DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF CLIMATE, CLEAN ENERGY & RADIATION PROTECTION
RADIATION PROTECTION ELEMENT
MONTHLY REPORT

JULY 1 THROUGH JULY 31, 2022

SECTION I- OFFICE OF THE ASSISTANT DIRECTOR

A. FY 2022 Radiation Protection Element Accomplishments

Assistant Director Assumes Role as Chairperson to the Conference of Radiation Control Program Directors Board of Directors (CRCPD)

In May 2022, Assistant Director, Pat Mulligan, assumed the position as Chairperson of the CRCPD's Board of Directors at the conclusion of the CRCPD' Annual Meeting. Mr. Mulligan is in the second year of a three-year term on the Board and provides this national organization with leadership and direction for issues related to radiation protection. The Conference of Radiation Control Program Directors, Inc. (CRCPD) is a 501(c)(3) nonprofit non-governmental professional organization dedicated to radiation protection. CRCPD's primary goal is to assure that radiation exposure to individuals is kept to the lowest practical level, while not restricting its beneficial uses. CRCPD's membership is made up mostly of radiation professionals in state and local government that regulate the use of radiation sources.

CRCPD 54th National Conference on Radiation Control

Assistant Director Mulligan attended the 54th National Conference on Radiation Control held in Tucson Arizona from May 13th through 20th, 2022. It was the first in person national conference for the CRCPD since the start of the pandemic. The Program Committee could not have picked a more suitable theme for meeting, and all those in attendance would agree that we are all- Better Together. While virtual meetings served us well during the pandemic, nothing can replace in person engagement between colleagues to foster professional relationships and technical collaboration. As a member of the Board of Directors' Mr. Mulligan attended several days of business meetings that included States only sessions as well as meeting with federal partners and support organizations. It was an excellent opportunity to collaborate and share experiences with so many colleagues. The conference agenda included a long list of distinguished speakers that shared their expertise and insights into a wide variety of technical topics on radiation protection. The Honorable David Wright, Commissioner US Nuclear Regulatory Commission (NRC) deliver the keynote address outlining the NRC's vision for the future focusing on "Building a Diverse Team", "Communication" and "Teamwork". Sessions also included updates from federal partners, including FEMA, NRC, EPA, DOE/NNSA, CDC and FDA.

Information on CRCPD and its Working Groups can be found on their website at https://www.crcpd.org/

Rule Adoption - N.J.A.C. 7:27A Radon Testing and Mitigation

The Radon Section's work to repeal its existing rules and promulgate new rules applicable to individuals and businesses who test for or mitigate radon has continued into FY2022. The radon statute gives the Department authority to establish a program for the certification of persons who test for the presence of radon gas and radon progeny in buildings, and who mitigate, and safeguard buildings from the presence of radon gas and radon progeny.

The rules were adopted in the New Jersey Register on June 6, 2022. To give all the currently certified businesses and individuals enough time to make the necessary changes, the new rule will not become operable until December 3, 2022. Initial applications were emailed out to more than 1000 certified entities and those initial applications are due back to the Radon Section by October 3, 2022. This timeframe will also allow the Radon database to be updated based on the new rule requirements.

Hope Creek FEMA Evaluated Exercise

On May 10, 2022, Radiation Protection Element staff joined the New Jersey State Police Office of Emergency Management (NJ OEM), Salem and Cumberland Counties, Delaware Emergency Management Agency (DEMA) and PSEG Nuclear LLC in a full-scale nuclear emergency response exercise. The offsite response organizations are evaluated by FEMA Regions 2 & 3, while PSEG Nuclear LLC is evaluated by the NRC. Simulating an accident at Hope Creek Nuclear Generating Station, staff from the Bureaus of Nuclear Engineering (BNE), X-ray Compliance, Environmental Radiation, Emergency Response, Geographic Information Systems and Communications & Response Services, as well as National Guard 21st Civil Support Team, staffed the Emergency Operations Facility in Salem, Field Command Center in Ewing and State Emergency Operations Center and Joint Information Center both at the Regional Operations Intelligence Center in West Trenton for this biennial evening exercise. Three field monitoring teams were dispatched to collect simulated radiation readings. This is the first in-person federally evaluated nuclear emergency response exercise since May 2018, as the 2020 evaluated exercise was held on a virtual platform for the offsite response organizations due to the COVID public health emergency. Post exercise, FEMA indicated that all objectives for the DEP's response were successfully met.

B. FY 2022 Bureau of X-Ray Compliance Accomplishments

Machine Source Section:

The Bureau inspected 1,565 facilities and evaluated compliance of 3,817 x-ray machines. Work plan targets for the year were 2,365 facilities and 7,654 machines, respectively. These inspections resulted in the issuance of 622 violations of radiation protection codes of which 203 (33%) were violations of quality assurance regulations and 419 (67%) were violations of other radiation protection regulations. Inspections completed fell short of the goals due to the continued impacts of the pandemic on the inspection schedule.

In addition, the Bureau continued inspections of dental radiography schools and dental cone beam computed tomography (CBCT) facilities. A total of 146 CBCT facilities were inspected and 93 CBCT violations issued. The majority of CBCT violations were for failure to conduct various quality control tests, 57 (61 %) and failure to have an annual medical physicist's survey performed, 35 (38 %).

Machine Source Registration Section:

In 2022, the Machine Source Registration total number of invoices paid on-line was maintained at 25 % from the previous fiscal year. This was attributed to the Bureau's actions to get

registrants to pay their renewal machine source registration fees on time through hand deliveries by inspectors. For the 2022 fiscal year, $3,139,869.00 was invoiced and a total of $3,128,950.00 was collected. The percentage collected was 99%.

Technologist Education and Licensing Section

In FY 2022, the section processed and issued 1,354 initial licenses and renewed 501 licenses. The section coordinated four quarterly meetings of the Radiologic Technology Board of Examiners. Thirty-four compliant inspections were conducted, and 15 unlicensed technologists were found operating x-ray equipment. This resulted in 102 enforcement documents being issued. A total of 14 new school applications were reviewed and three schools were inspected. The Section transformed its inspection practices and is using the Bureau's Machine Source Inspectors to perform most of these inspections as part of their x-ray equipment inspections. The section now has an inspector resource to cover dental radiography school inspections.

The Section initiated 34 investigations and verified 5,160 licenses. Only 30 investigations were projected. A total of 102 enforcement violations were found for employing unlicensed operators of X-ray equipment and unlicensed nuclear medicine technologists. There was a total of three technologists licensed sanctioned. Ten technologists were utilizing an expired license while practicing.

Mammography Section:

The Bureau's current contract with the Food and Drug Administration (FDA) ended on August 20, 2022. The Bureau completed 231 inspections of fully certified New Jersey mammography facilities. New Jersey mammography facilities continue to exceed national compliance rates reported by the FDA. In FY 2022, the national compliance rate was 86.4% compared to New Jersey's 87.9%. Nationally, the number of certified mammography facilities have decreased since the adoption of the Mammography Quality Standards Act in 1995. New Jersey certified mammography facilities has decreased from 275 (1999) to 233 (2022). Additionally, the Bureau inspected 51 of the 57 facilities that have stereotactic/needle localization units.

Enforcement Services Section:

In 2022, the Bureau completed: 391 compliance inspections, 511 dental inspections, and issued 150 Notice of Violations, 194 Administrative Orders and 182 Notice of Prosecutions for a total of 526 enforcement activities. In 2022, the Bureau assessed $94,200.00 in penalties and collected $89,650.00 for the current fiscal year. Also, the Bureau collected $19,450.00 from the previous fiscal year. The total amount collected was $109,100.00. The percentage collected was 95% for the current fiscal year.

C. FY 2022 Bureau of Environmental Radiation Accomplishments

Office of the Bureau Chief

The BER provided support for the radiological investigation of Colonia High School. A former student believed that the development of cancer in a family member may have been related to a radiation source that was discovered at the high school decades ago. The township hired a consultant who performed a thorough radiation survey and radon testing and found no readings outside of normal background variation. BER staff reviewed the plans, quality assurance plans and results. The Department of Health determined that the number of brain cancers was not outside the normal 95% confidence level of brain cancers in the county.

The Manager of BER initiated a health physics recruitment program whereby staff of the BER met with active Society of Physics Student (SPS) chapters at colleges and universities. BER staff met with eight SPS Chapters. As a result of the recruitment efforts, the BER was able to hire a paid summer intern, Brooke Richards from Seton Hall University. Brooke completed the development of a poster that was presented (via a recording) at the annual Organization of Agreement States (OAS) meeting in Ft. Worth, Texas. Brooke developed trends for radioactive materials incidents, accompanied staff on inspections, loaded instrument data into RadResponder, and reviewed emergency response online training, job aids and procedures.

The Manager gave a presentation at the Annual OAS meeting on the history and eventual remediation of Shieldalloy Metallurgical Corporation. This remediation effort spans over 50 years and predates the establishment of the US Nuclear Regulatory Commission. The Manager also gave a presentation on transportation issues involving common carriers and incidents involving misplaced radioactive materials packages.

The Manager continued to provide support to the International Atomic Energy Agency (IAEA) on several projects involving worker safety at water treatment facilities and dosimetry for NORM industry workers. In addition, the Manager was a peer reviewer for abstracts submitted for the NORM X Symposium held in the Netherlands.

The Manager and staff of REAS provided comments on Revision 2 of the Multi-Agency Radiation Site Survey Investigation Manual (MARSSIM). MARSSIM is a collaborative federal guidance document on how to investigate and determine if a radiological contaminated site is clean. New Jersey has vast experience using MARSSIM and had many technical comments for improvement.

Radon Section

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CDC National Radon Database

The 2020 data set for all radon tests conducted in New Jersey was successfully submitted to the CDC. With the assistance of the DEP IT staff and DOH staff, data sets have been submitted for radon tests conducted in New Jersey from 2009 – 2020. The national database is being developed after more than ten years of effort by EPA and CDC workgroups comprised of multiple states including New Jersey. Radon data submissions are accepted by CDC once a year and the data must meet specific criteria to be accepted into the CDC database.

Radon Database

Extensive changes were made over the past year to the Radon database. The result will be a more streamlined and automated database system. This will allow the Radon Section to operate more efficiently and to communicate with certified individuals and businesses more effectively. The changes will also benefit applicants and certified entities by providing them with routine information regarding their certification status and enhanced communication about issues that may arise throughout the year.

Automation reduces the probability of error. The contractor responsible for managing the database has been working on the automation of the following: sending out application with invoices to businesses and individuals, adjusting program administration fees and generating those invoices twice each year, preparing the database to handle the new requirements of the adopted regulations, and performing quality control tracking of duplicate and blank testing by the certified businesses.

The Radon Section and the contractor are also working on creating checklists for application review when measurement and mitigation businesses and professionals submit their renewal applications annually. The database will eventually be able to track attachments submitted for a business application review, including the quality assurance/quality control plan, radiological safety plan, client report, exposure tracking and mitigation contract information.

Radon Awareness Program

The Radon Awareness Program (RAP) grant is available to all New Jersey municipalities, counties, and schools. The purpose of RAP is to raise radon awareness and promote the testing of New Jersey residences. For this program, the Radon Section will reimburse up to $2,000 for the

purchase of radon test kits. These test kits can then be distributed to its residents along with other promotional materials free of charge.

Staff members have worked directly with participants to adapt to the challenge of distributing test kits in a safe and effective manner. The NJDEP's Facebook and twitter accounts were utilized to promote the program by encouraging residents to contact their locally elected official and urge program participation. During the past year, 34 municipalities and/or counties participated in the program.

Standard Harmonization

The American National Standards Institute and the American Association of Radon Scientists and Technologist have proposed a harmonization of standards for radon measurements and mitigations in single family homes, schools, large buildings, and multifamily buildings. Work on harmonization of text between these standards will result in significant improvements due to so many mixed-use buildings. The harmonization review of both standards resulted in many technical improvements and conversion to sentence styles that aid assessments for compliance with the standard. Radon section staff provided a thorough evaluation of all proposed standards, as they will have a direct effect on the testing and mitigating of radon in New Jersey and other regulated states.

Radiological and Environmental Assessment Section (REAS)

The REAS section performs technical review and oversight of complex decommissioning radioactive materials licensees and contaminated sites being addressed under the Industrial Site Recovery Act (ISRA) and referred for review by either NJDEP Site Remediation Program staff or directly from Licensed Site Remediation Professionals. Several highlights of their FY2022 accomplishments are presented below.

National Lead / Sayreville Economic and Redevelopment Agency - Remediation Progress

This 312-acre former National Lead site processed ore to extract Titanium, generating TENORM waste. Much of the property was released in the early 2000's and approximately 60 acres remain impacted by TENORM. Some of the property previously released for commercial use is being reevaluated for unrestricted release to permit some residential development. In 2008, site ownership changed to the Sayreville Economic & Redevelopment Agency (SERA). A 2013 Commission on Radiation Protection (CORP) exemption and revised Remedial Action Workplans established site-specific release criteria and allowed mixing soils with imported fill to achieve remedial action goals in future commercial use areas. Higher level soils are not permitted to be mixed and are shipped by rail to permitted disposal sites.

In FY2022, REAS staff reviewed 24 Final Status Survey Reports, releasing parcels of land totaling 36 acres. Staff spent significant time reviewing a request for an amendment to the Commercial Remedial Action Work Plan, specific to a 2.3-acre size Survey Unit known as the TiO2 area. This area has concentrations of radioactive materials that are generally the highest on-site, and the geotechnical conditions of the materials present unique challenges for excavation

and disposal. The approved amendment allows for in-situ stabilization prior to excavation of 8 ft of material uniformly across the entire Survey Unit. The site is in the process of seeking disposal site acceptance.

Staff also completed one site visit during the fiscal year to observe excavation activities. Overall, the two REAS staff spent a combined 682 hours (0.44 FTE) working on this remediation project during FY2022.

Maywood Chemical FUSRAP/Superfund site

The Maywood site includes residential, municipal, and commercial properties in the boroughs of Maywood and Lodi, and the Township of Rochelle Park, all located in Bergen County. The primary contaminant at the site is thorium-232, which originated from extraction processes involving monazite sands by the former Maywood Chemical Works between 1916 and 1959. Staff, along with some assistance from one member of the Bureau of Nuclear Engineering, reviewed 5 Post Remedial Action Reports (PRAR) ad 1 other technical submission for NJDEP review. A large caseload is pending for review as this project heads closer to closure. Staff spent 132 hours on this remediation project during FY2022.

Heritage Minerals

This site in Manchester Twp, Ocean County is the location of former mining operations where native sand deposits were mined to extract titanium-bearing minerals and several other heavy minerals, leaving approximately 1 million cubic yards of tailings containing low level Technologically Enhanced Naturally Occurring Radioactive Materials (TENORM). After years of delay, remedial actions were initiated in August 2021. The remediation plan consists of bulk excavation of the tailings pile and blending with onsite sands conducted in 1 foot elevation layers to ensure the final restricted area (future capped area) complies with NJ remediation standards. Staff spent 101 hours on this remediation project during FY2022.

Shieldalloy Metallurgical Corporation (SMC) - Decommissioning Plan Successes

Shieldalloy Metallurgical Corporation (SMC) in Newfield, Gloucester County is Superfund Site and has a radioactive materials license from the NJDEP's Bureau of Environmental Regulation (BER). Previous production activities (since the 1950's) licensed by the US Nuclear Regulatory Commission resulted in huge stockpiles of low-level radioactive slags and baghouse dust (from air pollution control equipment) on site as well as some off-site impacts to sediments of the Hudson Branch. NJDEP BER assumed regulatory authority over the site in 2009 and reengaged the site regarding decommissioning in accordance with NJDEP Remediation Standards for Radioactive Materials.

