January 1, 2022 – October 15, 2022 RAM NMED Events	
14 total events	
1 - Security Related Event	
1.	On June 5, 2022, the Department observed the removal of an irradiator at for a medical licensee. A crew member of the rigging subcontractor was seen livestreaming the operation. Campus police were immediately notified, the filming was stopped, and the crew member was removed from the site. He was eventually terminated from employment.
1 - Inability to Retract Radiography Source	
1.	The licensee reported that on May 3, 2022, a QSA Global Model 880 containing a 37curie source of iridium-192 malfunctioned. During radiographic operations, the automatic lock slide that secures the source failed to completely close. While the source was completely retracted, secured, and verified using a survey meter, the camera was not fully functioning as intended. The licensee contacted with QSA Global, who suspect a spring malfunction. The camera was sent back to QSA for evaluation and repair. There were no overexposures because of this event.
5 – Lost /Abandoned / Stolen	
1.	On January 17, 2022, a licensee reported the loss of an RSL I-125 breast localization seed that happened on January 14, 2022. During the surgery to remove the lesions, the specimen was removed, and imaging confirmed the seed within the specimen. This was also confirmed by the Radiologist. The container with the specimen and the seed was sent to the pathology for separation of seed from tissue. Pathology removed the seed and contacted Nuclear Medicine to retrieve the seed. A Nuclear Medicine technologist transported the specimen cup with the seed from the Pathology department to the nuclear medicine department for return to the vendor. The Nuclear Medicine technologist placed the specimen cup with the seed in the storage cabinet that normally used to store radioactive trash that has short half-life for decay. The technologist was busy with a patient and was planning to come back and place the seed in the return shipping container later. The next day, a second Nuclear Medicine technologist thought they accidently discarded the seed into the trash, but they did not. The seed was transferred to the appropriate lead vial, but the technician did not remember performing the task. The PADEP performed a follow-up inspection. No overexposures are expected as a result.
2.	The Department received notification from a licensee on March 16, 2022, that a Troxler 3440 portable gauge was delivered to the wrong location and to the wrong licensee. The gauge contained 9 mCi of Cs-137 and 44 mCi of Am-241:Be. The gauge was incorrectly delivered to another Pennsylvania licensee by a carrier. The device was on its way back from being serviced by commercial vendor. The other licensee also had gauge(s) at the same vendor for service. The other licensee has secured the device in its vault while the carrier and service provider arrange proper delivery back to the proper licensee.
3.	On April 7, 2022, the licensee informed the department that a Troxler Model 3440 nuclear density gauge, serial number 31109, containing 8 millicuries of cesium-137 and 40 millicuries of americium-241 had been stolen. The gauge was secured in the back of the technician's vehicle at his residence. The technician was leaving his residence this morning around 8:00 am and the vehicle was missing with the gauge inside. This incident was reported to the Philadelphia Police Department. At this time the matter is still under police investigation and the gauge is still missing.

Lost /Abandoned / Stolen (Continued):	
4.	The licensee performed packaging of some sealed sources and NORM material under reciprocity at a client facility in Oakwood, Ohio, in October of 2021. The sources were packed in 2 drums and shipped to the licensee's facility. The shipment was received on December 7, 2021. The licensee was contacted by the clients' RSO last week because they were missing a source and thought perhaps that it had been erroneously packed with the sources that were shipped to the licensee's facility. The licensee had not done anything with the two drums since receiving them in December, as they batch process sealed sources every few months. The licensee inventoried the drums for the client and in doing so did not find their missing source. However, the licensee also discovered that there appears to be a discrepancy in the inventory of the Strontium-90 sources within the drum. The packing list for the shipment identified 6 Strontium-90 sources with the following microcurie strengths: 459, 373, 432, 465, 255, and 411 with a total of 2,395 microcuries. The manifest for the shipment identified a total of 2,395 microcuries of Strontium-90. When the licensee technicians inventoried the 2 drums, they only found 5 Strontium-90 sources. The sources had been removed from their holders, which contained the source identification information. This removal was completed at the client facility. There is no way to determine which 5 Stronium-90 sources the licensee has within the drums. They then cross referenced the inventory with the packing list. This double check revealed that only 5 Strontium-90 sources present at the time of shipping. The licensee contacted the client and spoke to the technicians that packaged the materials. The client's technicians recalled that there were 6 Strontium-90 sources that were packaged. There was no indication that the drums had been tampered with during transit. Since there were only 5 Stronium-90 sources present when the licensee initially opened the drums, they believe that there was a miscount as the sources were packaged for shipment. The licensee was also able to verify that the 2 drums received had tamper seal placed on them at closure prior to it leaving the client facility. These seals were intact prior to the drum being opened at the licensee's facility.
