local radiopharmacy	V	6	15	27	5	5	5	13.3	53	53	53	3.5	14	14
Total Tl-201 activity in mCi contained in the above shipments	V	76.8	228.2	788.6	41.1	283.7	1134.7	42.2	168.7					
# of Xe-133 in-coming shipments	V	14	20	10	16	16	16	15.0	60	60	60	14.3	57	57
# of Xe-133 in-coming shipments noted above that were from the local radiopharmacy	V	14	20	10	16	16	16	15.0	60	60	60	14.3	57	57
Total Xe-133 activity in mCi contained in the above shipments	V	632.7	763.3	376.1	631.2	600.8	2,403.3	561.8	2,247.3					
18. Quarterly Review of Out-going Radionuclide/Return Package Records:														
# of times out-going records were missing pertinent info (e.g., survey/wipe results)	D	0	0	0	0	0	0	0.0	0	0	0	0.3	1	1
# of times out-going package problems noted (e.g., contamination)	D	0	0	0	0	0	0	0.0	0	0	0	0.0	0	0
# of out-coming shipments	V	169	203	158	179	179	179	177.3	709	709	709	114.8	459	459
# of out-coming shipments noted above that were Mo-99/Tc-99m used generator returns	V	0	0	0	0	0	0	0.0	0	0	0	6.3	25	25
# of out-coming shipments noted above that were return packages to local radiopharmacy	V	168	203	158	179	179	179	177.0	708	708	708	107.5	430	430
# of out-coming shipments noted above that were sealed sources returns	V	1	0	0	0	0	0	0.3	1	1	1	1.0	4	4
# of in-coming shipments from local radiopharmacy that did not have out-going documentation	D	0	1	2	4	4	4	1.8	7	7	7	0.0	0	0
19. Written Directive (WD) Audits for Nuclear Medicine:														
# of total written directives used for the quarter	V	8	5	2	5	5	5	5.0	20	20	20	9.3	37	37
# of written directives that were for I-131 thyroid uptake	V	0	0	0	0	0	0	0.0	0	0	0	0.3	1	1
# of written directives that were for I-131 whole body imaging	V	3	4	1	4	4	4	3.0	12	12	12	4.8	19	19
# of written directives that were for I-131 therapy for hyperthyroidism	V	3	0	1	1	1	1	1.3	5	5	5	2.5	10	10
# of written directives that were for I-131 therapy for thyroid cancer	V	2	1	0	0	0	0	0.8	3	3	3	1.5	6	6
# of written directives that were for Sm-153 therapy for bone pain	V	0	0	0	0	0	0	0.0	0	0	0	0.3	1	1
# of problem noted	D	0	0	0	0	0	0	0.0	0	0	0	0.0	0	0
20. Training (Include all staff if dealing with clinical use of radionuclides.):														
Total # of radiation safety training hours provided	V	39.50	6.25	30.20	149.00	56.24	224.95	34.25	137.00					
# radiation safety training hours provided to Nuclear Medicine staff	V	10.50	3.50	0.00	8.00	5.50	22.00	6.31	25.25					
# radiation safety training hours provided to AOD staff	V	0.00	0.00	0.00	6.00	1.50	6.00	1.25	5.00					
# radiation safety training hours provided to EMS staff	V	16.50	0.00	0.00	82.00	24.63	98.50	12.19	48.75					
# radiation safety training hours provided to VA Police staff	V	1.00	0.00	0.00	34.00	8.75	35.00	8.44	33.75					
# radiation safety training hours provided to Warehouse staff	V	0.00	0.00	0.00	11.00	2.75	11.00	2.38	9.50					
# radiation safety training hours provided as FYI training (e.g., Radiation Safety, Safety Office staff)	V	11.50	2.75	30.20	8.00	13.11	52.45	3.69	14.75					
# of times DOT HAZMAT training not done as required (i.e., new staff w/ 90 days; 3yr refresher due by 9/21/10 - last done 9/21/07)	D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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21. Radiation Safety Improvements and/or Additional Comments/Problems:									
Modified the position of the Tc-99m shielded sharps container in the hot lab & added splash guard to help prevent spills	N/A	in Feb	N/A	N/A	N/A	N/A	in Feb	N/A	N/A
Replaced Cs-137 dose calibrator standard's shielding and labeling	N/A	in Feb	N/A	N/A	N/A	N/A	in Feb	N/A	N/A
Raised & modified the position of the Tc-99m shielded sharps container in the hot lab to reduce radiation exposure	N/A	N/A	in May	N/A	N/A	N/A	in May	N/A	N/A
Mounted locked shielded sharps container in the imaging room (1) to the wall to better secure radioactive/biohazard waste	N/A	N/A	in Jun	N/A	N/A	N/A	in Jun	N/A	N/A
Mounted locked shielded sharps containers (2) in the injection & imaging rooms to the wall to better secure radioactive/biohazard waste	N/A	N/A	N/A	In Jul	N/A	N/A	in Jul	N/A	N/A
Updated required annual radiation safety training (e.g., added slides & questions, electronic test with question hint slides & % correct)	N/A	N/A	N/A	N/A	in Oct/Nov	N/A	in Oct/Nov	N/A	N/A
Restocked replacement items in the radiation spill kit and setup updated mini-radiation spill kits that were later distributed in January	N/A	N/A	N/A	N/A	in Dec	N/A	in Dec	N/A	in Dec