Progress toward completion of site remediation continued in FY2022. In the storage yard, the only remaining slag and baghouse dust exists in a small pile and as a thin layer across the surface of the yard. This is intended to be removed in calendar year 2022. Staff completed one site visit to conduct a routine inspection of licensed activities and collect gamma scan walkover data of portions of the property outside the storage yard and Hudson Branch. The collected data will

help support more targeted characterization of subsurface impacts around the site. Additional excavation and disposal are expected in these areas. The significant actions for next fiscal year should include this additional characterization, followed by excavation remaining in areas containing residual radioactivity. Another shipping effort will be implemented to manage those materials.

REAS staff reviewed a Final Status Survey Report for OU2 Hudson Branch and provided several comments which are being reviewed by the site. At this time, the only part of the Hudson Branch that has been released, for limited restricted use, is Phase 1D. Staff also reviewed a revised Decommissioning Funding Plan and provided comments. This will be revisited following the onsite characterization efforts. Staff spent a combined 68 hours on this remediation project during FY2022.

Former PSEG Fossil Mercer Generating Station

Coal Combustion Residue containing TENORM is present at this former coal burning power plant being redeveloped into trucking/warehouse space. A fast-paced remediation and redevelopment schedule has required significant staff time to ensure remedial actions are planned and carried out to comply with remediation standards. Staff spent 71 hours on this remediation project during FY2022.

Middlesex Sampling Plant & Middlesex Municipal Landfill FUSRAP sites

The Middlesex Industrial Center property is adjacent to the former Middlesex Sampling Plant, a Formerly Utilized Sites Remedial Action Program (FUSRAP) case and is listed as a Vicinity Property. Although some removal actions were conducted in the past, a redevelopment team sought unrestricted release under NJAC 7:28-12 which culminated in supplemental investigations identifying residual radiological impacts and the 2021 excavation and disposal of approximately 4,900 tons of TENORM-impacted soils. Review of the Remedial Action Report suggest the project met its goals, but some follow-up documentation remains before final approval is granted. REAS conducted several site visits of this property through the investigation and remedial action phases of work. Staff spent a combined 44 hours working on this remediation project during FY2022.

Non-Military Radium sites

In 2017, the U.S. Nuclear Regulatory Commission provided states with a list of possible radium sites based on their research. Many of the sites that the NRC identified for New Jersey were known and were either remediated or at some stage of remediation oversight. There were, however, sites where the research was incomplete. For example, a site could have ended up on the NRC list because they found an advertisement in a newspaper or magazine from the 1930's. It took considerable additional research from the REAS staff to identify properties, contact individuals (either homeowners, landlords or businesses), and perform on-site surveys. Two properties that REAS staff identified with contamination were referred over to the US Environmental Protection Agency (EPA) and removal has been completed.

During FY2022, staff completed surveys of three remaining properties, and found no evidence of contamination. Staff also conducted a site visit to observe EPA's removal action at one residential property. A final report was recently received from EPA closing out their investigation and removal action.

NORM X

The tenth International Symposium on Naturally Occurring Radioactive Materials (NORM X) was held in Utrecht, the Netherlands from May 9-13, 2022. James McCullough was invited to present a refresher class on decommissioning of water treatment facilities that treat for naturally occurring radionuclides. James provided the training as a recorded session for the conference attendees. The training class, developed by James, received accreditation from the American Board of Health Physicists for continuing education credits as well as the Authority for Nuclear Safety and Radiation Protection in the Netherlands, two prestigious accreditation bodies.

Medical and Industrial Sections of the Agreement State Program

Periodic Meeting with the NRC

On September 9, 2021, a Periodic Meeting was held with the US Nuclear Regulatory Commission (NRC). These meetings are held with an Agreement State at the halfway point between Integrated Materials Performance Evaluation Program (IMPEP) reviews. The meeting is a chance for NJ's State Agreements Officer at the NRC to check in with the program to see if there are any new developments since the previous IMPEP. The meeting was held virtually and was successful. The program's next IMPEP will be scheduled for early 2024.

Industrial Section

During FY22, the industrial section participated in the Annual OAS meeting in Philadelphia, jointly hosted by PADEP and NJDEP. Two staff members provided presentations during the hybrid, multi-day meeting. Staff participated in numerous trainings over the past year totaling over 300 hours. Staff continued their qualification process including inspection accompaniments and on the job training for licensing actions. Staff performed 7 investigations of missing, lost or stolen radioactive materials and processed 13 trash or scrap metal incidents. All staff received HAZMAT refresher training. All inspections were performed on time during the fiscal year including five initial inspections.

Medical Section

Approval of use of Synovetin® OA in Arthritic Dog Elbows

In June of 2022, Medical Section staff approved the use of radioactive tin (Synovetin OA®), to be injected into dog elbows to relieve the symptoms of arthritis. The condition is exacerbated in large, overweight, aging dogs and this form of treatment is meant to be used when all other methods to relieve discomfort have proved unsuccessful. After injection, radiation fields emanating from the dog can be quite high and if instructions are not followed, potential radiation

exposure to dog owners and other members of the public could possibly exceed public dose limits. Therefore, New Jersey authorized the use of this drug with restrictions above and beyond what is recommended by the USNRC and the manufacturer. In fact, New Jersey is the first state to impose such limitations. Guidance can be found on NJDEP's website.

Radioactive Materials Radiological Assessment Team (RAMRAT)
Uranium Incident

The Radioactive Materials program was informed that a private citizen was in possession of enriched (i.e., reactor grade) uranium. The initial investigation was coordinated with county officials. Personnel confirmed the identity of the material and confirmed that exposure levels were within regulatory limits. After assessing that the material as adequately secured, the removal of the material was coordinated with the FBI and the U.S. Department of Energy.

NJOHSP/UASI Grant

There were two accomplishments under the grant awarded to the DEP. The first accomplishment was the successful messaging campaign launched September 1, 2021, which highlighted the CDC's messaging for a radiological emergency - "Get Inside, Stay Inside, Stay Tuned." The second accomplishment was the launch earlier this year of the first of several e-learning courses on the NJ Learn platform for credentialed police officers, firefighters, and EMTs.

D. FY 2022 Bureau of Nuclear Engineering Accomplishments

Nuclear Engineering Section

PSEG and BNE Discuss the Marine Port Being Built at Artificial Island

The New Jersey Board of Public Utilities chose Ocean Wind (combined effort by Danish energy company Ørsted and supported by PSEG Power) to develop a 1,110-megawatt offshore wind farm. Ocean Wind was selected from among three projects. Construction of the energy farm is expected to start in 2022 or 2023. The first phase would come online in 2024. Construction of the farm will require a marine port which can support the assembly of the wind turbine supports. The supports, turbines and turbine blades would then be loaded onto installation ships and taken to the wind farm location for final assembly and installation. Due to the height of the supports, the marine port must be located where there are no overhead interferences (e.g., bridges). PSEG is in the process of building an offshore wind support marine terminal facility on Artificial Island, north of the Hope Creek site. On February 2, 2022, PSEG and the BNE held their regular scheduled status update meeting concerning activities at Salem and Hope Creek. At that meeting PSEG provided an update of the marine port activities. Attending the meeting were the Director of Climate, Clean Energy and Radiation Protection, the Assistant Director of the Radiation Protection Element, the BNE Manager and BNE staff. In addition, a NES Engineer virtually observed the NRC inspection in April 2022 concerning PSEG's hazard analysis and safety evaluations as to any impact that the building of the facility could possibly have on Salem and Hope Creek.

NES Staff Observed NRC Inspections at New Jersey Nuclear Power Stations

In accordance with the Memorandum of Understanding (MOU) between the BNE and the NRC, the NES Staff is provided the opportunity to observe the inspection activities and processes of the NRC during its inspections at the nuclear power stations in New Jersey. Normally this is done as an onsite activity. Due to the COVID-19 pandemic, both the NRC and the BNE developed protocols allowing their respective staffs to perform/observe inspections remotely. During FY2022, twenty (20) NRC inspections were observed either in-person or remotely by the NES staff.

NES Participated in Department of Energy (DOE) National Transportation Stakeholders Forum (NTSF) and the Council of State Governments/Eastern Regional Conference (CSG/ERC) Northeast High-Level Radioactive Waste Transportation Task Force (NE Task Force)

The DOE NTSF is the mechanism through which DOE communicates at a national level with states and tribes about the DOE's shipments of radioactive waste and materials. The purpose of the NTSF is to bring transparency, openness, and accountability to DOE's transportation activities through collaboration with state and tribal governments. The NTSF is composed of DOE representatives and four (4) state regional groups (SRG) (Northeast, Midwest, Southern and Western) and the Tribal Radioactive Materials Transportation Committee (TRMTC).

A NES Staff Engineer and the NES Supervisor are Governor appointed members of the CSG/ERC Northeast SRG (i.e., NE Task Force). The NES Supervisor is a co-chair of the NE Task Force. The CSG/ERC NE Task Force assists the northeastern states in planning and preparing for the transportation of spent nuclear fuel and high-level radioactive materials with the goal of the safe, secure, and uneventful transportation of such materials.

During FY2022, the NES members of the NE Task Force supported the Task Force and the NTSF by virtually attending sixteen (16) Task Force, NTSF and other SRG meetings/webinars. Virtual attendance at the meetings was in response to COVID-19 concerns. The NES Staff Engineer remotely attended the Fall 2021 NE Task Force Meeting that was held in Philadelphia. The NES Supervisor attended (in-person) the Annual NTSF Meeting in Philadelphia.

NES Continues Active Participation in NRC, Industry, Citizen Action Panel (CAP) and other Meetings/Webinars

During FY2022, NES staff attended a minimum of sixty (60) virtual meetings applicable to nuclear power station operation; decommissioning; high level radioactive waste and spent nuclear fuel storage and transportation; NRC license amendment requests; COVID and its effects on NRC activities; emergency action levels; security force-on-force drills; fitness-for-duty; risk-informed in-service inspections; NRC's annual Regulatory Information Conference; NRC vendor oversight; proposed Consolidated Interim Storage Facilities for spent nuclear fuel; advanced reactor designs; advanced nuclear fuel designs; small modular reactors; cyber-security; Mid-Atlantic States Radiation Control Programs Conference; CAP meetings for the Vermont Yankee, Pilgrim, and San Onofre nuclear power stations; DOE's Waste Isolation Pilot Plant in

New Mexico; DOE's proposed Consent Based Siting process for interim storage and final repository for spent nuclear fuel.

Nuclear Environmental Engineering Section (NEES)

Oyster Creek Nuclear Generating Station Decommissioning Activities

NEES staff participated in three (3) virtual meetings and one (1) on-site tour, hosted by the site owner, Holtec, regarding updates of the Industrial Site Recovery Act (ISRA) project at the Oyster Creek site. Topics included non-radiological ISRA compliance, historical site assessment, characterization planning, decommissioning of impacted structures, radiological release criteria, waste disposition, and license termination plan. The on-site tour included a site walkdown of buildings already razed or in the process of being demolished. Participants were also shown a video presentation of ongoing activity with the site's removal of components in the spent fuel pool.

Staff assisted Holtec/Comprehensive Decommissioning International (CDI) with their response to NEES comments on their Historical Site Assessment (HSA) for the Oyster Creek Nuclear Generating Station. Subsequently they reviewed CDI's revised HSA to verify that NEES's extensive technical comments were adequately addressed. The purpose of the HSA is to identify systems, structures, components, and land areas at the Oyster Creek Station where there is a potential for radiological contamination to exist as a result of the operation of the nuclear power plant from 1969 to 2018. The results of the HSA will be used to develop survey and sampling plans as part of the License Termination process and to ensure compliance with the NJDEP Bureau of Environmental Radiation Remediation Standards for Radioactive Materials.

A staff member assisted Holtec/CDI with the development of a plan for recycling the concrete rubble generated as a result of building demolition during the decommissioning process.

Radioanalytical Laboratory Services

Staff secured a one-year gap waiver for radioanalytical lab services, which was bid out and awarded to GEL Laboratories, LLC, on August 27, 2021. The waiver was urgently needed so that the BNE could continue to analyze environmental samples collected onsite and in the environs of New Jersey's nuclear power generating stations. Without an approved waiver, sample collection and analysis would have been halted, pending award of the new term contract, impacting the BNE's ability to provide the public with assurance of no public health or environmental impacts.

Radiological Environmental Monitoring Program (REMP)

Throughout FY22, NEES staff oversaw the collection, processing, and analysis of over 800 samples from the environs surrounding New Jersey's four (4) nuclear generating stations. In addition, 130 split groundwater samples were analyzed in support of the licensee's Radiological Groundwater Protection Program (RGPP) at each site. All results were reviewed to ensure that required levels of detection were met. Staff performed quality assurance of all air sampler

performance using statistical control charts to identify sampler issues requiring maintenance or replacement.

Annual calibration and maintenance of the BNE's environmental air sampling network was performed by staff and the BNE's contractor, Najarian Associates, during the week of May 16, 2022, and included refresher training for Najarian' s technicians. The purpose of the annual calibration is to maintain manufacturer specifications of the air samplers and flow meters, thus ensuring accurate environmental air sampling results for the environs of the New Jersey's nuclear power generating stations.

Thermoluminescent Dosimetry (TLD) Program

Throughout FY22', NEES staff independently analyzed over 1000 TLD badges that were deployed and collected each calendar quarter. The badges were located in the surrounding environs and Independent Spent Fuel Storage Installations (ISFSI) of the Oyster Creek and Artificial Island nuclear power plant sites, as well as two background stations.

NRC's Proposed Rule on Regulatory Improvements for Production and Utilization Facilities Transitioning to Decommissioning

A staff member, who chairs CRCPD's E-24 Committee on Decontamination and Decommissioning, collaborated with the CRCPD Chair of E-47 (Commercial Nuclear Power) and Chair of HS/ER-5 (Emergency Response Planning) to provide comments on the NRC's Proposed Rule, published in the Federal Register (FR) March 3, 2022, entitled "Regulatory Improvements for Production and Utilization facilities Transitioning to Decommissioning (87 FR 12254-12336). The comments can be obtained at: https://www.regulations.gov/document/NRC-2015-0070-0229/comment

Conference of Radiation Control Program Directors (CRCPD) Board

A staff member completed a three-year term as Member at Large and Chair of the Environmental Nuclear Council (ENC) on CRCPD's Board of Directors. This past fiscal year, the staff member participated in thirty-six (36) Board calls; nineteen (19) virtual working group meetings; produced two (2) Biannual Reports, twelve (12) ENC Chair Reports; and submitted comments under CRCPD on the US NRC's Decommissioning Rule and MARSSIM, Revision 2. The staff member also assisted in finalizing a white paper on "Disposition of Foreign Origin Radioactive Material"; established one (1) new Task Force (E-48: Best Practices for use of DOT Special Permits); one (1) new Working Group (E-47: Commercial Nuclear Power); and re-established the E-34 Working Group on Unwanted Radioactive Materials. The CRCPD is a nonprofit professional organization whose membership consists of state and local radiation control officials and others interested in the work of radiation protection in the public interest. Information on CRCPD can be obtained at the following website address: https://www.crcpd.org/default.aspx

Nuclear Emergency Preparedness Section

RERP Public Hearings

As required by the New Jersey Radiation Accident Response Act, NEPS Staff held public hearings in July 2021 on the Radiological Emergency Response Plan (RERP). The hearings give the public opportunity to provide comment or ask questions regarding the adequacy and effectiveness of the RERP for nuclear power plants. Normally, the hearings are held in each of the impacted counties, Ocean for Oyster Creek and Salem and Cumberland for Salem Units 1&2 and Hope Creek Nuclear Generating Stations. Due to the public health emergency from COVID-19, the hearings were for a second year held virtually using Microsoft Teams with the public joining via the internet or telephone link, as was done in July 2020. The hearing for Ocean County was held Tuesday, July 13, 2021 at 6pm. Salem and Cumberland Counties were combined given the remote nature of the meetings and was held on Wednesday, July 14, 2021 at 6pm. The meeting format resembled the annual in-person hearings. As Oyster Creek has shut down and all fuel is now in the Independent Spent Fuel Storage Installation as of May 21, 2021, this was the final public hearing for Ocean County under the Act.