5.	On July 15, 2022, a licensee discovered they lost an Americium-241 source. The 100 mCi source is in a FILTEC model FT-50 gauge (Serial Number 116888). The licensing was conducting an inventory for its license renewal and has been unable to locate the device in its storage location. The licensee has notified its Facilities and Engineering Departments and is actively searching for the source. At this time the source has not been located.
1 **- Stuck / Broken Shutter**	
1.	On February 9, 2022, the licensee's radiation safety officer (RSO) was completing shutter checks and leak tests on a Ronan, Model Number: SAI-F37 fixed gauge that contained 10 millicuries of Cesium 137. During the checks the shutter's shear pin broke and he was unable to close the shutter. The vessel that this gauge is on is not entered very often and is not readily accessible. The RSO notified the manufacturer and repairs were complete on March 8, 2022. Given the harsh environment the licensee's procedures were updated to increase shutter check frequency.
1 - Generator Breakthrough Event	
1.	On February 2, 2022, a routine inspection of the licensee, it was discovered that on November 30th, 2021, two Lantheus Medical Imaging generators failed Molybdenum breakthrough testing. A 10 Ci Lantheus generator was eluted at 12:10 am with a Mo/Tc ratio of 0.00343 uCi/mCi. The generator was then eluted again at 7:58am with a Mo/Tc ratio of 1.22159 uCi/mCi, exceeding the breakthrough limits. A second generator 15 Ci Latheus was eluted at 12:06 am with a Mo/Tc ratio of 0.0023 uCi/mCi. The generator was eluted again at 7:51 am with a ratio of Mo/Tc 1.3897uCi/mCi, also exceeding the breakthrough limits. The generators were taken out of service and the manufacturer was notified. The generators were returned to the manufacturer and were never used for patient doses.

5 - Medical Events	
1.	The Department received notification from a licensee on February 15, 2022, of medical event involving dose to an incorrect treatment site. An Elekta/Nucletron Remote Afterloader containing 6.4 curies of iridium 192 with a Valencia skin applicator was to treat the lower third nasal dorsum with 600 cGy. However, the prescribing physician specified the right nasal sidewall. Therefore, the patient received 600 cGy to her lower 3rd nasal dorsum and not right nasal sidewall. The patient and prescribing physician were informed on February 14, 2022. The patient is being monitored and at this time no adverse effects are evident.
2.	On March 3, 2022, a patient was receiving a Lutetium-177 (Lutathera®) treatment. During treatment, the vial lost pressure resulting in the inability to deliver the majority of the dose to the patient. Remedial measures were attempted, such as Dermabond and the addition of air. However, the procedure still could not continue, and it was ultimately terminated. No contamination was found outside of the delivery box. The prescribed dose was 200 millicuries and it is estimated that the patient received approximately 1.4 millicuries. An investigation into the cause of the event was performed by the licensee and training procedures were updated. No adverse effects to the patient are noted at this time and the patient and prescribing physician have been informed.
3.	On April 18, 2022, a patient underwent a Y-90 SIR-Sphere treatment. The prescribed dosage was 7.07 millicuries, however only 5.27 millicuries was able to be delivered, or 74.5 percent. The apparent cause is that the blood vessel the catheter was placed in had a complicated vasculature which inhibited the flow of the spheres. No harm is expected to the patient. The referring physician and the patient have been informed.
4.	On May 4, 2022, a patient underwent a Y- 90 SIR-Sphere treatment. The catheter placement changed during a SIR-Spheres administration. The Authorized User intentionally stopped the administration, as continuing could have resulted in harm to the patient. The administered activity was 67% of the prescribed activity (15.1 mCi vs 22.51 mCi).
5.	On May 18, 2022, a patient underwent treatment of four lesions in the brain. Upon review of the treatment, the physicist noticed that all four lesions were missed by approximately 0.5cm and healthy brain tissue was treated. The patient and referring physician have been informed. The patient had MRIs and CT Scans. Those images were fused by the neurosurgeon and radiation oncologist. Upon completion of the treatment, they discovered that although the targets were moved with the second image fusion, the shots and contours were not. This resulted in the treatment being 0.5 cm off for all 4 targets. Prescribed dose was 20-21 Gy, delivered dose to target tissue was 8 to 15 Gy, maximum dose to healthy tissue is estimated to range from 21.82 to 27.09. To prevent recurrence of the event, the Radiation Oncology Department revised the procedures for reviewing and approving all CT/MR co-registration cases.