D = Discrepancy/Problem Indicator

V = Volume Indicator

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Trending Report for 2009

Research Service

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1. Monthly Radiation Surveys/Wipes of Core Labs, Waste, Common Areas done by RSO:									
# of times surveys/wipes not performed monthly as required	D	0	0	0	0	0.0	0	0.0	0
# of times surveys/wipes greater than trigger level	D	0	0	0	0	0.0	0	0.0	0
# of times appropriate action was not taken to decrease levels below trigger level	D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2. Annual Radiation Surveys/Wipes of each Authorized User Lab/Room done by RSO:									
# of times surveys/wipes not performed annually (Dec) as required	D	N/A	N/A	N/A	0	N/A	0	N/A	0
# of times surveys/wipes greater than trigger level	D	N/A	N/A	N/A	0	N/A	0	N/A	1
# of times appropriate action was not taken to decrease levels below trigger level	D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
# of rooms monitored	V	N/A	N/A	N/A	11	N/A	11	N/A	12
# of Authorized Users	V	N/A	N/A	N/A	10	N/A	10	N/A	9
3. Quarterly Record Audit of Weekly Radiation Wipes Performed by each Authorized User Labs:									
# of times wipes not performed weekly as required	D	0	0	0	0	0.0	0	1.0	4
By Authorized User: AM	D	0	0	N/A	N/A	0.0	0	1.0	4
# of times wipes greater than trigger level	D	0	0	0	0	0.0	0	0.5	2
By Authorized User-Room: FB/DV-D427	D	0	0	0	0	0.0	0	0.5	2
# of times appropriate action was not taken to decrease levels below trigger level	D	N/A	N/A	N/A	N/A	N/A	N/A	0.0	0
# of rooms monitored	V	12	12	12	14	12.5	N/A	12.0	N/A
# of labs Authorized Users	V	9	9	8	10	9.0	N/A	9.0	N/A
4. Quarterly/Annual Radionuclide Sealed Source Inventory of Labs and Core Labs done by RSO:									
# of times quarterly inventories not performed as required	D	0	0	0	0	0.0	0	0.0	0
# of unaccounted for sealed sources	D	0	0	0	0	0.0	0	0.0	0
# of sealed sources on inventory	V	17	17	17	17	17.0	N/A	17.0	N/A
# of sealed sources added to inventory during the quarter (may/may not be in above total due to when received)	V	0	0	0	0	0.0	0	0.0	0
# of sealed sources removed from inventory during the quarter (may/may not be in above total due to when shipped)	V	0	0	0	0	0.0	0	0.0	0
# of times annual (Mar) NHPP sealed source verification not performed as required	D	0	N/A	N/A	N/A	N/A	0	N/A	0
# of sealed sources on NHPP inventory	V	2	N/A	N/A	N/A	N/A	2	N/A	2
5. Semi-Annual Radionuclide Sealed Source Leak Testing by RSO:									
# of times semi-annual (Jan & Jul) leak test not performed as required	D	0	N/A	0	N/A	0.0	0	0.0	0
# of sealed sources leak tested	V	2	N/A	2	N/A	2.0	N/A	2.0	N/A
# of leak tests with leakage detected above required limits	D	0	N/A	0	N/A	0.0	0	0.0	0
6. Quarterly Radionuclide (Unsealed) Inventory of each Authorized User Lab done by RSO:									
# of times quarterly inventories (based on first date of quarters possession) not performed as required	D	0	0	0	0	0.0	0	0.0	0
# of unaccounted for unsealed sources	D	0	0	0	0	0.0	0	0.0	0
# of times Authorized User was over their possession limits	D	0	0	0	0	0.0	0	0.0	0
# of Authorized Users	V	9	9	8	10	9.0	N/A	9.0	N/A
7. Reported Radioactive Spills:									
# of times a reported radioactive spill occurred	D	0	0	0	0	0.0	0	0.0	0
# of times appropriate action to the spill was not taken	D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8. Authorized User Lab Closings:									
# of labs closed out (i.e., monitored and released for general use)	V	0	0	0	1	0.3	1	0.0	0
9. Annual Survey Meter Calibrations:									
# of times annual calibration (Mar)/post repair not performed as required	D	0	N/A	N/A	N/A	0.0	0	0.0	0
# of survey meters calibrated	V	3	N/A	N/A	1	2.0	4	5.0	5
10. Annual Beta Counter (2) Quench Curve and Gamma Counter (2) Calibration:									
# of times Quench Curve and Gamma Calibration not performed annually (Jan)/post repair as required	D	0	N/A	N/A	N/A	0.0	0	0.0	0

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11. Monthly Beta Counter (2) Normalization, Chi-Square, and Constancy Checks and Gamma Counter (2) Peak, % Resolution, Chi-Square, Constancy, and Efficiency Checks:									
# of times above checks not performed monthly as required	D	0	0	0	0	0.0	0	0.0	0
# of times above checks not within limits	D	0	0	0	0	0.0	0	0.0	0
12. Authorized User Approval by the RSC:									
# of authorized user approvals by the RSC	V	0	0	2	0	0.5	2	0.3	1
13. Quarterly Review of In-coming Radionuclide Receiving Records:									
# of times shipments received that were not pre-approved by the RSO	D	0	0	0	0	0.0	0	0.0	0
# of times receiving records were missing pertinent info (e.g., survey/wipe results)	D	0	0	0	0	0.0	0	0.0	0
# of times package receiving problems noted (e.g., contamination, wrong material)	D	0	0	0	0	0.0	0	0.3	1
By Problem: Shipping label did reflect RSO as delivery point	D	0	0	0	0	0.0	0	0.3	1
Total # of in-coming shipments	V	1	1	1	4	1.8	7	2.5	10
# of C-14 in-coming shipments	V	0	0	0	0	0.0	0	0.3	1
Total C-14 activity in mCi contained in the above shipments	V	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.25
# of Cr-51 in-coming shipments	V	0	0	0	0	0.0	0	0.3	1
Total Cr-51 activity in mCi contained in the above shipments	V	0.00	0.00	0.00	0.00	0.00	0.00	1.88	7.50
# of H-3 in-coming shipments	V	0	1	0	0	0.3	1	0.5	2
Total H-3 activity in mCi contained in the above shipments	V	0.00	5.00	0.00	0.00	1.25	5.00	0.31	1.25
# of I-125 in-coming shipments	V	0	0	0	2	0.5	2	0.0	0
Total P-32 activity in mCi contained in the above shipments	V	0.00	0.00	0.00	5.95	1.49	5.95	0.00	0.00
# of P-32 in-coming shipments	V	1	0	1	2	1.0	4	1.3	5
Total P-32 activity in mCi contained in the above shipments	V	1.27	0.00	0.32	0.67	0.57	2.26	5.75	22.98
# of S-35 in-coming shipments	V	0	0	0	0	0.0	0	0.3	1
Total S-35 activity in mCi contained in the above shipments	V	0.00	0.00	0.00	0.00	0.00	0.00	0.30	1.20
14. Quarterly Review of Out-going Radionuclide/Return Package Records:									
# of times out-going records were missing pertinent info (e.g., survey/wipe results)	D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of times out-going package problems noted (e.g., contamination)	D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of out-coming shipments	V	0	0	0	0	0.0	0	0.0	0
15. Training (Include all staff if dealing with research use of radionuclides.): See Nuclear Medicine audits for support staff (e.g., EMS, Police, etc.)									
Total # of radiation safety training hours provided	V	3.00	1.25	20.92	17.25	10.61	42.42	2.00	8.00
# radiation safety training hours provided to Research staff	V	2.25	0.75	20.17	16.25	9.86	39.42	1.63	6.50
# radiation safety training hours provided as FYI training (e.g., Radiation Safety, Safety Office staff)	V	0.75	0.50	0.75	1.00	0.75	3.00	0.38	1.50
16. Radiation Safety Improvements and/or Additional Comments/Problems:									
Worked w/ Research Safety Manager to update safety training for all research staff & lab entrance poster (both included radiation safety)	N/A	N/A	in Apr	N/A	N/A	N/A	in Apr	N/A	N/A
Restocked replacement items (i.e., due in August) in the radiation spill kits	N/A	N/A	N/A	in Aug	N/A	N/A	in Aug	N/A	in Aug
Added annual radiation safety training for research administrative staff	N/A	N/A	N/A	N/A	in Nov	N/A	in Nov	N/A	N/A