FEMA Annual Letter of Certification

In January 2022, NEPS staff worked to collect and prepare documentation to submit to New Jersey Office of Emergency Management as part of the Annual Letter of Certification (ALC) to FEMA. Based on guidance from the Radiological Emergency Preparedness Manual, offsite response organizations must demonstrate that they can protect the public in the event of a nuclear emergency at a power plant. NEPS documented and summarized all drills, exercises and related trainings held during 2021. They provided spreadsheets of radiation detection equipment used and associated calibration schedules. Certification also includes verification of review and revision of plans and procedures, necessary staffing to cover two full shifts of responders and readiness of emergency facilities and equipment, including sufficient quantities of potassium iodide (KI) are available. BNE's submission was provided to NJ OEM on January 18, 2022, with the package including Salem and Cumberland Counties forwarded to FEMA by January 31, 2022.

National Radiological Emergency Preparedness Conference

From April 10-14, 2022, BNE Manager Pfaff attended the National Radiological Emergency Preparedness (NREP) Conference in Nashville, TN. As a member of the Conference of Radiation Control Program Directors' (CRCPD) Homeland Security/Emergency Response HS/ER-5 Committee for Emergency Response Planning, attending the conference provided opportunities to interact with federal partners, hear updates from other state and local organizations and benefit from pertinent training. HS/ER-5 met individually with FEMA, NRC, EPA, DOE, NEI and CDC/Advisory Team. These meetings facilitate candid conversations about issues of interest and build beneficial relationships. All costs were covered by CRCPD for Ms. Pfaff to attend.

Return to Nixle from Everbridge

During November 2021, NEPS staff worked to transition from Nixle to Everbridge (parent company) for the Bureau of Nuclear Engineering's (BNE) nuclear emergency responder notifications. BNE has used Nixle since 2017 to alert responders on its roster of an event at a nuclear generating station via text messages, phone calls and email. Nixle allows responders to provide availability, Estimated Time of Arrival, and facility assignment. During the annual renewal process, BNE was informed that Department of Treasury has purchased Everbridge licenses to be used by State Agencies. BNE investigated the capabilities of Everbridge and understood them to be comparable to what Nixle offered and made the transition to the new system in November. However, during the implementation process it became apparent that Everbridge could not provide all the individual response text messages from responders following notification. Consequently, the Bureau of Nuclear Engineering has re-activated its Nixle platform and resumed its use in making notifications to its nuclear emergency responders.

Nuclear Emergency Response Training, Drills and Exercises

RadResponder Nationwide Drill

On September 9, 2021, NEPS staff participated in RadResponder's 2021 Nationwide Drill to self-assess our RadResponder competency and practice using the new simulation capability and CBRNResponder app. Simulated field teams were able to successfully report radiological readings via the CBRNResponder app and submitted feedback during the post-drill hotwash. The use of RadResponder is a critical part of the bureau's procedures in responding to nuclear emergencies and these drills are beneficial for our responders to have as much practice as possible.

Annual Review of Emergency Actions Levels at PSEG

On November 30, 2021, NEPS staff attended PSEG's annual training for Emergency Action Level, Emergency Classification Guide, Protective Action Recommendation Scheme as well as an operating experience review. These documents provide guidance that is key to providing a protective action recommendation to the governor in exercises, drills, and real events. NEPS staff attend this annual training to remain current on any changes or updates and gain a better understanding of how these guides fit into the state's emergency response plan. PSEG also provided an informative presentation on the new Wind Port project regarding job creation, clean energy approach, site logistics and more.

FEMA Region II REP Core Concepts Course (RCCC)

From November 8th to November 10th, 2021, NEPS staff attended the AWR-317 Radiological Emergency Preparedness (REP) Core Concepts Course hosted by FEMA Region II in coordination with State Police Office of Emergency Management. This course focused on the emergency preparedness of offsite response organizations for a radiological emergency at a commercial nuclear power plant. Course topics included REP Program history and key events, federal regulatory policies, basic radiation principles, REP planning standards, REP

demonstration guidance, and the REP disaster-initiated review process. The foundational course was held on a virtual platform and attended by new staff in the Radiation Protection Element

FEMA Region 3 Radiological Emergency Preparedness (REP) Stakeholders Workshop

On December 14th and 15th, 2021, NEPS staff attended the annual FEMA Region 3 Radiological Emergency Preparedness (REP) Stakeholders Workshop hosted by the FEMA Region 3 Technological Hazards Branch. This workshop included presentations by FEMA Headquarters, the Region 3 Regional Assistance Committee Chair, the Interagency Modeling and Atmospheric Assessment Center, as well as state, federal and utility partners. Topics included REP policy updates, American Red Cross/ Federal/ Licensee Partner Reports, state partner reports, Preparedness Toolkit overview and a REP Response Plan workshop reviewing the REP Program Manual.

FEMA REPP Learning Sessions

On January 19, 2022, NEPS staff attended the "Leadership 2022 Path Forward" presentation as part of the Radiological Emergency Preparedness Program (REPP) Learning Series hosted by the Federal Emergency Management Agency (FEMA). This presentation was the first in a series of five webinars that covers a range of topics from both internal FEMA programs and external partners. On January 26, 2022, NEPS staff attended the second in the series of five webinars presented as part of the Radiological Emergency Preparedness Program (REPP) Learning Series. In this session, the Advisory Team ("A-Team"), comprised of EPA, CDC, FDA, and USDA experts, presented their experiences and lessons learned from the Fukushima events of 2011. Discussions included potassium iodide (KI), food safety and testing, standards for non-food products, wastewater discharge, lack of health physics expertise, animal decontamination, stranded animals, livestock management and protective action guides (PAGs). The chief takeaway from their collective experiences is that recovery is *long and entailed.* On February 9th and 16th, NEPS staff attended the fourth and fifth of the series which covered policy updates regarding FEMA REP-21 and REP-22 and FEMA's GIS Initiative. Attendees had the opportunity to contribute comments, ask questions, voice concerns, and make recommendations regarding the topics presented. More information and related materials to this learning series can be found on the REPP Recovery Initiative Preparedness Toolkit community.

Nuclear Emergency Response Exercise for Hope Creek

On March 29, 2022, Radiation Protection Element staff joined the New Jersey State Police Office of Emergency Management (NJ OEM), Salem and Cumberland Counties, Delaware Emergency Management Agency (DEMA) and PSEG Nuclear LLC in a full-scale nuclear emergency response exercise. Observed by the Institute of Nuclear Power Operations (INPO), the exercise is a rehearsal in preparation for the federally evaluated evening exercise scheduled for May 10, 2022. Simulating an accident at Hope Creek Nuclear Generating Station, staff from the Bureaus of Nuclear Engineering (BNE), X-ray Compliance, Environmental Radiation, Geographic Information Systems and Communications & Response Services, as well as National Guard 21st Civil Support Team, staffed the Emergency Operations Facility in Salem, Field Command Center in Ewing and State Emergency Operations Center and Joint Information Center both at the

Regional Operations Intelligence Center in West Trenton. The successful exercise was the first full-scale in-person nuclear emergency response exercise since February 2020 due to the COVID public health emergency.

Cumberland County Reception Center Exercise

On the evening of June 29, 2022, Assistant Director Mulligan, Manager Pfaff, and Nancy Stanley of the Bureau of Environmental Radiation supported the New Jersey Office of Emergency Management's Radiological Emergency Planning and Technical Unit's participation in an exercise of the Cumberland County's Community Reception Center. Recently combined with its Emergency Worker Decontamination Center, this is the first in-person full scale exercise since 2019. More than one hundred volunteers from local fire departments and law enforcement offices worked through the Standard Operating Procedures for welcoming, scanning, decontaminating, and registering members of the public as well as emergency workers during a postulated accident at Salem/Hope Creek Nuclear Generating Stations. New Jersey Office of Emergency Management staff from across the state supported as evaluators while County HazMat staff provided technical support and Department of Corrections staff served as members of the public. DEP's radiation Protection Program staff served as subject matter experts to offer guidance and feedback on improving the SOPs and response.

Original signed by:

Patrick Mulligan

Assistant Director, Pat Mulligan

SECTION II – BUREAU OF X-RAY COMPLIANCE (BXC)

A. OFFICE OF THE BUREAU CHIEF

CRCPD H-7 Committee on Diagnostic X-ray, Monthly Technical Trends and Topics

On July 5, Bureau staff participated in CRCPD H-7 Committee on Diagnostic X-ray conference call to discuss current issues and topics of mutual concern to State X-ray compliance personnel.

IAEA Webinar: What is the Best Metric to Quantify and Qualify Imaging Radiation Dose?

On July 6, Bureau staff participated in the IAEA Webinar: What is the Best Metric to Quantify and Qualify Imaging Radiation Dose?

IAEA Webinar: WINSI: Education as a Key to Addressing the Gender Equality Gap in Global Nuclear Security

On July 8, Bureau staff participated in the IAEA Webinar: WINSI: Education as a Key to Addressing the Gender Equality Gap in Global Nuclear Security.

National Practitioners Data Bank Webinar: Writing Narrative Descriptions for Reports

On July 14, Bureau staff participated in the National Practitioners Data Bank Webinar: Writing Narrative Descriptions for Reports.

Contact: Arthur Robinson (609) 984-5634

B. REGISTRATION SECTION

Machine Source Registration and Renewal Fees

The Registration Section has begun invoicing the registrants for FY2023 registration renewals. In addition, new equipment is invoiced administrative and prorated registration fees when they are installed. The table below represents monthly and year to date activities. In July, Facilities in the 0-F group were invoiced their FY2023 annual registration fees.

Machine Source Fees Invoiced and Collected for FY 2023					
Monthly Invoiced	**Monthly Collected**	**Fiscal YTD Invoiced**	**Fiscal YTD Collected**	**Fiscal YTD Adjustments**	**Percent Collected**
$983,112.00	$453,793.00	$983,112.00	$453,793.00	$0.00	46%

Progress on Collection of FY 2023 Registration Renewal Fees

Renewal Groups	Paid 7/31/22	Paid 8/31/22	Paid 9/30/22	Paid 10/31/22	Paid 11/30/22	Paid 12/31/22	Paid 1/31/23	Paid 2/28/23	Paid 3/31/23	Paid 4/30/23	Paid 5/31/23	Paid 6/30/23
0-F	46%	0	0	0	0	0	0	0	0	0	0	0
G-L	N/A	0	0	0	0	0	0	0	0	0	0	0
M-R	N/A	N/A	0	0	0	0	0	0	0	0	0	0
S-Z	N/A	N/A	N/A	0	0	0	0	0	0	0	0	0

The Bureau of X-ray Compliance issued administrative orders to registrants who have failed to pay their annual registration fees.

Of the total number of invoices paid to date, 29% percent paid on-line.

Monthly Machine Source Registration Activity FY 2023

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	YTD
New Facilities	19												19
Terminated Facilities	28												28
Net Change (Facilities)	-9	0	0	0	0	0	0	0	0	0	0	0	-9
New Registrations	143												143
Stored Registrations	42												42
Disposed registrations	78												78
Net Change (Machines)	23	0	0	0	0	0	0	0	0	0	0	0	23

The Registration Section staff continues to collect registrant e-mail addresses and enter them into the database in preparation for sending future notices and invoices electronically.

Contact: Lisa Brodbeck (609) 984-5370

C. MACHINE SOURCE SECTION

The machine source section is charged with the responsibility of inspecting all x-ray machines used within the state. Below is a summary of the inspection initiatives that the section is engaged in.

Medical Diagnostic Quality Assurance Inspections

One initiative of the machine source section is the inspection of medical facilities that perform diagnostic x-ray procedures to ensure that they have implemented a quality assurance program. Department regulations require that each facility implement a program that includes the periodic performance of quality control tests and in-depth annual equipment performance testing of its x-ray equipment by Department certified medical physicists. The goal of the quality assurance program is for facilities to ensure optimal operation of the x-ray equipment in order to achieve high quality diagnostic x-ray images while simultaneously maintaining/reducing patient radiation exposure to acceptable levels. As part of the Bureau's inspections, image quality and patient radiation exposure metrics are gathered and evaluated as an indicator of facility performance. These measurables are reported to the facility along with the results of similar facilities performing similar x-ray studies.

Image Quality

As part of the Bureau's quality assurance inspection program, an x-ray image of our image quality (IQ) phantom is taken and scored by the inspector in six criteria: background density, high contrast resolution, noise and artifacts, density uniformity, low contrast detail and low contrast resolution. Additionally, our database calculates an overall image quality score which is reported to the facility.

A report is generated and sent to each facility at which an IQ film was done. This report identifies which category (excellent, good, fair, or poor) each of the six tests and the overall score the IQ falls into. The report explains IQ and its determining factors. Facilities with poor IQ scores are asked to consult with their physicist and determine the cause of the poor IQ, take corrective actions to improve IQ, and send a report of their findings and corrective actions to the BXC within thirty days.

In July 2022, IQ evaluations were performed on ninety-eight x-ray units with the following results:

- 64 units (65%) had excellent image quality scores.
- 33 units (34%) had good image quality scores.
- 0 units (0%) had fair image quality scores.
- 1 unit (1%) had poor image quality scores.

Entrance Skin Exposures

Entrance skin exposure (ESE) is a measurement of the radiation exposure a patient receives from a single x-ray at skin surface. There are three main factors that affect ESE: technique factors, film-screen or digital image receptor speed, and film or digital image processing. A key element of our strategy is to ensure that facilities are aware of their ESE and to encourage them to take steps to reduce their ESE if it is high.

When the Bureau conducts inspections to determine compliance with New Jersey Administrative Code 7:28, a measurement of entrance skin exposure (ESE) is taken. A report containing the

measurement results is sent to each facility at which an ESE measurement was taken. This report categorizes the facilities measured ESE as low, average, high or extremely high. Facilities with extremely high ESE readings are asked to consult with their physicist and determine the cause of the extremely high ESE, take corrective actions to reduce the x-ray machine ESE, and send a report of their findings and corrective actions to the BXC within thirty days.

Medical Facilities

Prior to the implementation of quality assurance regulations in June 2001, baseline data revealed that twenty-five percent of New Jersey facilities had extremely high ESE. These facilities are delivering unnecessary radiation exposure to its patients. The Bureau has documented a steady decrease in the number of facilities with extremely high patient radiation exposure since the implementation of its quality assurance program.

Radiographic ESE Ranges in Milliroentgens (mR)				
Exam	**Low**	**Average**	**High**	**Extremely High**
Chest	< 5	5 to 20	21 to 30	> 31
LS Spine	< 100	100 to 450	451 to 600	> 601
Foot	< 5	5 to 30	31 to 40	> 41

- In July 2022, ESE measurements were calculated on sixty-five x-ray units that performed lumbo-sacral spine x-rays. No units (0%) had extremely high ESE measurements.
- In July 2022, ESE measurements were calculated on twenty x-ray units that performed chest x-rays. No units (0%) had extremely high ESE measurements.
- In July 2022, ESE measurements were calculated on eleven x-ray units that performed foot x-rays. No units (0%) had extremely high ESE measurements.

Dental Facilities

Dental facilities use two types of digital imaging: direct radiography (DR) or computed radiology (CR); also, referred to as phosphor storage plates (PSP). Dental facilities also use two speeds of film: D and E/F or *Insight*. (*Insight* is the branded name of Kodak's F speed film). D is the slowest speed and requires sixty percent more radiation than E/F or F to produce an acceptable image. Direct radiography requires the least radiation.

The Bureau inspected two thousand eight hundred and twenty-one (2,821) intra oral dental units from May to December of 2015. Eighty one percent (81%) of all dental facilities evaluated in 2015 were using digital imaging systems. This percentage breaks down to seventy three percent (73%) used DR and eight percent (8%) used CR (PSP). Only nineteen percent (19%) of all dental facilities evaluated in 2015 were using film-based imaging. This percentage breaks down to twelve (12%) used D speed film and seven percent (7%) used E/F or F speed film.

An inexpensive way to reduce radiation is to change to a faster speed film. Our research determined that E/F or F speed film costs only a few cents more per film then D speed. No changes in equipment or processing are necessary to use a faster speed film.

