

Documents for Mr. Steven Courtemanche

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Howard University

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Actions and planned activities following the NRC inspection on 3/18 & 19/03 and the observations of contamination of personnel and areas in the Nuclear Medicine Division

- 3/19,20 Large gloves obtained for NM staff
- by 3/20 Ring badge exchanged for fresh ring badge from tech who had extensive contamination of the hand.
- 3/21 One tech out on sick leave.
- 3/24 Meeting between RSO & NM manager to discuss corrective actions. Corrective actions considered are: training of techs on surveys (close-out & personnel), survey meter check, demo on decontamination, closer supervision by supervisor, increased inspections and observations by RSO, obtaining a long handled GM probe and letter of reprimand. Confirmatory survey performed after hours in the NM areas by RSO. Some contamination discovered in Hot Lab by dose calibrator, hot trash in a imaging room and on a desk top in the Nuc Cardiology area. NM manager informed about the contamination.
- 3/24 - 4/1 Radiation Safety technician performs confirmatory surveys approximately twice a week in the NM area. Some contamination found. The RS technician informs the NM technologists of his discoveries and about correcting the problems.
- 3/31 Tech's ring badge sent to Landauer for urgent processing, obtained info for a new long handled GM probe, and confirmatory survey performed after hours in the NM areas. Contamination found in the Hot Lab around the dose calibrator, hot trash in the injection lab and sheets with a small amount of contamination in one general imaging room.
- 3/31 - 4/1 One tech out on sick leave
- 3/31 - 4/4 RSO working on calculation of dose to fingers.
- 4/1 Ring badge result indicated a dose of 240 mrem. This badge was 2 months old, so the average dose was 120 mrem. This exposure is 20 - 25% higher than an average of 95 mrem from previous exposures. The ring badge was worn on the left hand, but the contamination occurred to the right hand. Confirmatory survey performed in the NM areas by RSO after hours. Contamination limited to hot spot on table top in Nuc Cardiology area.
- 4/2 Confirmatory survey performed in the NM areas by RSO after hours.

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Contamination limited to syringe carrier with a hot spot sitting on table in Nuc Cardiology area. NM manager worked with the tech the next morning on correcting the contamination problems discovered over the past week and discussed the need for improvement and about the steps to maintain areas clear of contamination.

- 4/3 Information and current results reviewed by chair of Radiation Safety Committee.
- 4/4 Meeting between RSO, MD chief of NM & NM manager to further apprise NM chief of the problems that occurred during the NRC inspection and to further discuss the following items; corrective actions, the tech who received a significant hand dose and the possibility of hiring a part-time tech.
Informed NRC of the results of the finger dose calculation. An additional computation was necessary in order to evaluate the dose to two fingers rather than a spot on one finger.
- 4/4 - 4/7 RSO performed additional measurements & calculated new dose to the hand based on measurements.
- 4/8 Meeting between RSO, NM manager and both NM techs.
Discussed the violations that occurred during the NRC inspection, appropriate procedures for doing surveys and asked for tech response and or comments on the problems. Techs stated a need for additional carts, a larger carrier for hot items and informing nurses about proper disposal of potentially contaminated items.
Confirmatory survey was performed. Found hot wrapper lying on the floor in general imaging room and contaminated items (gauze, gloves, alcohol wipes) in Nuc Cardiology trash.
- 4/10 Results of second calculation faxed to NRC.
- 4/17 RSO observed NM tech perform some start-of-the-day procedures. It was observed that the package receipt procedure was not fully followed. Instructed tech that a smear of box surface is to be done before disposal. Note that waste collected by housekeeping personnel is placed in front of low level detectors before disposal. The detectors are set to alarm for low levels of activity. When the alarm is triggered, the waste is set aside for further inspection by Radiation Safety personnel. Information and current results reviewed by chair of Radiation Safety Committee.

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Inspections by the RSO have begun as of the first week following the inspection. Further inspections and observations are being performed by the Radiation Safety technician and NM manager. The inspections and observations are to continue for 4 months as a measure to ensure training has been adequately done and followed. If by the end of this time period it is found that training and inspections have not produced noticeable performance improvement then a recommendation will be made to reassign the tech(s) to some other area than Nuclear Medicine. Training on area close-out surveys, personnel surveys, package receipt surveys and survey meter check will be completed in the next two weeks. During the training an emphasis will be placed on performing area and personnel surveys throughout the day especially when contamination is suspected. This emphasis is to highlight the potential for large skin doses should any skin contamination go undetected. Radiology nurses will also be instructed about proper disposal of potentially hot items (especially in Nuc Cardiology). Additional training is to include a decontamination demonstration to be completed in the next four weeks. Purchase requests for a long handled probe, cart and larger carrier will be placed over the next two weeks.

Review points:

Area surveys – use GM meter in audible mode, low scale setting, probe positioned close above area being checked, probe movement sufficiently slow to ensure adequate response time of detector, expected level of background reading, typical locations to check for possible contamination, like trash cans, tables, counter tops, linen, computer consoles, camera controllers, floors and door knobs.

Personnel surveys – use of NaI detector in audible mode to detect low levels of contamination, perform survey in low background area, expected level of background reading, use of area survey techniques to ensure adequate inspection for any low level contamination and report any skin contamination that is discovered.

Package receipts – exposure surveys done at 3 ft and package surface before retrieving shipment from receiving vault, acceptable exposure results based on DOT label, wearing gloves, visual inspection of package for any sign of damage, wipes taken of package/box surface, open package, inspect contents for signs of damage, verify contents with packing slip, take wipe of source outer container, recording of data and obliterating labels.

Survey meter check – basic operation principles for GM tubes and NaI detectors, verification of operability with battery check and check source,

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comparing check source response against value listed on calibration sticker
and recording of results.

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