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Radiation Safety Committee

Trending Report for 2009

Radiographic-Fluoroscopic Use

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	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec									
1. Patient radiation dose from CT (B152 only):																					
See reference tables/links at end of this audit related to patient effective doses.																					
Total # of CT exams	V	895	872	1051	1075	1094	1013	1063	1003	968	1050	987	1111	1015.2	2818	3182	3034	3148	3045.5	12182	992
Total # of CT procedures	V	47	52	44	54	47	48	43	46	54	51	47	46	48.3	58	60	57	62	59.3	58	52
# Exams/procedure (note: patient may have multiple procedures; dose may reflect all exams done)	V	19.0	16.8	23.9	19.9	23.3	21.1	24.7	21.8	17.9	20.6	21.0	24.2	21.0	48.6	53.0	53.2	50.8	51.4	210.0	19.1
A. Interventional CT Exams:																					
# of Interventional CT exams with CPRS documented ~ pt radiation dose (i.e., DLP)	V	11	18	11	12	11	9	16	15	15	15	11	9	12.8	40	32	46	35	38.3	153	19
% of total # of CT exams	V	1.2%	2.1%	1.0%	1.1%	1.0%	0.9%	1.5%	1.5%	1.5%	1.4%	1.1%	0.8%	1.3%	1.4%	1.0%	1.5%	1.1%	1.3%	1.3%	1.9%
Average patient effective dose (mSv) for these exams	V	10.3	13.4	7.1	7.6	10.5	6.7	9.2	11.6	7.8	10.1	12.0	10.8	9.9	10.8	8.4	9.5	10.9	9.9	9.9	17.4
# of these exams with pt effective dose ≥ 10 mSv but ≤ 100 mSv	V	5	8	2	2	4	0	5	6	3	4	5	5	4.1	15	6	14	14	12.3	49	9
% of exams with pt effective dose ≥ 10 mSv but ≤ 100 mSv compared to total	V	45%	44%	18%	17%	36%	0%	31%	40%	20%	27%	45%	56%	32%	38%	19%	30%	40%	32%	32%	47%
# of these exams with pt effective dose > 100 mSv	D	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0.0	0	0
(1) Further broken down by CCTA Exams:																					
# of these Interventional CT exams that were for CCTA W/WO, QUAN CALCIUM	V	11	16	10	12	11	9	16	14	14	14	9	9	12.1	37	32	44	32	36.3	145	10
% of total # of CT exams	V	1.2%	1.8%	1.0%	1.1%	1.0%	0.9%	1.5%	1.4%	1.4%	1.3%	0.9%	0.8%	1.2%	1.3%	1.0%	1.5%	1.0%	1.2%	1.2%	1.0%
Average patient effective dose (mSv) for these CCTA exams	V	10.3	13.4	6.8	7.6	10.5	6.7	9.2	10.5	7.8	10.2	11.3	10.8	9.7	10.7	8.4	9.1	10.7	9.7	9.7	9.2
# of these exams with pt effective dose ≥ 10 mSv but ≤ 100 mSv	V	5	7	1	2	4	0	5	5	3	4	4	5	3.8	13	6	13	13	11.3	45	2
% of exams with pt effective dose ≥ 10 mSv but ≤ 100 mSv compared to total	V	45%	44%	10%	17%	36%	0%	31%	36%	21%	29%	44%	56%	31%	35%	19%	30%	41%	31%	31%	20%
# of these CCTA exams with pt effective dose > 100 mSv	D	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0.0	0	0
B. High Volume Exams (Jan-Jun)/Cases (Jul-Dec)																					
(different procedures reviewed each qtr):																					
(1) Broken down by Procedure Type:																					