When the Bureau conducts inspections to determine compliance with New Jersey Administrative Code 7:28, a measurement of entrance skin exposure (ESE) is taken. The Bureau collected baseline ESE data on dental x-ray machines for the years 2008 and 2009. This data was evaluated to establish the ranges for four ESE categories similar to those in the medical quality assurance program (low, average, high and extremely high). A report is generated and sent to each facility at which an ESE measurement was taken. This report gives the ESE and identifies which category the ESE falls into. The report explains ESE and its determining factors. Facilities with extremely high ESE readings are asked to consult with their digital or film representative or physicist and determine the cause of the extremely high ESE, make changes to reduce ESE, and send a report of their findings and corrective actions to the BXC within thirty days. The table below depicts the current ESE ranges for the various imaging systems used.

Dental ESE Ranges Measured in Milliroentgens (mR)				
Image Receptor	**Low**	**Average**	**High**	**Extremely High**
Digital (DR)	0 to 20	21 to 110	111 to 160	≥161
CR (PSP)	0 to 35	36 to 170	171 to 215	≥216
Film Speed				
D	0 to100	101 to 285	286 to 350	≥351
E/F,F,Insight	0 to 50	51 to 150	151 to 205	≥206

- In July 2022, ESE measurements were calculated on ninety-eight dental x-ray units that used DR digital imaging. Four units (4%) were measured as having extremely high ESE.
- In July 2022, ESE measurements were calculated on seventeen dental x-ray units that used CR (PSP) digital imaging. One unit (6%) was measured as having extremely high ESE.
- In July 2022, ESE measurements were calculated on three dental x-ray units that used D speed film. No units (0%) were measured as having extremely high ESE.
- In July 2022, ESE measurements were calculated on zero dental x-ray units that used E/F, F, or Insight speed film. No units (0%) were measured as having extremely high ESE.

Dental Amalgam Inspections

Effective November 1, 2009, all dental facilities that generate amalgam waste were required to install amalgam separators (N.J.A.C. 7:14A-1 et seq.). In June 2010, the Bureau met with Division of Water Quality staff to discuss the dental amalgam requirements and to develop an amalgam questionnaire. This questionnaire would be provided to each dental facility when they are scheduled for an x-ray inspection. During each inspection, the inspector verifies the information on the questionnaire and visually inspects that an amalgam separator has been

installed. In July 2022, 41 amalgam questionnaires were collected. The total dental amalgam questionnaires collected for FY2023 is 41.

Inspection Activity and Items of Non-compliance

A two-page Inspector Activity Report of inspections performed, enforcement documents issued, and a description of the non-compliances found follows in Appendix A of this report.

FY 2022 Inspection Results

The Bureau inspected 1,565 facilities and evaluated compliance of 3,817 x-ray machines. Work plan targets were 2,365 facilities and 7,654 machines. These inspections resulted in the issuance of 622 violations of radiation protection codes of which 203 (33%) were violations of quality assurance regulations and 419 (67%) were violations of other radiation protection regulations.

Most quality assurance violations were for failure to conduct various quality control tests, 126 (62%) and failure to have an annual medical physicist's survey performed, 35 (17%). The majority of violations in all other categories were for failure for equipment performance issues, 64 (15%); failure to perform and/or submit radiation safety surveys, 65 (16%); permitting the operation of x-ray equipment without a license, 17 (4%); failure to register x-ray equipment with the Department, 56 (13%); failure to monitor employees radiation exposure, 42 (10%); failure to test interlocks, spot checks and safety devices, 60 (14%); and failure to pay registration fees, 0 (0%).

In addition, the Bureau continued inspections of dental cone beam computed tomography (CBCT) facilities. A total of 146 CBCT facilities were inspected and 93 CBCT violations issued. The majority of CBCT violations were for failure to conduct various quality control tests, 57 (61%) and failure to have an annual medical physicist's survey performed, 35 (38%).

Two charts summarizing Bureau Inspection Goals vs. Inspections Completed for FY22 and a seven-page Inspector Activity Report of inspections performed, enforcement documents issued, and a description of the non-compliances found follows in Appendix B of this report.

Contact: Rachel McVeigh (609) 984-5370

D. TECHNOLOGIST EDUCATION AND LICENSING SECTION

The Section continued to process license and examination applications investigate complaints and respond to inquiries during the month of July. Statistical information follows in Appendix A of this report. In addition to its regular business functions, the following highlights are reported:

Radiologic Technology Board of Examiners Meeting

The Board met remotely via Microsoft TEAMS on July 13, 2022. Minutes of the meeting will be made available on the Bureau website once accepted by the Board at a future meeting. This meeting resulted in 91 activities and letters/reports to be written. A full summary of the meeting

is available upon request. The following are highlights of some major issues discussed at this meeting:

1. Reviewed the past criminal convictions of an applicant applying for a license in diagnostic radiologic technology. The Board found that the applicant submitted sufficient evidence of rehabilitation and current good moral character and that his past convictions would not preclude him from obtaining a license. The Board voted to approve the application.

2. Voted to sanction the license of a dental radiologic technologist who was convicted of crimes involving moral turpitude.

3. Denied two new school dental radiography applications since both applications were incomplete and did not complete with the Board's accreditation Standards.

4. Fully approved curriculum modifications submitted by two schools of diagnostic radiologic technology to offer a program length of less than 24 months.

5. Was informed of the Bureau's investigation into the closure/change in ownership of a school of dental radiologic technology and the enforcement taken against the school. The Board voted to bar the school from enrolling future candidates into the program and restarting the radiography component of the program until: (a) the school is inspected by the Bureau for compliance with the Board's accreditation standards and the inspection outcomes are reviewed by the Committee and (b) a plan is submitted resulting in a transition to a new owner and that enrolled students are permitted to complete the program without additional cost than that agreed upon at the time of their enrollment.

   Regarding the 25 students who were enrolled, the Board asked the Bureau to assist students in the possible transfer to another school. Additionally, for students who can submit a copy of or recreate his or her clinical record will be considered a graduate of a Board approved school and therefore eligible to submit a license application once the student has passed DANB's RHS examination.

6. Was provided an update on ten educational issues and program changes relating to schools of radiologic technology.

Technologist Education and Licensing Section (Fees)

The Section continues to invoice individuals for initial licenses and examinations as applications are received or license renewal requests are made. The table below represents monthly and fiscal year-to-date billing and revenue activities.

Technologist Education & Licensing Section FY 2023 Invoiced & Collected				
Invoice Type	**Monthly Invoiced**	**Monthly Collected**	**Fiscal YTD Invoiced**	**Fiscal YTD Collected**
Examinations	$0	$0	$0	$0
Initial Licenses	$10,140	$8,640	$10,140	$8,640
Renewal Licenses*	$2,099,340	$1,890	$2,099,340	$1,890
Totals	$2,109,480	$10,530	$2,109,480	$10,530

- On July 27th, radiologic technologists were invoiced for their 2023-2024 license renewal. Invoices will be mailed in October 2022.

Contact: Al Orlandi (609) 984-5890

E. MAMMOGRAPHY SECTION

Stereotactic Facilities Inspected

The Mammography Section inspected no facilities with a stereotactic/needle localization breast biopsy unit during the month of July. A total of 51 of the 57 planned stereotactic facility inspections have been performed since July 1, 2021.

Mammography Facilities Inspected

Mammography facilities are inspected by the Bureau's FDA certified MQSA inspectors under the Mammography Quality Standards Act (MQSA). Any areas of non-compliance discovered during MQSA facility inspections are classified into one of two categories: Level 1 and Level 2. Level 1 and Repeat Level 2 non-compliances are the most serious and the facility has fifteen days from the date of the inspection to respond to the FDA detailing the corrective actions they have taken.

Level 2 non-compliances are considered serious, and the facility has thirty days from the date of the inspection to respond to the FDA detailing the corrective actions they have taken.

The Mammography Section inspected 5 facilities in July. A total of 231 of the 233 facilities scheduled to be inspected under the contract that expires on August 20, 2022. There were no facilities found to have non-compliance issues.

Facility Non-compliance Discovered

There were no facilities with **Level 1 and Level 2 Repeat** non-compliances.

There were no facilities with **Level 2** non-compliances.

Summary of FY2022 Inspection Results

The Bureau's current contract with the FDA will end on August 20, 2022. To date the Bureau has completed 231 inspections of fully certified New Jersey mammography facilities. New Jersey mammography facilities continue to exceed national compliance rates reported by the Food and Drug Administration. In FY 2022, the national compliance rate was 86.4% compared to New Jersey's 87.9%.

Violation Type*	Number of Facilities with Violations	NJ Violation Rate (%)	National Rates (%)
Level 1	1	0.4	1.1
Level 2	27	11.6	12.5
Totals	28	12.1	14
No Violations	203	87.9	86.4
Totals	231	100.00	100

- Level 1 is the most egregious violations (see mammography section report for further description of FDA violation levels)

Additionally, this fiscal year the Bureau inspected 51 of the 57 facilities that have stereotactic/needle localization units.

History of Certified Mammography Facilities in New Jersey

Nationally the number of certified mammography facilities has decreased since the adoption of the Mammography Quality Standards Act in 1995. New Jersey certified mammography facilities has decreased from 275 (1999) to 233 (2022).

A table of inspection details can be found in Appendix A.

Contact: Mary Kanewski (609) 984-5370

F. BUREAU ENFORCEMENT SERVICES SECTION

Enforcement Actions for July 2022

Bureau Enforcement is responsible for producing and following up on all enforcement actions for violations found during Bureau x-ray inspections. Since the Bureau has not yet been fully integrated into the Departments NJEMS database system, it enters summary inspection information into NJEMS on all inspections conducted by the Bureau to provide more accurate inspection numbers for the Department's NJEMS reports. See the table below for current month and year to date information.

Inspections and Enforcement Documents Issued
July 2022

Bureau of X-Ray Compliance		
	Month	YTD
Compliance Inspections entered into NJEMS	64	64
Dental/CBCT Inspections entered into NJEMS	25	25

Notice of Violations	Closed	Effective	Pending	Total	YTD
	8	1	6	15	15

Administrative Orders	Closed	Effective	Pending	Total	YTD
	0	0	17	17	17

Notice of Prosecutions	Closed	Effective	Pending	Total	TYD
	0	0	17	17	17

Amount Assessed in Penalties	Amount Assessed for Month	Total amount assessed for FY	Amount Collected from current FY	Amount Collected from previous FY	Total amount collected
	$11,100.00	$11,100.00	$0.00	$7,950.00	$7,950.00

Contact: Ramona Chambus (609) 984-5370

INSPECTOR ACTIVITY REPORT

07/01/2022 THROUGH 07/31/2022

Inspector: ALL
Discipline: ALL

Number of Inspections Performed

Inspection Type	Inspection Description	Facilities Inspected	Machines Inspected	Machines Audited	Machines Uninspected
1	ROUTINE INSPECTION	45	127		12
2	VIOLATION INSPECTION ON SITE	2	3		
11	INVESTIGATION	17			
15	QA INSPECTION ROUTINE LEVEL 1	68	97	98	10
22	NON-QA INSPECTION - HOSPITALS	4	22		1
28	DENTAL CBCT INSPECTION	17	89		3
29	DENTAL CBCT VIOLATION INSPECTION	2	2		
	Total On-Site Inspections:	**155**	**340**	**98**	**26**
6	OFFICE VIOLATION RESPONSE REVIEW	17		19	
18	OFFICE QA VIOLATION RESPONSE REVIEW	5		7	
30	DENTAL CBCT OFFICE REVIEW INSPECTION	1		1	
	Total Office Inspections:	**23**		**27**	**0**

Number of Enforcement Documents Issued

NOV	17
AO	21
NOP	17
Amount of Penalties	$12,600

07/01/2022 THROUGH 07/31/2022

Inspector: ALL
Discipline: ALL

Violation Code	Glossary Information	Description Non-Compliance	Number of Violations By Code
Violations Cited Non-QA			
Analytical			
A-001	8.1(g)	personnel monitoring records or true copy of same not available upon request.	**2**
A-002	21.6(a)1	Testing safety devices every six months.	**5**
A-003	21.6(a)4	Record of survey of controlled and non-controlled areas not available.	**1**
A-005	21.6(a)3	Finger or wrist personnel monitoring equipment not provided.	**2**
A-006	8.1	Personnel monitoring records not available.	**6**
Cabinet			
C-006	17.7(c)	Requirements for film badges not met.	**2**
C-014	17.7(f)5	Requirements for safety interlock tests not met.	**1**
CB			
CB-001	22.3(i)	No Alternate QA program for CBCT	**8**
CB-002	22.7(a)1	CBCT No QA Manual	**3**
CB-003	22.7(a)3	CBCT No MPQCS	**6**
Dental			
D-025	16.3(a)16	Timer accuracy exceeds manufacturer’s specifications (certified units).	**2**
D-027	16.3(a)17	Radiation reproducibility exceeds 5% for certified unit	**1**
Industrial Radiography			
IR-012	17.4(e)1	radiation survey instrument not calibrated at 3 mo. intervals	**2**
IR-040	17.4(k)	Current logs for machine, operator and dates of use	**2**
IR-051	17.5(e)	no film badge, pocket dosimetry and/or pocket chamber	**1**
IR-053	17.5(e)2	pocket dosimeters not read and recorded daily	**1**
Particle Accelerator Non-Medical			
P-003	20.3	Unit not registered as per N.J.A.C. 7:28-3.	**2**
P-146	20.13(a)1	EM used before radiation protection survey completed & not performed	**1**
P-154	20.13(a)3	Operating parameters, indicators, and controls pertinent to rad. prod. not clearly identified/easily discernible	**1**

07/01/2022 THROUGH 07/31/2022

Inspector: ALL
Discipline: ALL

Violation Code	Glossary Information	Description Non-Compliance	Number of Violations By Code
Violations Cited Non-QA			
Radiographic			
R-286	15.8(b)4v	Medical cabinet six-month interlock test not documented	**1**
R-326	15.10(b)1	Initial survey completed and submitted within 60 days	**1**
Registration			
REG1	3.1 (a) and (b)	Failed to register the ionizing radiation producing machine within 30 days of acquisition.	**2**
Therapy Below 1 Mev			
TB-005	14.3(a)1vi	Pursuant to N.J.A.C. 7:28-14.3(a)1vi for therapeutic x-ray systems with energies less than one MeV, records of leakage radiation shall be maintained at the facility for at least five years and shall be made	**2**
TB-008	14.3(d) 1, 2	Pursuant to N.J.A.C. 7:28-14.3(d) for therapeutic x-ray systems, spot checks shall be performed on therapeutic x-ray systems with energies greater than 0.018 MeV and less than one MeV and shall meet the following requirements: 1. The qualified radiological physicist will determine those parameters to be spot-checked and the procedure to be used when performing those spot checks. The spot check procedure shall be in writing and specify the frequency at which tests, or measurements are to be performed, not to exceed one month, and the acceptable tolerance for each parameter measured in the spot-check. A qualified radiological physicist need not actually perform the spot-check measurement. If a qualified radiological physicist does not perform the spot-check measurement, the results of the spot-check measurement shall be reviewed by a qualified radiological physicist within 15 days. 2. The measurements taken during spot checks shall demonstrate the degree of consistency of the operating characteristics which can affect the radiation output of the system or the radiation delivered to a patient during a therapy procedure;	**2**
TB-011	14.3(b)1	Therapy not equipped with warning lights	**1**
Total Violations Cited Non-QA			**58**
Violations Cited QA			
Quality Assurance			
QA-011	22.5(a)2	QC tests from Table 1 (Radiographic) not performed at the required intervals.	**8**
QA-012	22.5(a)3	Medical Physicist's QC Survey not performed at required interval or all tests not performed.	**2**

07/01/2022 THROUGH 07/31/2022

Inspector: ALL
Discipline: ALL

Violation Code	Glossary Information	Description Non-Compliance	Number of Violations By Code
Violations Cited QA			
Quality Assurance			
QA-019	22.3(o)	Falsified records.	**1**
QA-037	22.6(a)2	QC tests from Table 2 (Fluoroscopic) not performed at the required intervals.	**6**
QA-038	22.6(a)3	No Med Phys QC Survey for Fluoro	**1**
QA-063	22.7(a)2	QC tests from Table 3 (CT) not performed at the required intervals.	**2**
QA-174	22.5(j)3	All images for QC tests for items 8, 11, 12 & 13 maintained for 1 year	**2**
Total Violations Cited QA			**22**
Total Violations			**80**

APPENDIX A - TECHNOLOGIST EDUCATION AND LICENSING SECTION

MONTH OF JULY 2022

License Category	Diagnostic Rad	Nuc Med	Rad Therapy	Dental Rad	Chest Rad	Podiatric Rad	Orthopedic Rad	Fusion Imaging CT	Monthly Total	FY to Date	FY Projected
Initial Licenses Processed	69	5	3	59	-	-	-	2	138	138	1,100
Licenses Renewed	5	1	3	4	-	-	-	-	13	13	N/A
Total Licensed	9,627	982	874	11,775	48	16	5	102	23,429	23,429	N/A
Exams Scheduled	-	-	-	-	-	-	-	-	0	0	N/A
Investigations Conducted	1	-	1	1	-	-	-	-	3	3	30
Licenses Verified	105	10	6	201	-	-	-	-	322	322	7,000
Expired Licenses	-	-	-	-	-	-	-	-	0	0	N/A
Unlicensed	1	-	-	-	-	-	-	-	1	1	N/A
Enforcement Documents Issued	4	-	-	-	-	-	-	-	4	4	N/A
NEAs Issued	-	-	-	-	-	-	-	-	0	0	N/A
Offer of Settlement	$1,300	-	-	-	-	-	-	-	$1,300	$1,300	N/A
Licenses Sanctioned	-	-	-	-	-	-	-	-	0	0	N/A
Approved Educational Schools	15	2	3	26	-	-	-	-	46	46	N/A
New School Application Evaluated	-	-	-	2	-	-	-	-	2	2	10
School Inspections Conducted	-	-	-	1	-	-	-	-	1	1	8
Total Schools Reviewed	-	-	-	3	-	-	-	-	3	3	18
Curriculum Modifications Evaluated	2	-	-	3	-	-	-	-	4	5	20
Clinical Applications Approved	2	-	-	74	-	-	-	-	76	76	1,100

Appendix A - Bureau of X-ray Compliance
Mammography Section
July 2022

Type of Facility	INDUSTRY	PHYSICIAN	HOSPITAL	GOVERNMENT	TOTAL MONTH	FY TO DATE	TOTAL DUE THIS FY
MQSA							
Facilities Inspected	0	4	1	0	5	231	
Machines Inspected	0	4	1	0	5	370	**233**
FDA Violations Level 1	0	0	0	0	0	1	
FDA Violations Level 2	0	0	0	0	0	22	
Registered	0	3	4	0	7	39	
Canceled	0	0	1	0	1	46	
Stereotactic							
Facilities Inspected	0	0	0	0	0	51	**57**
Machines Inspected	0	0	0	0	0	52	
Notice of Violation	0	0	0	0	0	0	
Administrative Order	0	0	0	0	0	0	
Notice of Prosecution	0	0	0	0	0	0	
Registered	0	0	0	0	0	7	
Canceled	0	0	0	0	0	6	

INSPECTOR ACTIVITY REPORT

07/01/2021 THROUGH 06/30/2022

Inspector: ALL
Discipline: ALL

Number of Inspections Performed

Inspection Type	Inspection Description	Facilities Inspected	Machines Inspected	Machines Audited	Machines Uninspected
1	ROUTINE INSPECTION	713	2086		175
2	VIOLATION INSPECTION ON SITE	7	18		
8	NO SHOW	1			3
9	HAND DELIVERY	148			304
10	EMBARGO	2	1		6
11	INVESTIGATION	119			1
12	STEREOTACTIC INSPECTION	51	52		1
15	QA INSPECTION ROUTINE LEVEL 1	361	404	511	32
17	QA VIOLATION INSPECTION ON SITE	3	1	3	
22	NON-QA INSPECTION - HOSPITALS	10	76		33
26	DENTAL ESE INSPECTION	1	1		
28	DENTAL CBCT INSPECTION	146	660		43
29	DENTAL CBCT VIOLATION INSPECTION	3	4		5
	Total On-Site Inspections:	**1565**	**3303**	**514**	**603**
6	OFFICE VIOLATION RESPONSE REVIEW	132		192	
7	OFFICE RADIATION SAFETY SURVEY	3		4	
18	OFFICE QA VIOLATION RESPONSE REVIEW	125		166	
23	OFFICE TECH CERT INSPECTION	17		17	
30	DENTAL CBCT OFFICE REVIEW INSPECTION	60		71	
	Total Office Inspections:	**337**		**450**	**0**

INSPECTOR ACTIVITY REPORT

07/01/2021 THROUGH 06/30/2022

Inspector: ALL
Discipline: ALL

Number of Enforcement Documents Issued

NOV	146
AO	182
NOP	170
Amount of Penalties	$126,300

07/01/2021 THROUGH 06/30/2022

Inspector: ALL
Discipline: ALL

Violation Code	Glossary Information	Description Non-Compliance	Number of Violations By Code
Violations Cited Non-QA			
Analytical			
A-001	8.1(g)	personnel monitoring records or true copy of same not available upon request.	**2**
A-002	21.6(a)1	Testing safety devices every six months.	**45**
A-004	21.6(a)4	Record of survey of controlled and non-controlled areas not available	**1**
A-005	21.6(a)3	Finger or wrist personnel monitoring equipment not provided.	**15**
A-006	8.1	Personnel monitoring records not available.	**8**
A-012	21.3(a)1	A clearly visible label with the words "CAUTION: THIS EQUIPMENT PRODUCES X-RAYS" is not attached near any switch which energizes	**1**
A-013	21.3(a)2	A clearly visible label with the words "CAUTION: HIGH INTENSITY X-RAY BEAM" not located in a conspicuous location near the x-ray tube housing	**1**
Cabinet			
C-002	17.7(e)	Requirements for surveys not met:	**2**
C-006	17.7(c)	Requirements for film badges not met.	**13**
C-008	17.7(d)	Requirements for external radiation not met:	**1**
C-014	17.7(f)5	Requirements for safety interlock tests not met.	**4**
C-021	17.7(i)3	Requirements for X-RAY ON warning light not met:	**1**
C-032	17.6(c) calibrated and operable ionizing radiation survey instrumentation must be used.	No radiographic operation shall be conducted unless calibrated and operable ionizing radiation-survey instrumentation as described in N.J.A.C. 7:28-17.4(e) is available and used at each site where radiographic exposures are made.	**2**
CB			
CB-001	22.3(i)	No Alternate QA program for CBCT	**51**
CB-002	22.7(a)1	CBCT No QA Manual	**1**
CB-003	22.7(a)3	CBCT No MPQCS	**35**
CB-005	22.3(a)	No QA Program for CBCT	**6**

07/01/2021 THROUGH 06/30/2022

Inspector: ALL
Discipline: ALL

Violation Code	Glossary Information	Description Non-Compliance	Number of Violations By Code
Violations Cited Non-QA			
Dental			
D-002	16.8(a)1	Survey of environs not available or not performed	**49**
D-003	16.8(a)2	Survey not available upon relocation or changes to shielding	**2**
D-015	16.3(a)6	Insufficient filtration. Measured HVL ____ mm Al at ____ kVp	**4**
D-016	16.3(a)7	kVp exceeds manufacturer's specifications (certified unit).	**16**
D-021	16.3(a)12	Visual indication of x-ray production not provided on control	**3**
D-022	16.3(a)13	Signal audible to operator indicating termination of exposure not provided for certified units	**5**
D-023	16.3(a)14	Timer reproducibility exceeds 5% for certified unit	**1**
D-025	16.3(a)16	Timer accuracy exceeds manufacture'rs specifications (certified units).	**11**
D-032	16.3(a)21	Tube head does not remain stationary in the exposure position	**3**
G			
G-003	2.11(a)	Failed to afford the Dept an opportunity to inspect x-ray equipment being used or stored on premises.	**1**
G-007	2.5(c)	device not working properly	**20**
Industrial Radiography			
IR-001	7.1(a)	No radiation safety survey for the industrial radiography unit.	**1**
IR-012	17.4(e)1	radiation survey instrument not calibrated at 3 mo intervals	**2**
IR-040	17.4(k)	Current logs for machine, operator and dates of use	**2**
IR-049	17.5(d)	no written operating and emergency procedures	**1**
IR-051	17.5(e)	no film badge, pocket dosimetry and/or pocket chamber	**2**
IR-057	17.8(f)	The radiation surveys shall be made with a radiation survey instrument measuring radiation at the energies and at the exposure rates to be encountered	**1**
Particle Accelerator Non-Medical			
P-077	20.10(a)3	Failed to test locks & warning devices prior to use, test results not available.	**9**
P-087	20.10(a)5	Failed to maintain a record of the operating and emergency procedures at the particle accelerator control panel.	**1**

07/01/2021 THROUGH 06/30/2022

Inspector: ALL
Discipline: ALL

Violation Code	Glossary Information	Description Non-Compliance	Number of Violations By Code
Violations Cited Non-QA			
Particle Accelerator Non-Medical			
P-171	20.11(f)	PASO initial and annual surveys	**2**
P-53	20.7(i)2	Failed to ensure that the survey instrument is calibrated at intervals not	**1**
PM			
PM-003	7.4(b)	All individuals required to wear personnel-monitoring equipment and records maintained	**2**
Radiographic			
R-021	15.3(d)3	SID indicated to within 2% (fixed SID has permanent marking)	**1**
R-132	15.4(j)4	For mammography units, the registrant shall have test procedures performed annually.	**1**
R-326	15.10(b)1	Initial survey completed and submitted within 60 days	**5**
R-327	15.10(b)2	Survey completed and submitted within 60 days	**1**
RA			
RA-200	15.4(e)	Operating federally regulated mammography equipment with no accreditation by the American College of Radiology.	**1**
Registration			
REG1	3.1 (a) and (b)	Failed to register the ionizing radiation producing machine within 30 days of acquisition.	**56**
S			
S-001	7.1(a)	Radiation survey inside and outside controlled area not performed by a qualified individual.	**1**
Therapy 1 Mev and Above			
TA-101	14.4(u)1	Requirements for calibration of unit not met:	**1**
Therapy Below 1 Mev			
TB-005	14.3(a)1vi	Pursuant to N.J.A.C. 7:28-14.3(a)1vi for therapeutic x-ray systems with energies less than one MeV, records of leakage radiation shall be maintained at the facility for at least five years and shall be made	**2**

07/01/2021 THROUGH 06/30/2022

Inspector: ALL
Discipline: ALL

Violation Code	Glossary Information	Description Non-Compliance	Number of Violations By Code
Violations Cited Non-QA			
Therapy Below 1 Mev			
TB-008	14.3(d) 1, 2	Pursuant to N.J.A.C. 7:28-14.3(d) for therapeutic x-ray systems, spot checks shall be performed on therapeutic x-ray systems with energies greater than 0.018 MeV and less than one MeV and shall meet the following requirements: 1. The qualified radiological physicist will determine those parameters to be spot-checked and the procedure to be used when performing those spot checks. The spot check procedure shall be in writing and specify the frequency at which tests or measurements are to be performed, not to exceed one month, and the acceptable tolerance for each parameter measured in the spot-check. A qualified radiological physicist need not actually perform the spot-check measurement. If a qualified radiological physicist does not perform the spot-check measurement, the results of the spot-check measurement shall be reviewed by a qualified radiological physicist within 15 days; 2. The measurements taken during spot checks shall demonstrate the degree of consistency of the operating characteristics which can affect the radiation output of the system or the radiation delivered to a patient during a therapy procedure:	**2**
TC			
TC-001	19.3(c)	x-rayed humans without a valid NJ license	**17**
Veterinary			
V-001	7.1(a)	veterinary unit no radiation safety survey of the environs	**3**
Total Violations Cited Non-QA			**419**
Violations Cited QA			
Quality Assurance			
QA-009	22.3(a)	Failed to develop and continuously implement QA program.	**1**
QA-011	22.5(a)2	QC tests from Table 1 (Radiographic) not performed at the required intervals.	**86**
QA-012	22.5(a)3	Medical Physicist's QC Survey not performed at required interval or all tests not performed.	**24**
QA-037	22.6(a)2	QC tests from Table 2 (Fluoroscopic) not performed at the required intervals.	**29**
QA-038	22.6(a)3	No Med Phys QC Survey for Fluoro	**10**
QA-050	22.6(f)	Failed to immediately initiate steps to bring fluoroscopic equipment into	**4**

07/01/2021 THROUGH 06/30/2022

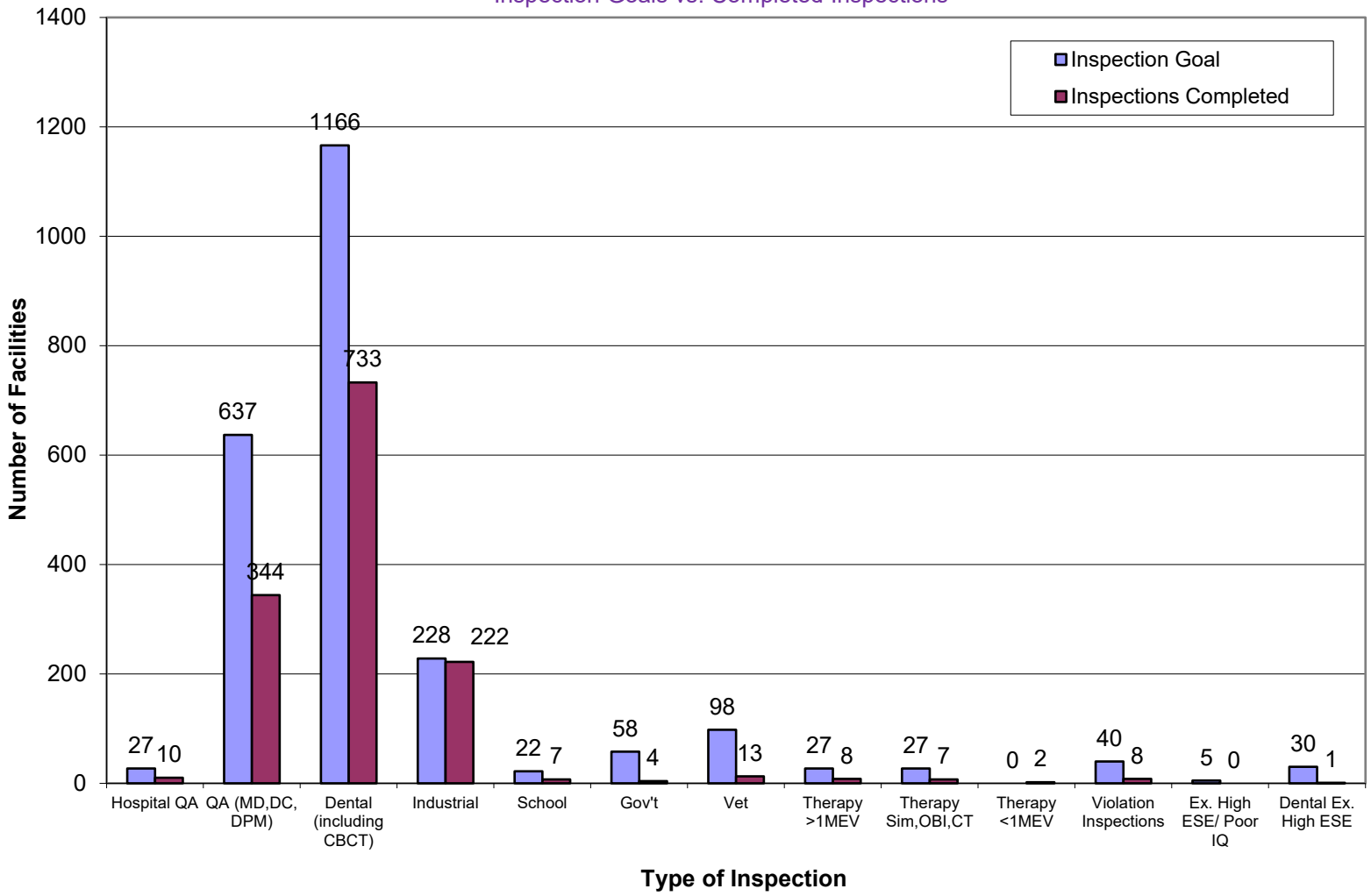
Inspector: ALL
Discipline: ALL

Violation Code	Glossary Information	Description Non-Compliance	Number of Violations By Code
Violations Cited QA			
Quality Assurance			
QA-063	22.7(a)2	QC tests from Table 3 (CT) not performed at the required intervals.	**11**
QA-064	22.7(a)3	No Med Phys QC Survey for CT	**1**
QA-069	22.7(e)	Failed to immediately initiate steps to repair CT equipment.	**1**
QA-097	22.8(f)1	Registrant failed to immediately initiate corrective action recommended	**2**
QA-124	22.9(f)1	Registrant failed to immediately initiate corrective action.	**1**
QA-141	22.10(e)2	Registrant failed to immediately initiate corrective action.	**2**
QA-157	22.11(c)	QC program test procedures not carried out.	**1**
QA-172	22.5(j)1	QC Test records maintained for 12 months	**1**
QA-174	22.5(j)3	All images for QC tests for items 8, 11, 12 & 13 maintained for 1 year	**26**
QA-177	22.7(j)1	All records for QC tests maintained for one year	**2**
QA-179	22.7(j)2	All images for QC tests for items 2, 3, 4 & 5 maintained for 30 days	**1**
Total Violations Cited QA			**203**
Total Violations			**622**