# of CT cases (case = 1 or more exams) documented as being performed	V	N/A	N/A	N/A	N/A	N/A	N/A	44	53	45	28	40	38	N/A	N/A	N/A	142	106	N/A	N/A	N/A
# of CT exams per case	V	N/A	N/A	N/A	N/A	N/A	N/A	2	2	2	1	1	1	N/A	N/A	N/A	2	1	N/A	N/A	N/A
# of these CT exams documented as being performed	V	122	114	134	103	117	92	88	106	90	28	40	38	N/A	370	312	284	106	N/A	N/A	N/A
% of total # of CT exams	V	14%	13%	13%	10%	11%	9%	8%	11%	9%	3%	4%	3%	N/A	13%	10%	9%	3%	N/A	N/A	N/A
# of these exams (Jan-Jun)/cases (Jul-Dec) reviewed (i.e., 10% w/ 10min) for ~ pt radiation dose (i.e., DLP)	V	12	11	13	10	12	10	10	11	10	10	10	10	N/A	36	32	31	30	N/A	N/A	N/A
% of total # of CT exams	V	1.3%	1.3%	1.2%	0.9%	1.1%	1.0%	1.9%	2.2%	2.1%	1.0%	1.0%	0.9%	N/A	1.3%	1.0%	2.0%	1.0%	N/A	N/A	N/A
Average patient effective dose (mSv) for these exams (Jan-Jun)/cases (Jul-Dec)	V	2.2	2.2	2.1	17.4	17.0	21.7	29.6	33.1	36.4	16.2	16.6	17.0	N/A	2.1	18.6	33.0	16.6	N/A	N/A	N/A
# of these exams (Jan-Jun)/cases (Jul-Dec) with pt effective dose ≥ 10 mSv but ≤ 100 mSv	V	0	0	0	8	8	8	9	11	10	10	8	9	N/A	0	24	30	27	N/A	N/A	N/A
% of exams (Jan-Jun)/cases (Jul-Dec) with pt effective dose ≥ 10 mSv but ≤ 100 mSv compared to total	V	0%	0%	0%	80%	67%	80%	90%	100%	100%	100%	80%	90%	N/A	0%	75%	97%	90%	N/A	N/A	N/A
# of these exams (Jan-Jun)/cases (Jul-Dec) with pt effective dose > 100 mSv	D	0	0	0	0	0	0	0	0	0	0	0	0	N/A	0	0	0	0	N/A	N/A	N/A
(2) Broken down by Procedure Type:																					
# of CT cases (case = 1 or more exams) documented as being performed	V	N/A	N/A	N/A	N/A	N/A	N/A	43	40	36	13	10	9	N/A	N/A	N/A	119	32	N/A	N/A	N/A
# of CT exams per case	V	N/A	N/A	N/A	N/A	N/A	N/A	3	3	3	3	3	3	N/A	N/A	N/A	3	3	N/A	N/A	N/A
# of these CT exams documented as being performed	V	111	94	109	94	116	92	129	120	108	39	30	27	N/A	314	302	357	96	N/A	N/A	N/A
% of total # of CT exams	V	12%	11%	10%	9%	11%	9%	12%	12%	11%	4%	3%	2%	N/A	11%	9%	12%	3%	N/A	N/A	N/A
# of these exams (Jan-Jun)/cases (Jul-Dec) reviewed (i.e., 10% w/ 10min) for ~ pt radiation dose (i.e., DLP)	V	11	10	11	10	12	10	10	10	10	10	10	9	N/A	32	32	30	29	N/A	N/A	N/A
% of total # of CT exams	V	1.2%	1.1%	1.0%	0.9%	1.1%	1.0%	2.8%	3.0%	3.1%	2.9%	3.0%	2.4%	N/A	1.1%	1.0%	3.0%	2.8%	N/A	N/A	N/A
Average patient effective dose (mSv) for these exams (Jan-Jun)/cases (Jul-Dec)	V	16.4	18.7	11.6	12.6	20.0	17.3	37.6	46.0	45.3	18.9	19.3	19.7	N/A	15.4	16.8	43.0	19.3	N/A	N/A	N/A
# of these exams (Jan-Jun)/cases (Jul-Dec) with pt effective dose ≥ 10 mSv but ≤ 100 mSv	V	9	7	3	6	9	7	10	10	10	10	10	9	N/A	19	22	30	29	N/A	N/A	N/A
% of exams (Jan-Jun)/cases (Jul-Dec) with pt effective dose ≥ 10 mSv but ≤ 100 mSv compared to total	V	82%	70%	27%	60%	75%	70%	100%	100%	100%	100%	100%	100%	N/A	59%	69%	100%	100%	N/A	N/A	N/A
# of these exams (Jan-Jun)/cases (Jul-Dec) with pt effective dose > 100 mSv	D	0	0	0	0	0	0	0	0	0	0	0	0	N/A	0	0	0	0	N/A	N/A	N/A