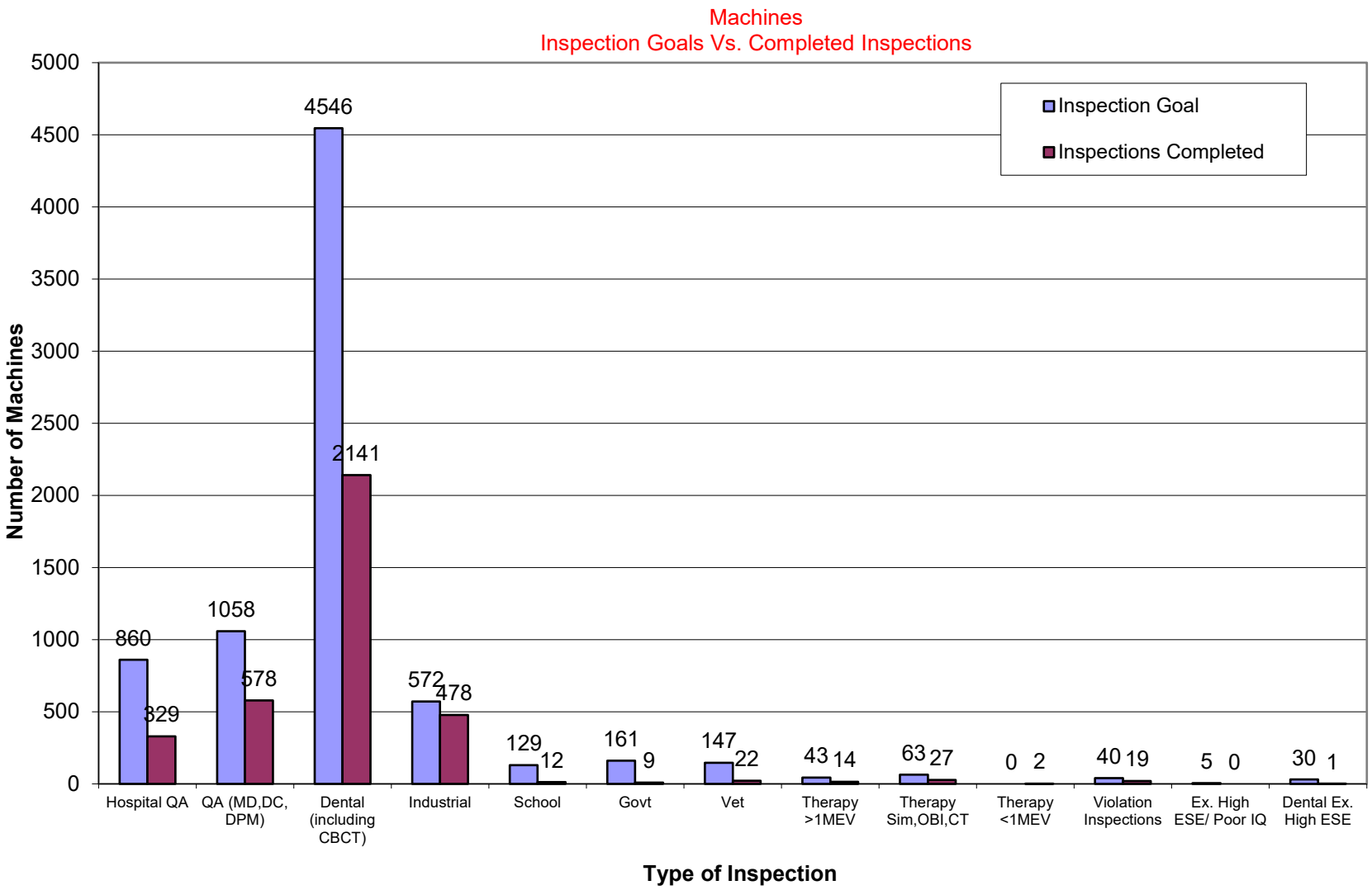
Appendix B: 4th Qtr Quarter FY22

Facilities

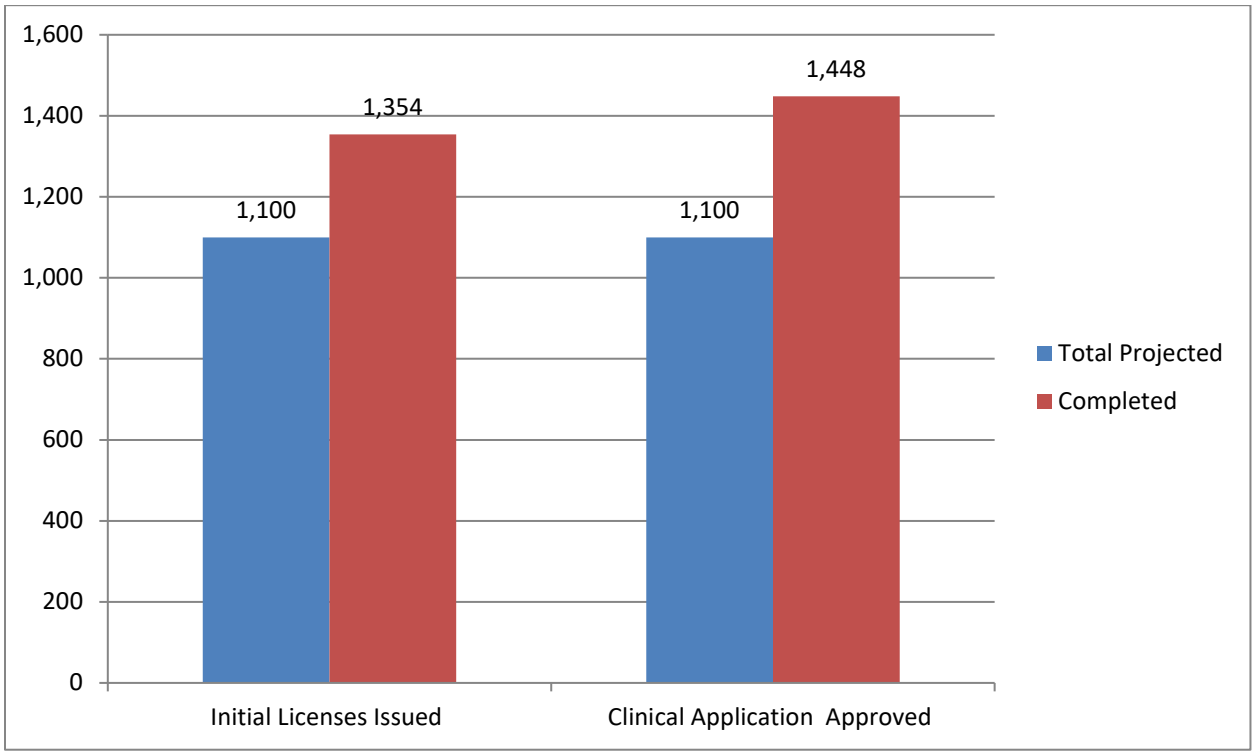
Inspection Goals vs. Completed Inspections

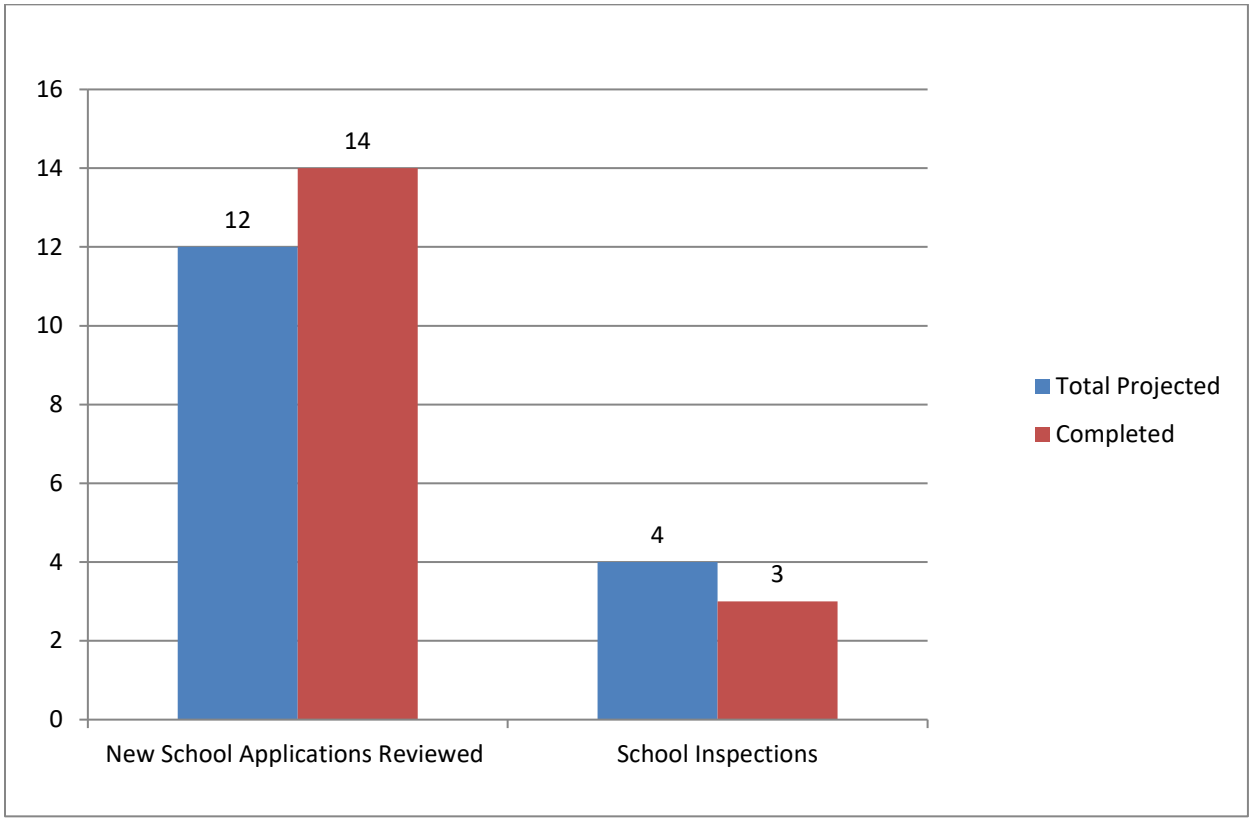


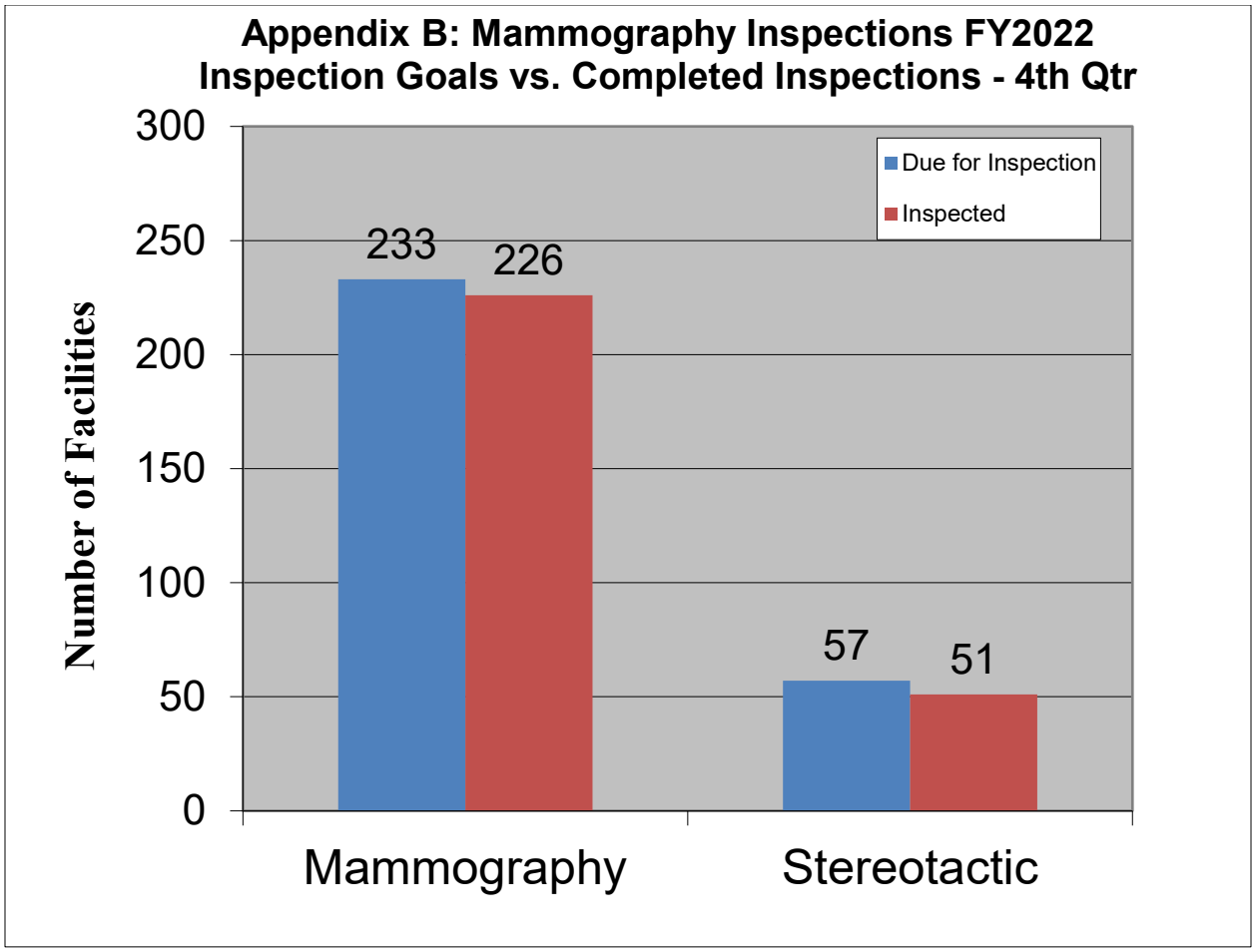
Appendix B: 4th Quarter FY22



Appendix B: Technologist Education and Licensing Section 4th Quarter






Appendix B: Mammography Inspections FY2022
Inspection Goals vs. Completed Inspections - 4th Qtr
Number of Facilities
300
250
200
150
100
50
0
Due for Inspection
Inspected
233
226
57
51
Mammography
Stereotactic

SECTION III - BUREAU OF ENVIRONMENTAL RADIATION (BER)

A. OFFICE OF THE BUREAU CHIEF

The Organization of Agreement States annual meeting will be held from August 15-18, 2022 in Fort Worth, TX. Karen Flanigan will be a member on the Health Physics Pipeline and Recruiting Efforts panel discussion. Her presentation will cover BER efforts on their recruitment program for college students interested in health physics as a career. Brooke Richards, the BERs 2022 summer intern, developed a poster for the meeting on what she learned and projects she completed during her time with the BER. Brooke provided a short, recorded presentation for the meeting.

The Integrated Materials Performance Evaluation Program (IMPEP) is the mechanism by which the US Nuclear Regulatory Commission (NRC) ensures that Agreement States and the NRC are adequate to protect the public health and safety, and compatible with the NRC regulations. The IMPEP process employs a team of Agreement State and NRC staff to assess both Agreement State and NRC radiation control licensing and inspection programs. Agreement State members must be fully qualified and complete special IMPEP training to be selected to participate in another state or NRC IMPEP.

In July 2022, Nancy Stanley participated in the New York IMPEP. The New York Agreement State Program is administered by three agencies: (1) the New York State Department of Health (DOH), which has jurisdiction over industrial uses of radioactive materials throughout the State, as well as medical, academic, and research uses outside of New York City; (2) the New York City Department of Health and Mental Hygiene (NYC), which has jurisdiction over medical, academic, and research uses of radioactive materials within the five boroughs of New York City; and (3) the New York State Department of Environmental Conservation (DEC), which has jurisdiction over discharges of radioactive material to the environment, including releases to the air and water, and the land disposal of radioactive wastes. This IMPEP is considered to be one of the most challenging reviews in the country. The review took place over a period of two consecutive weeks at locations in New York City and Albany.

B. RADIOACTIVE MATERIALS PROGRAM

During the month of July 2022, the Radioactive Materials Program responded to two (2) radiation incidents:

Date	Type of Incident	Description	Status
7/1/22	Trash	BER was notified that a load of municipal solid waste was rejected at an incinerator in Camden. The load was returned to its origin where it was surveyed by the county HAZMAT team who identified Ra-226 in the load. A contractor was hired to survey and sort the load, finding an old compass with radium paint on the dial. This item is awaiting proper disposal.	Pending

7/29/22	Trash	BER was notified that a load of municipal solid waste was rejected at an incinerator in Camden. The load was returned to its origin for decay and return to the incinerator.	Closed

Contact: Nancy Stanley (609) 984-5452

C. ROUTINE ACTIVITIES

	This Month 7/1/22-7/31/22	**FY-To-Date 7/1/22-7/31/22**
Number of Amendments Processed	12	12
Number of Renewals Processed	8	8
Number of Initial Applications Processed	3	3
Number of Active Licenses	558	558
Number of Terminations	0	0
Number of Reciprocity Requests Received	26	26
Number of Incidents	2	2
Number of Inspections	16	16

Contact: Debbie Wenke (609) 984-5509 or Jack Tway (609) 984-5514

General Licensing

Reconciliation of the Generally Licensed and Tritium Databases that were inherited from the NRC in 2009 continues. Fifty-five (55) sources on the databases were verified during July. Staff continues to maintain entry of quarterly reports from manufacturers and distributors into the generally licensed database. Fourteen (14) reports were received reflecting quarterly transactions. Generally Licensed Device Registration Forms continue to be maintained. A total of 47 registrations are currently active. Two registrants terminated and one new registration was submitted during July.

Contact: Sarah Sanderlin (609) 984-5466

D. SUMMARY OF ENFORCEMENT – JULY 2022

Bureau of Environmental Radiation – By Month (7/1/2022 -7/31/2022)				
Administrative Orders				
	Closed	Effective	Pending	Total
Radioactive Materials Section	0	0	3	3
Radon Section	0	0	4	4

Notice of Prosecution				
	Closed	Effective	Pending	Total
Radioactive Materials Section	0	0	1	1
Radon Section	0	0	1	1
Notice of Violations				
	Closed	Effective	Pending	Total
Radioactive Materials Section	0	0	3	3
Radon Section	0	0	2	2

Bureau of Environmental Radiation – Fiscal Year to Date 7/1/2021 -				
Administrative Orders				
	Closed	Effective	Pending	Total
Radioactive Materials Section	0	0	3	3
Radon Section	0	0	4	4
Notice of Prosecution				
	Closed	Effective	Pending	Total
Radioactive Materials Section	0	0	1	1
Radon Section	1	0	1	1
Notice of Violations				
	Closed	Effective	Pending	Total
Radioactive Materials Section	0	0	3	3
Radon Section	0	0	2	2

Amount Assessed in Penalties = FY				
	Total Amount Assessed for FY23	Amount Collected from Current FY23	Amount Collected from FY22	Total Amount Collected (FY22+FY23)
Radioactive Materials Section	$0.00	$0.00	$6,250.00	$6,875.00
Radon Section	$0.00	$0.00	$300.00	$300.00

Amount Assessed in Penalties = By Month		
	Total Amount Assessed for 7/1/2022 - 7/31/2022	Amount Collected from 7/1/2022 - 7/31/2022

Radioactive Materials Section	$0.00	$0.00
Radon Section	$0.00	$0.00

Contact: Jack Tway (609) 984-5462 or Anita Kopera (609) 984-5543

E. RADIOLOGICAL AND ENVIRONMENTAL ASSESSMENT SECTION (REAS)

There are currently 23 active specific licenses for water treatment systems and 18 active general license registrations for water treatment systems (13 radium systems and 5 uranium systems). Staff completed review of 1 routine submittal of dosimetry/discharge/resin analysis data per specific license conditions.

Contact: Joseph Power (609) 777-4252

Decommissioning and Contaminated Site Reviews

Staff completed review of 4 technical reports/referrals. Staff worked on the following sites/projects:

- Agrico in Carteret
- Biotranex License Termination
- City of Vineland Water Utility
- Heritage Minerals site in Manchester
- Howmet site in Dover
- Kintock site in Newark
- MEL Site in Kingwood
- National Lead site in Sayreville
- Prologis site in Teterboro
- Sumitomo Machinery Corp in Teterboro

Contacts: James McCullough (609) 984-5480 or Joseph Power (609) 777-4252

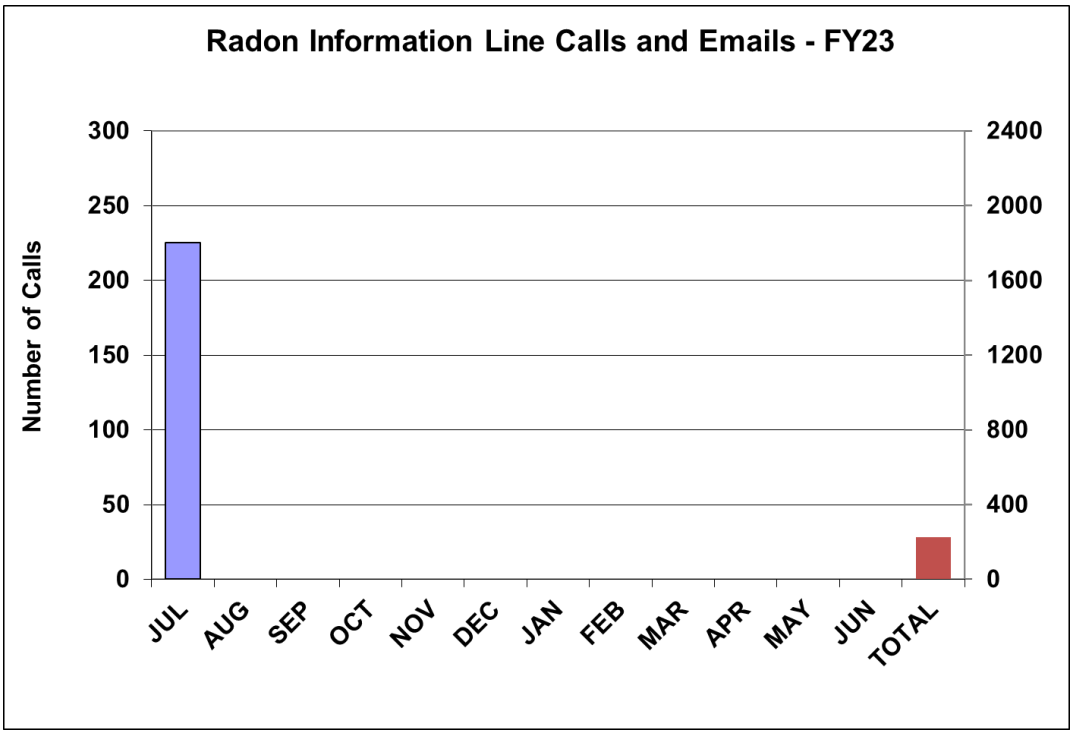
F. RADON SECTION

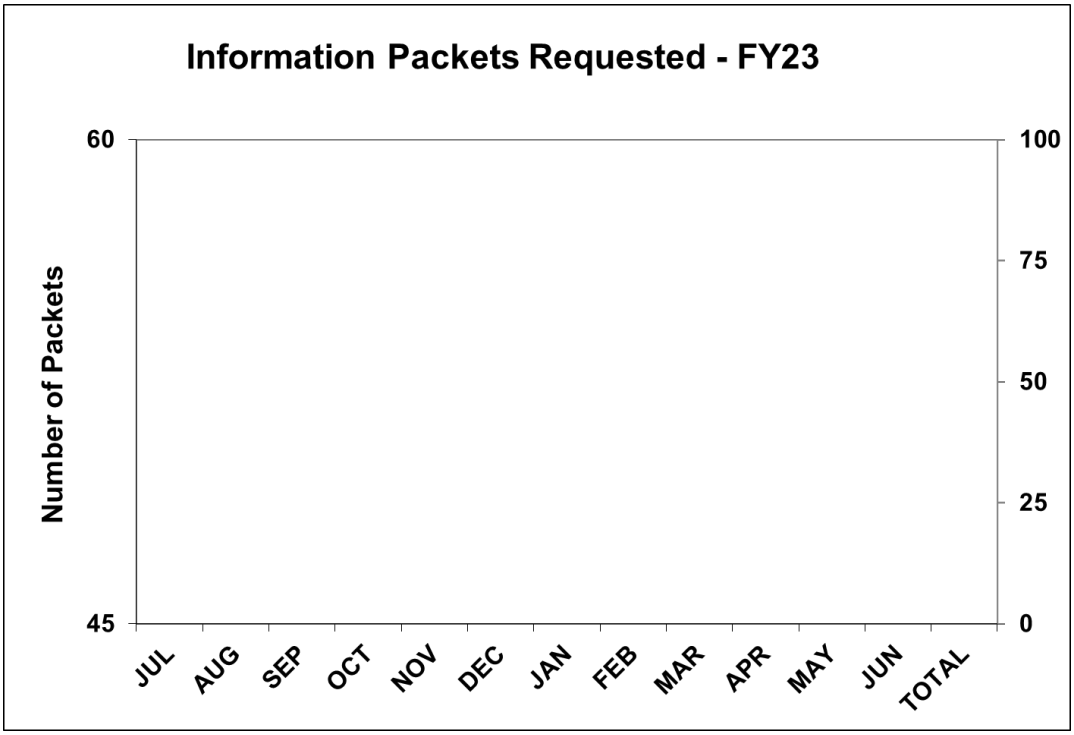
Radon Rule

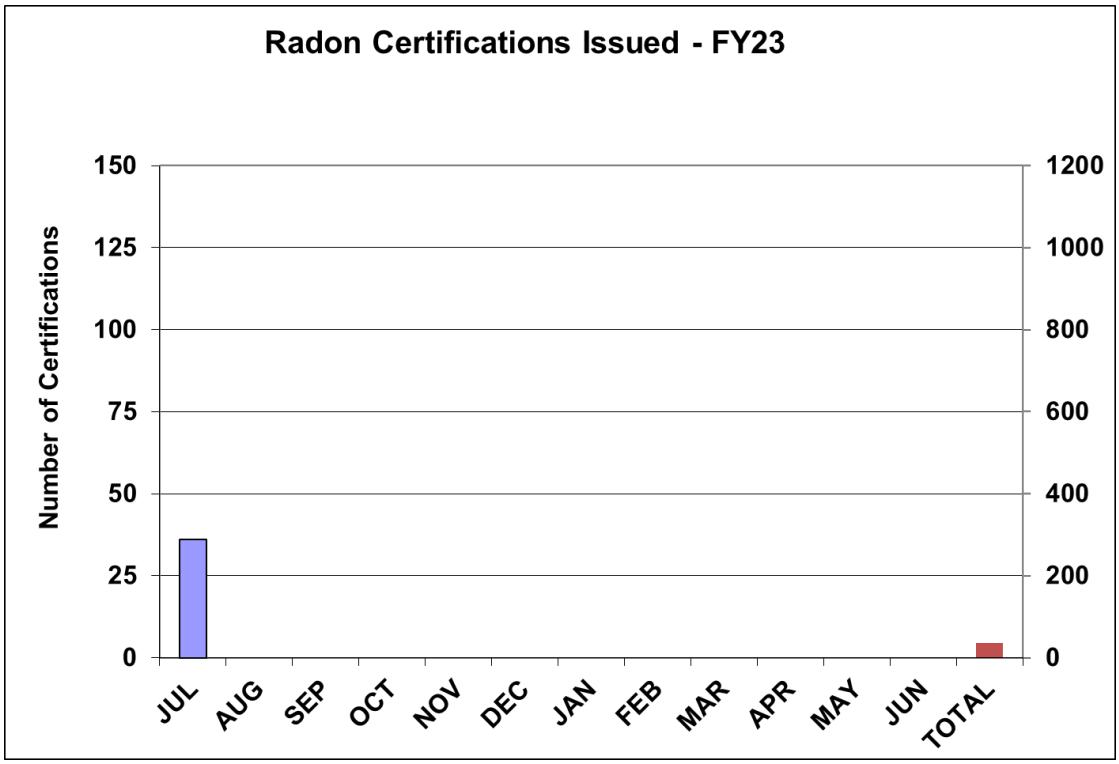
Applications for initial certified under the new regulations are being submitted. The checklists that will be used to review the applications have been prepared and work continues by our database contractor to develop the database to handle the new regulation requirements. Staff continues to educate individuals and businesses about the requirements of the new regulations and to address questions and issues that arise regarding implementation.