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	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec								
C. Average Volume Exams (Jan-Jun)/Cases (Jul-Dec) (different procedures reviewed each qtr):																				
(1) Broken down by Procedure Type:																				
# of CT cases (case = 1 or more exams) documented as being performed	V	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of CT exams per case	V	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
# of these CT exams documented as being performed	V	17	21	29	19	13	11	26	18	19	13	14	12	N/A	67	43	63	39	N/A	N/A
% of total # of CT exams	V	1.9%	2.4%	2.8%	1.8%	1.2%	1.1%	2.4%	1.8%	2.0%	1.2%	1.4%	1.1%	N/A	2.4%	1.4%	2.1%	1.2%	N/A	N/A
# of these exams (Jan-Jun)/cases (Jul-Dec) reviewed (i.e., 10% w/ 10min if possible) for ~ pt radiation dose (i.e., DLP)	V	10	10	10	10	10	10	10	10	10	10	10	10	N/A	30	30	30	30	N/A	N/A
% of total # of CT exams	V	1.1%	1.1%	1.0%	0.9%	0.9%	1.0%	0.9%	1.0%	1.0%	1.0%	1.0%	0.9%	N/A	1.1%	0.9%	1.0%	1.0%	N/A	N/A
Average patient effective dose (mSv) for these exams (Jan-Jun)/cases (Jul-Dec)	V	1.6	1.5	1.5	30.8	22.0	26.2	9.4	12.8	11.5	4.9	4.5	5.4	N/A	1.5	26.3	11.2	4.9	N/A	N/A
# of these exams (Jan-Jun)/cases (Jul-Dec) with pt effective dose ≥ 10 mSv but ≤ 100 mSv	V	0	0	0	8	8	8	4	8	6	0	0	1	N/A	0	24	18	1	N/A	N/A
% of exams (Jan-Jun)/cases (Jul-Dec) with pt effective dose ≥ 10 mSv compared to total	V	0%	0%	0%	80%	80%	80%	40%	80%	60%	0%	0%	10%	N/A	0%	80%	60%	3%	N/A	N/A
# of these exams (Jan-Jun)/cases (Jul-Dec) with pt effective dose > 100 mSv	D	0	0	0	0	0	0	0	0	0	0	0	0	N/A	0	0	0	0	N/A	N/A
(2) Broken down by Procedure Type:																				
# of CT cases (case = 1 or more exams) documented as being performed	V	N/A	N/A	N/A	N/A	N/A	N/A	11	8	5	11	9	18	N/A	N/A	N/A	24	38	N/A	N/A
# of CT exams per case	V	N/A	N/A	N/A	N/A	N/A	N/A	2	2	2	1	1	1	N/A	N/A	N/A	2	1	N/A	N/A
# of these CT exams documented as being performed	V	23	20	22	18	26	22	22	16	10	11	9	18	N/A	65	66	48	38	N/A	N/A
% of total # of CT exams	V	2.6%	2.3%	2.1%	1.7%	2.4%	2.2%	2.1%	1.6%	1.0%	1.0%	0.9%	1.6%	N/A	2.3%	2.1%	1.6%	1.2%	N/A	N/A
# of these exams (Jan-Jun)/cases (Jul-Dec) reviewed (i.e., 10% w/ 10min if possible) for ~ pt radiation dose (i.e., DLP)	V	10	10	10	10	10	10	11	8	5	10	9	10	N/A	30	30	24	29	N/A	N/A
% of total # of CT exams	V	1.1%	1.1%	1.0%	0.9%	0.9%	1.0%	2.1%	1.6%	1.0%	1.0%	0.9%	0.9%	N/A	1.1%	0.9%	1.6%	0.9%	N/A	N/A
Average patient effective dose (mSv) for these exams (Jan-Jun)/cases (Jul-Dec)	V	42.9	32.9	33.2	2.7	2.8	3.1	16.3	32.3	27.1	4.2	4.1	4.2	N/A	36.3	2.8	23.9	4.2	N/A	N/A
# of these exams (Jan-Jun)/cases (Jul-Dec) with pt effective dose ≥ 10 mSv but ≤ 100 mSv	V	10	10	10	0	0	0	8	8	5	0	0	0	N/A	30	0	21	0	N/A	N/A
% of exams (Jan-Jun)/cases (Jul-Dec) with pt effective dose ≥ 10 mSv compared to total	V	100%	100%	100%	0%	0%	0%	73%	100%	100%	0%	0%	0%	N/A	100%	0%	88%	0%	N/A	N/A
# of these exams (Jan-Jun)/cases (Jul-Dec) with pt effective dose > 100 mSv	D	0	0	0	0	0	0	0	0	0	0	0	0	N/A	0	0	0	0	N/A	N/A
D. Low Volume Exams (Jan-Jun)/Cases (Jul-Dec) (different procedures reviewed each qtr):																				
(1) Broken down by Procedure Type:																				
# of CT cases (case = 1 or more exams) documented as being performed	V	N/A	N/A	N/A	N/A	N/A	N/A	3	3	3	7	7	4	N/A	N/A	N/A	9	18	N/A	N/A
# of CT exams per case	V	N/A	N/A	N/A	N/A	N/A	N/A	3	3	3	1	1	1	N/A	N/A	N/A	3	1	N/A	N/A
# of these CT exams documented as being performed	V	2	5	4	5	5	3	9	9	9	7	7	4	N/A	11	13	27	18	N/A	N/A
% of total # of CT exams	V	0.2%	0.6%	0.4%	0.5%	0.5%	0.3%	0.8%	0.9%	0.9%	0	0	0	N/A	0.4%	0.4%	0.9%	0.6%	N/A	N/A
# of exams (Jan-Jun)/cases (Jul-Dec) reviewed (i.e., all performed) for ~ pt radiation dose (i.e., DLP)	V	2	5	4	5	5	3	3	3	3	7	7	4	N/A	11	13	9	18	N/A	N/A
% of total # of CT exams	V	0.2%	0.6%	0.4%	0.5%	0.5%	0.3%	0.8%	0.9%	0.9%	0.7%	0.7%	0.4%	N/A	0.4%	0.4%	0.9%	0.6%	N/A	N/A
Average patient effective dose (mSv) for these exams (Jan-Jun)/cases (Jul-Dec)	V	17.6	10.8	3.2	33.0	15.6	37.9	65.2	62.4	72.4	37.3	45.1	40.0	N/A	9.3	27.5	66.7	40.9	N/A	N/A
# of these exams (Jan-Jun)/cases (Jul-Dec) with pt effective dose ≥ 10 mSv but ≤ 100 mSv	V	2	3	0	5	5	2	3	3	3	7	7	4	N/A	5	12	9	18	N/A	N/A
% of exams (Jan-Jun)/cases (Jul-Dec) with pt effective dose ≥ 10 mSv compared to total	V	100%	60%	0%	100%	100%	67%	100%	100%	100%	100%	100%	100%	N/A	45%	92%	100%	100%	N/A	N/A
# of these exams (Jan-Jun)/cases (Jul-Dec) with pt effective dose > 100 mSv	D	0	0	0	0	0	0	0	0	0	0	0	0	N/A	0	0	0	0	N/A	N/A

Radiation Safety Committee

Trending Report for 2009

Radiographic-Fluoroscopic Use

Click on the links to the right for detailed Quarterly Radiographic-Fluoroscopic Use Radiation Safety Audits in 2009 with links to case-by-case breakdown - started preliminary data collection in Dec 2008.	1st Qtr 2009			2nd Qtr 2009			3rd Qtr 2009			4th Qtr 2009			Mon Ave	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Qtr Ave	2009 Total	2008 Dec		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec										
	CT ABDOMEN W & W/O CONTRAST LIVER PROTOCOL			CT TRAUMA FACE			CT NECK SOFT TISSUE, CHEST, ABD & PELVIS W/CONTRAST			CT ORBIT SELLA P FOS OR TEMP BONE (W/O CONTRAST)												
(2) Broken down by Procedure Type: # of CT cases (case = 1 or more exams) documented as being performed	V	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4	4	4	3	5	4	N/A	N/A	N/A	12	12	N/A	N/A	N/A
# of CT exams per case # of these CT exams documented as being performed	V	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4	4	4	1	1	1	N/A	N/A	N/A	4	1	N/A	N/A	N/A
% of total # of CT exams	V	4	5	2	6	2	3	16	16	16	3	5	4	N/A	11	11	48	12	N/A	N/A	N/A	
# of exams (Jan-Jun)/cases (Jul-Dec) reviewed (i.e., all performed) for ~ pt radiation dose (i.e., DLP)	V	0.4%	0.6%	0.2%	0.6%	0.2%	0.3%	1.5%	1.6%	1.7%	0.3%	0.5%	0.4%	N/A	0.4%	0.3%	1.6%	0.4%	N/A	N/A	N/A	
% of total # of CT exams	V	4	5	2	6	2	3	4	4	4	3	5	4	N/A	11	11	12	12	N/A	N/A	N/A	
Average patient effective dose (mSv) for these exams (Jan-Jun)/cases (Jul-Dec)	V	33.7	56.0	30.3	2.0	1.9	1.8	44.4	56.3	60.4	2.4	2.2	1.7	N/A	43.3	1.9	53.7	2.1	N/A	N/A	N/A	
# of these exams (Jan-Jun)/cases (Jul-Dec) with pt effective dose ≥ 10 mSv but ≤ 100 mSv	V	4	5	2	0	0	0	4	4	4	0	0	0	N/A	11	0	12	0	N/A	N/A	N/A	
% of exams (Jan-Jun)/cases (Jul-Dec) with pt effective dose ≥ 10 mSv but ≤ 100 mSv compared to total	V	100%	100%	100%	0%	0%	0%	100%	100%	100%	0%	0%	0%	N/A	100%	0%	100%	0%	N/A	N/A	N/A	
# of these exams (Jan-Jun)/cases (Jul-Dec) with pt effective dose > 100 mSv	D	0	0	0	0	0	0	0	0	0	0	0	0	N/A	0	0	0	0	N/A	N/A	N/A	
2. Patient radiation dose from Interventional Fluoroscopy (Specials B180): See reference table/link at end of this audit related to patient skin doses.																						
# of Specials exams with documented ~ pt radiation dose (i.e., Air Kerma)	V	32	29	24	36	24	26	39	36	33	20	17	24	28.3	85	86	108	61	85.0	340	36	
Average fluoro time (min) for these exams	V	7.0	4.7	3.6	10.3	3.3	5.3	9.2	7.6	5.4	4.2	3.2	7.4	6.3	5.3	6.8	7.5	5.1	6.3	6.3	7.0	
Average total Air Kerma dose (Gy) for these exams	V	0.3	0.3	0.2	0.5	0.2	0.2	0.3	0.3	0.2	0.1	0.2	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4
# of these exams with total dose ≥ 3 Gy but < 10 Gy	D	0	0	0	0	0	0	0	0	1	0	0	1	0.2	0	0	1	1	0.5	2	1	
% of cases with total dose ≥ 3 Gy but < 10 Gy compared to total	D	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	4%	1%	0%	0%	1%	2%	1%	1%	3%	
# of these exams with total dose ≥ 10 Gy but < 15 Gy	D	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	
% of exams with total dose ≥ 10 Gy but < 15 Gy compared to total	D	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
# of these exams with total Air Kerma dose ≥ 15 Gy	D	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	
3. Patient radiation dose from Cardiac Cath (A233 & A235): See reference table/link at end of this audit related to patient skin doses.																						
# of Cardiac Cath exams with documented ~ pt radiation dose (i.e., Dose = Air Kerma)	V	81	66	64	79	78	69	75	77	69	68	53	63	70.2	211	226	221	184	210.5	842	76	
Average fluoro time (min) for these exams	V	14.6	14.5	13.9	19.4	12.9	12.3	14.1	16.7	15.2	17.0	16.5	20.1	15.6	14.3	15.0	15.3	17.9	15.6	15.6	12.8	
Average estimated dose * (Gy) for these exams * Estimated dose based on recorded dose overestimation (i.e., 19.4% CCL & 19.6% EPL) Updated 2008-2009 data (i.e., from recorded dose to estimated dose).	V	2.1	1.9	1.8	2.4	1.9	2.0	2.1	2.1	2.2	2.4	2.6	3.0	2.2	1.9	2.1	2.2	2.7	2.2	2.2	1.7	
# of these exams with estimated dose ≥ 3 Gy but < 10 Gy	D	21	13	11	19	18	14	20	20	21	18	17	27	18.3	45	51	61	62	54.8	219	14	
% of exams with estimated dose ≥ 3 Gy but < 10 Gy compared to total	D	26%	20%	17%	24%	23%	20%	27%	26%	30%	26%	32%	43%	26%	21%	23%	28%	34%	26%	26%	18%	
# of these exams with estimated dose ≥ 10 Gy but < 15 Gy	D	0	0	0	0	0	0	0	0	0	1	0	1	0.2	0	0	0	2	0.5	2	0	
% of exams with estimated dose ≥ 10 Gy but < 15 Gy compared to total	D	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%	0.0%	1.6%	0.2%	0.0%	0.0%	0.0%	1.1%	0.2%	0.2%	0.0%	
# of these exams with estimated dose ≥ 15 Gy	D	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	
A. Broken down by:																						
# of these exams that were in A233 (EP Lab - EPL)	V	31	25	26	28	20	23	31	28	26	27	15	24	25.3	82	71	85	66	76.0	304	28	
Average fluoro time (min) for these exams	V	17.8	12.7	16.3	22.3	15.5	10.5	15.0	19.3	14.4	14.0	12.2	21.9	16.2	15.8	16.6	16.2	16.5	16.2	16.2	14.6	
Average estimated dose (Gy) for these exams	V	2.0	1.2	1.6	1.4	1.6	1.5	1.9	1.6	1.6	1.7	1.4	2.8	1.7	1.6	1.5	1.7	2.0	1.7	1.7	1.0	
# of these exams with estimated dose ≥ 3 Gy but < 10 Gy	D	11	2	4	2	4	2	8	5	4	6	2	7	4.8	17	8	17	15	14.3	57	1	
% of exams with estimated dose ≥ 3 Gy but < 10 Gy compared to total	D	35%	8%	15%	7%	20%	9%	26%	18%	15%	22%	13%	29%	19%	21%	11%	29%	23%	19%	19%	4%	
# of these exams with estimated dose ≥ 10 Gy but < 15 Gy	D	0	0	0	0	0	0	0	0	0	0	0	1	0.1	0	0	0	1	0.3	1	0	
% of exams with estimated dose ≥ 10 Gy but < 15 Gy compared to total	D	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.2%	0.3%	0.0%	0.0%	0.0%	1.5%	0.3%	0.3%	0.0%	
# of these exams with estimated dose > 15 Gy	D	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	

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Radiographic-Fluoroscopic Use

Click on the links to the right for detailed Quarterly Radiographic-Fluoroscopic Use Radiation Safety Audits in 2009 with links to case-by-case breakdown - started preliminary data collection in Dec 2008.

	1st Qtr 2009			2nd Qtr 2009			3rd Qtr 2009			4th Qtr 2009			Mon Ave	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Qtr Ave	2009 Total	2008 Dec	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec									
B. Broken down by:																					
# of these exams that were in A235 (Cardiac Cath Lab - CCL)	V	50	41	38	51	58	46	44	49	43	41	38	39	44.8	129	155	136	118	134.5	538	48
Average fluoro time (min) for these exams	V	12.6	15.5	12.2	17.8	12.1	13.2	13.4	15.2	15.7	19.0	18.2	19.0	15.2	13.4	14.3	14.8	18.8	15.2	15.2	11.8
Average estimated dose (Gy) for these exams	V	2.2	2.4	1.9	2.9	1.9	2.2	2.2	2.4	2.6	2.9	3.1	3.1	2.5	2.2	2.3	2.4	3.0	2.5	2.5	2.1
# of these exams with estimated dose ≥ 3 Gy but < 10 Gy	D	10	11	7	17	14	12	12	15	17	12	15	20	13.5	28	43	44	47	40.5	162	13
% of exams with estimated dose ≥ 3 Gy but < 10 Gy compared to total	D	20%	27%	18%	33%	24%	26%	27%	31%	40%	29%	39%	51%	30%	22%	28%	32%	40%	30%	30%	27%
# of these exams with estimated dose ≥ 10 Gy but < 15 Gy	D	0	0	0	0	0	0	0	0	0	1	0	0	0.1	0	0	0	1	0.3	1	0
% of exams with estimated dose ≥ 10 Gy but < 15 Gy compared to total	D	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.4%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.8%	0.2%	0.2%	0.0%
# of these exams with estimated dose > 15 Gy	D	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0.0	0	0
4. Radiation Safety Improvements and/or Additional Comments/Problems:																					
Additional monitoring started (i.e., pt radiation dose from CT from high to low volume exams: 1.B.-D.)	N/A	in Jan-Mar			N/A			N/A			N/A			N/A	N/A	N/A	N/A	N/A	N/A	in 1 Qtr	N/A
Special dose (i.e., air kerma) evaluation done on Specials & Cardiac Cath equipment	N/A	N/A			in Jun			N/A			N/A			N/A	N/A	N/A	N/A	N/A	N/A	in Jun	N/A

D = Discrepancy/Problem Indicator V = Volume Indicator
References for Section 1 above

Table 1. Relative radiation level designations along with common example examinations for each classification

Relative Radiation Level*	Effective Dose Estimate Range	Example Examinations
None	0	Ultrasound, MRI
Minimal	<0.1 mSv	Chest radiographs, hand radiographs
Low	0.1-1 mSv	Pelvis radiographs, mammography
Medium	1-10 mSv	Abdomen CT, barium enema, nuclear medicine bone scan
High	10-100 mSv	Abdomen CT without and with contrast, whole body PET

*RRL assignments are not included for some examinations. These are designated as IP (in progress) or NS (not specified). The RRL assignments for the IP examinations will be available in future releases. The RRL assignments for the NS examinations cannot be made because the RRL depends on the region of the body exposed to ionizing radiation, and the body part will vary as a function of the clinical situation.

†Taken from ACR Appropriateness Criteria® Radiation Dose Assessment Introduction (Relative Radiation Level Information)

Table 2

Adult Effective Doses for Various CT Procedures

Examination	Average Effective Dose (mSv)	Values Reported in Literature (mSv)
Head	2	0.9-4.0
Neck	3	...
Chest	7	4.0-18.0
Chest for pulmonary embolism	15	13-40
Abdomen	8	3.5-25
Pelvis	6	3.3-10
Three-phase liver study	15	...
Spine	6	1.5-10
Coronary angiography	16	5.0-32
Calcium scoring	3	1.0-12
Virtual colonoscopy	10	4.0-13.2

†Taken from Mettler FA, Jr., Huda W, Yoshizumi TT, Mahesh M. Effective doses in radiology and diagnostic nuclear medicine: a catalog. Radiology 2008; 248(1):254-263.

Reference for Sections 2 & 3 above

Table II. Radiation-Induced Skin Injuries

Effect	Typical Threshold Absorbed Dose (Gy)*	Hours of Fluoroscopic "On Time" to Reach Threshold† at:		Time to Onset of Effect**
		Usual Fluoro. Dose Rate of 0.02 Gy/min (2 rad/min)	High-Level Dose Rate of 0.2 Gy/min (20 rad/min)	
Early transient erythema	2	1 /	0.1 /	hours
Temporary epilation	3	2.5	0.25	3 wk
Main erythema	6	5.0	0.50	10 d
Permanent epilation	7	5.8	0.58	3 wk
Dry desquamation	10	8.4	0.84	4 wk
Invasive fibrosis	10	8.3	0.83	
Dermal atrophy	11	9.2	0.92	>14 wk
Telangiectasis	12	10.0	1.00	>52 wk
Moist desquamation	15	17.5	1.25	4 wk
Late erythema	15	12.5	1.25	6-10 wk
Dermal necrosis	18	15.0	1.50	>10 wk
Secondary ulceration	20	16.7	1.67	>6 wk

* The unit for absorbed dose is the gray (Gy) in the International System of units. One Gy is equivalent to 100 rad in the traditional system of radiation units.

** Time required to deliver the typical threshold dose at the specified dose rate.

*** Time after single irradiation to observation of effect.

(Table adapted from Ref. 4.)

†Taken from FDA's Avoidance of Serious X-ray-Induced Skin Injuries to Patients During Fluoroscopically-Guided Procedures

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Trending Report for 2009

ALARA-Radiation Exposure

Click on the link to the right for the detailed Quarterly ALARA-Radiation Exposure Audits in 2009 or the Trending Report for 2008 (on far right) which includes links to 2008 detailed reviews.		Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	2009 Qtrly Average	2009 Total	2008 Qtrly Average	2008 Total
1. Personnel Exposure Records/ALARA Investigational Levels (see below):									
A. Radioactive Materials Use:									
a) Follow-up on previous quarter's review (see detailed reports above or summaries below)									
b) # of times ALARA Quarterly Investigational Level I (10% of ¼ annual limit) was exceeded									
By Type: # of times Whole Body Deep Dose Equivalent ALARA I @ 125 mrem was exceeded	D	0	0	0	0	0.0	0	1.8	7
Then by Employee:									
Nuclear Medicine Technologist - Badge # 269 qtrly total in mrem	D	82	91	69	78	80	320	141	565
Nuclear Medicine Technologist - Badge # 1033 qtrly total in mrem	D	108	92	107	119	107	426	118	473
By Type: # of times Extremity Shallow Dose Equivalent ALARA I @ 1,250 mrem was exceeded	D	0	0	0	0	0.0	0	1.0	4
Then by Employee:									
Nuclear Medicine Technologist - Badge # 271 qtrly total in mrem	D	410	400	300	360	368	1,470	863	3,450
Nuclear Medicine Technologist - Badge # 1027 qtrly total in mrem	D	530	600	460	380	493	1,970	1,778	7,110
Nuclear Medicine Technologist - Badge # 1033 qtrly total in mrem	D	500	470	280	360	403	1,610	793	3,170
c) # of times ALARA Quarterly Investigational Level II (30% of ¼ annual limit) was exceeded	D	0	0	0	0	0.0	0	0	0
B. Radiographic-Fluoroscopic Use:									
a) Follow-up on previous quarter's review (see detailed reports above or summaries below)									
b) # of times ALARA Quarterly Investigational Level I (10% of ¼ annual limit) was exceeded									
By Type: # of times Whole Body Effective Dose Equivalent ALARA I @ 125 mrem was exceeded	D	1	0	0	0	0.3	1	0.8	3
Then by Employee:									
RN/Cath Lab - Badge # 534 qtrly total in mrem	D	112	100	114	82	102	408	119	476
Cardiologist/Cath Lab - Badge # 984 qtrly total in mrem	D	107	82	85	94	92	368	111	443
Anesthesiologist/Pain Clinic - Badge # 1048 qtrly total in mrem	D	130	61	8	3	51	202	83	332
By Type: # of times Lens Dose Equivalent ALARA I @ 375 mrem was exceeded	D	1	0	1	0	0.5	2	1.8	7
Then by Employee:									
RN/Cath Lab - Badge # 534 qtrly total in mrem	D	372	334	380	274	340	1,360	396	1,585
Physician Assistant/Pain Clinic - Badge # 972 qtrly total in mrem	D	23	7	4	0	9	34	102	407
Cardiologist/Cath Lab - Badge # 984 qtrly total in mrem	D	360	275	284	316	309	1,235	372	1,488
Anesthesiologist/Pain Clinic - Badge # 1048 qtrly total in mrem	D	434	218	35	9	174	696	290	1,158
c) # of times ALARA Quarterly Investigational Level II (30% of ¼ annual limit) was exceeded	D	0	0	0	0	0.0	0	0	0
2. I-125/I-131 Bioassay Results:									
a) Nuclear Medicine									
# of employees having bioassays	V	2	1	1	1	1.3	5	3.0	12
# of times bioassays performed	V	4	1	1	1	1.8	7	4.8	19
# of administrations > 1 mCi of I-131 as NaI in solution	V	0	0	0	0	0.0	0	0.5	2
# of administrations > 10 mCi of I-131 as NaI in capsule	V	4	1	1	1	1.8	7	2.8	11
# of times bioassays not performed within 6-72 hours post administration	D	0	0	0	0	0.0	0	0.3	1
# of times bioassay results were > minimal detectable activity (MDA) of the counting system	D	0	0	0	0	0.0	0	0.0	0
# of times bioassay results required action and/or inclusion in Total Effective Dose Equivalent	D	0	0	0	0	0.0	0	0.0	0
b) Research - Not performing iodinations at this time - no bioassays done	V	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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ALARA-Radiation Exposure

Click on the link to the right for the detailed Quarterly ALARA-Radiation Exposure Audits in 2009 or the Trending Report for 2008 (on far right) which includes links to 2008 detailed reviews.		Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	2009 Qtrly Average	2009 Total	2008 Qtrly Average	2008 Total
3. Pregnant Radiation Workers:									
# of declared pregnant radiation workers	V	0	0	0	0	0.0	0	0.8	1
4. Quarterly Area Monitors Involving Radioactive Materials:									
NM2 monitor - wall in main hallway outside Nuclear Medicine (i.e., outer wall of hot lab) qtrly total in mrem	V	8	6	10	1	6.3	25	17.8	71
NM3 monitor - wall in main hallway outside Nuclear Medicine (i.e., outer wall of hot lab) qtrly total in mrem	V	0	0	0	0	0.0	0	0.0	0
RES1 monitor - doorway of research radioactive waste storage room qtrly total in mrem	V	0	0	0	0	0.0	0	0.0	0
# of area monitors with readings > 100 mrem for the current calendar year (i.e., 2009)	D	N/A	N/A	N/A	0	N/A	0	N/A	0
5. Sanitary Sewer Disposal of Radioactive Material: none at this time	V	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6. Radiation Safety Improvements and/or Additional Comments/Problems:									
Compliant with NRC's constraint of radioactive air effluents for the current calendar year (i.e., 2009)	N/A	N/A	N/A	N/A	in 2009	N/A	N/A	N/A	in 2008

D = Discrepancy/Problem Indicator

V = Volume Indicator

Quarterly ALARA Levels & Annual Limits are expressed in mrem	ALARA Quarterly Investigational Levels		Annual Limits*
	Level I (10% of ¼ annual limits)	Level II (30% of ¼ annual limits)	
Whole Body (WB) Deep Exposure (DDE = Deep Dose Equivalent) (if lead/lead equivalent apron not used)	125	375	5,000
Whole Body Effective Dose Equivalent (WB EDE) = 0.3 x DDE (due to use of lead/lead equivalent apron)	125	375	5,000
Lens of Eye Exposure (LDE = Lens Dose Equivalent)	375	1,125	15,000
WB Shallow (Skin) Exposure (SDE = Shallow Dose Equivalent)	1,250	3,750	50,000
Extremity Shallow Exposure (SDE = Shallow Dose Equivalent)	1,250	3,750	50,000

* Annual Occupational Dose Limits for Adults based on NRC Regulations