Contact: Anita Kopera (609) 984-5543 or Charles Renaud (609) 984-5423

APPENDIX B: BUREAU OF ENVIRONMENTAL RADIATION SUMMARY OF STATISTICS



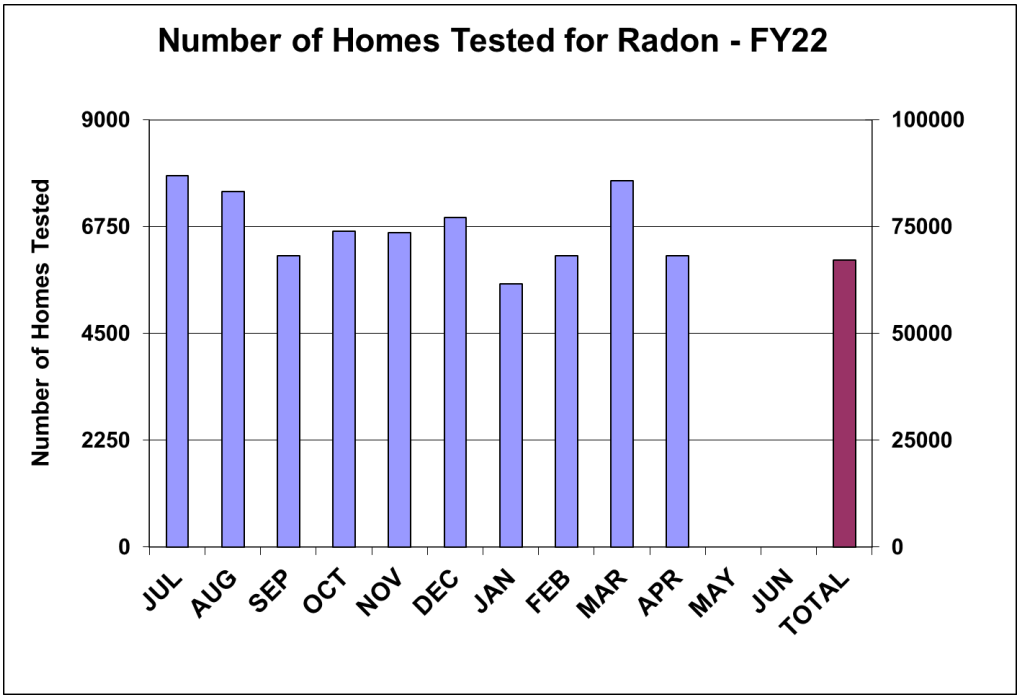


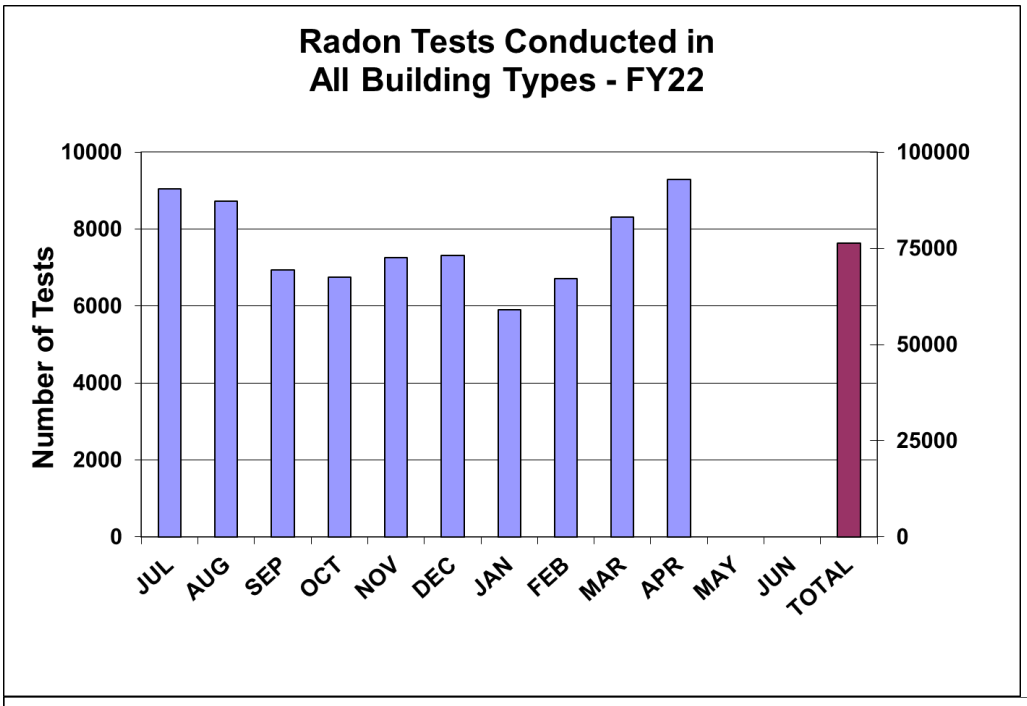

Radon Certifications Issued - FY23
Number of Certifications
150
125
100
75
50
25
0
1200
1000
800
600
400
200
0
JUL
AUG
SEP
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
TOTAL

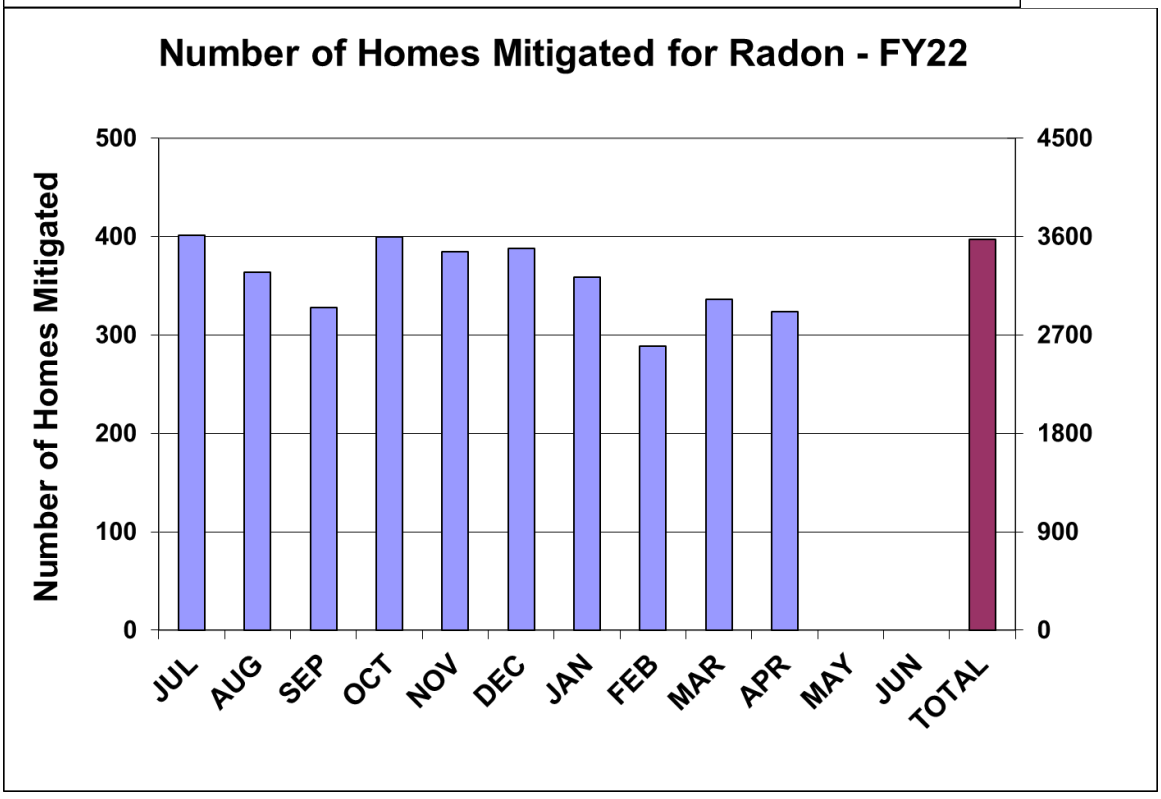
MONTHLY REPORT DATA IS NOT COMPLETED YET FOR MAY AND JUNE 2022

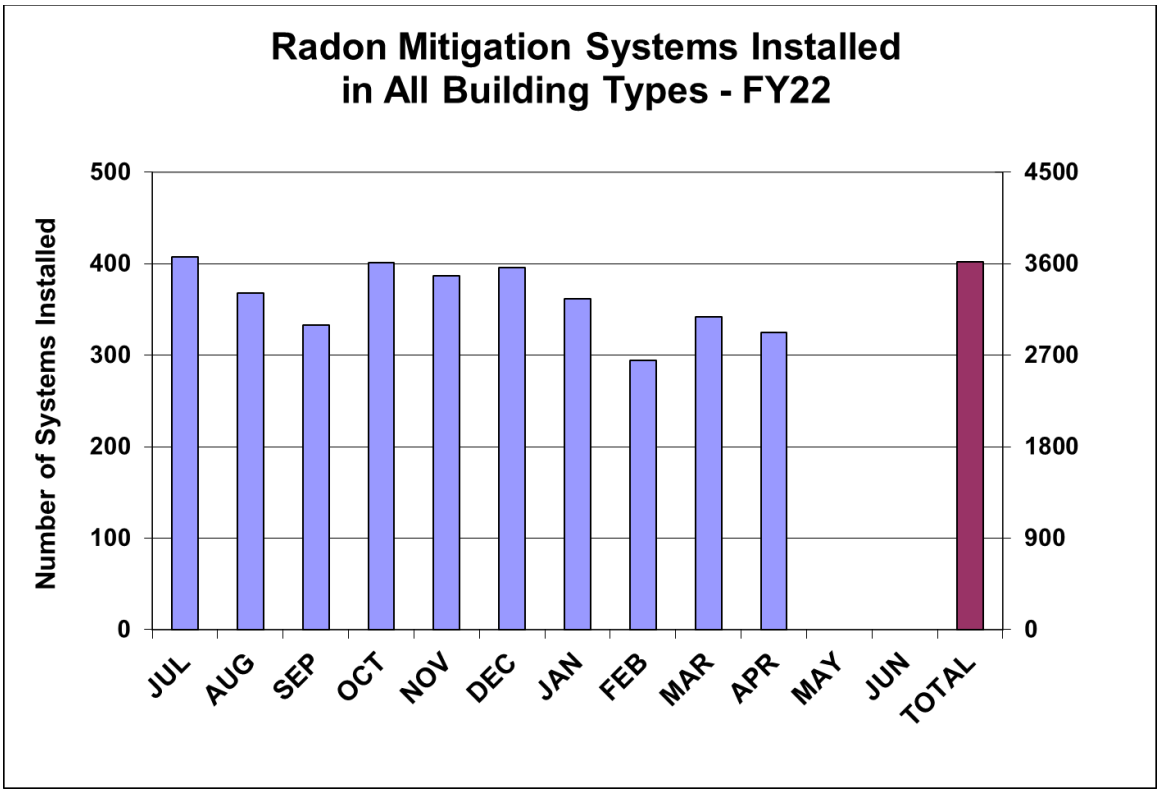
(These charts have not been updated since April)

Radon testing and mitigation data is submitted to the Radon Section monthly by all certified radon businesses. This data has been collected for all building types since the implementation of the radon certification regulations in 1991. According to N.J.A.C. 7:28-27.28 (a) and (e), Radon test results and mitigation reports for April 2022 are due by June 1, 2022.




Radon Tests Conducted in
All Building Types - FY22
Number of Tests
10000
8000
6000
4000
2000
0
100000
75000
50000
25000
0
JUL
AUG
SEP
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
TOTAL


Number of Homes Mitigated for Radon - FY22
Number of Homes Mitigated
500
400
300
200
100
0
4500
3600
2700
1800
900
0
JUL
AUG
SEP
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
TOTAL


Radon Mitigation Systems Installed
in All Building Types - FY22
Number of Systems Installed
500
400
300
200
100
0
4500
3600
2700
1800
900
0
JUL
AUG
SEP
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
TOTAL

SECTION IV – BUREAU OF NUCLEAR ENGINEERING (BNE)

A. OFFICE OF THE BUREAU CHIEF

Significant Events

None

B. NUCLEAR ENGINEERING SECTION

Oyster Creek Decommissioning Projects:

Removal and segmentation of the reactor vessel head heat shield, reactor vessel head, drywell head and the drywell concrete shield plugs have been completed. Segmentation of the reactor vessel internals has commenced. Segmentation of the reactor steam dryer and steam separator is complete. Packaging of the steam separator into different containers is complete. Phase 1 of the reactor vessel internals is complete. Segmentation of the top guide tubes is complete. Removal of the reactor vessel internal piping is complete. Segmentation of the upper shroud is complete. Cleanup of the spent fuel pool in preparation for removal of the spent fuel racks is complete. All spent fuel racks have been removed from the pool. Removal of the control rod guide tubes has been completed. Segmentation of the control rod guide tubes is in progress. Removal of the lower core plate for segmentation is underway. Cleaning of the lower core plate is complete. Segmentation of the reactor head is complete.

Three outer buildings (not located in the radiological controlled area) have been demolished and removed from the site. Eight power transformers have been removed from the site. All reactor control rod hydraulic control units (HCU) and associated components have been dismantled. The original site water tank and a demineralized water storage tank have been dismantled and shipped offsite.

A lube oil tank has also been removed and transported offsite. Demolition of the old north guard house, the abandoned torus water storage tank, the new maintenance building, the radwaste surge tank, the augmented off gas building, nitrogen tank, condensate storage tank, chlorination tank, radwaste sample tanks, site heating boiler and security buildings is complete. Core bore layout for new radwaste building is complete. Core boring in preparation for demolition is in progress at the new radwaste building.

Contact: Veena Gubbi (609) 984-7457

Hope Creek

Hope Creek ran at essentially full power throughout July, with the following brief exceptions: Power was reduced to 82% on July 3rd and to 84% on July 8th to perform scheduled reactor control rod pattern adjustments. Power was reduced to 95% on July 15th, 25th and 29th to perform scheduled removal of selected feedwater heaters from service to compensate for reactor power coast-down that occurs at the end of core life. Selected feedwater heaters are typically

removed from service just prior to shutdown for a refueling outage (24th refueling outage begins in late September). Power was reduced to 94% to 99% on various days due to atmospheric conditions affecting the efficiency of the cooling tower. Power was returned to 100% upon completion of each evolution/atmospheric condition.

Contact: Veena Gubbi (609) 984-7457

Salem Unit 1

Salem Unit 1 ran at essentially full power throughout July.

Contact: Jacob Fakory (609) 984-7458

Salem Unit 2

Salem Unit 2 ran at essentially full power throughout July.

Contact: Jacob Fakory (609) 984-7458

NRC Performs Design Bases Assurance Inspection (DBAI) of Power-Operated Valves (POVs) at Hope Creek

During the weeks of July 11th and 25th, the NRC performed a DBAI at Hope Creek in accordance with NRC Inspection Procedure 71111.21N, "Design-Basis Capability of Power Operated Valves under 10 CFR 50.55a Requirements". The first week of the inspection was conducted on-site at Hope Creek and the second week was conducted remotely. The purpose of the inspection was to gain reasonable assurance that risk important POVs can adequately perform their design basis functions. This includes verification that: 1) the sampled POVs are being tested and maintained per the applicable regulatory requirements; 2) Hope Creek is following the applicable ASME Operation and Maintenance Code (OM Code) for the IST program for the sampled POVs; and 3) Hope Creek is implementing its applicable commitments to provide reasonable assurance of POV capability. The report will be available to the public within forty-five (45) days following the NRC exit meeting which is expected to occur during the first week of August.

Contact: Veena Gubbi (609) 984-7457 or Jacob Fakory (609) 984-7458

NRC Performs Independent Spent Fuel Storage Installation (ISFSI) Inspection during the Salem Unit 2 Dry Cask Storage Campaign

On July 18th- 22nd, the NRC performed an inspection of the ISFSI located north of Hope Creek. The inspection was performed during the Salem Unit 2 dry cask storage campaign in order to observe ISFSI operations.

The inspection was performed in accordance with NRC Inspection Procedure 60855, "Operation of an Independent Spent Fuel Storage Installation". The purpose of the inspection was to observe and independently evaluate whether PSEG is operating the ISFSI in conformance with

regulatory requirements. This includes reasonable assurance that the spent fuel can be handled and stored without undue risk to the health and safety of the public. The results of the inspection will be included in the NRC Third Quarter 2022 Integrated Inspection Report for Salem Unit 2.

Contact: Veena Gubbi (609) 984-7457

NES Staff Attends NRC Teleconferences/Webinars

NRC Commissioners' Meeting to Discuss 10 CFR Part 53 Licensing and Regulation of Advanced Nuclear Reactors

On July 21st, the NRC Commissioners held a teleconference to hear updates on the development of 10 CFR Part 53 "Licensing and Regulations of Advanced Nuclear Reactors" and to hear external stakeholders' views on the development of the rule. The meeting consisted of two sessions which included speakers from external stakeholders and the NRC staff. The first panel, consisting of external stakeholders, provided industry's perspective on Part 53, the international market, and micro-reactor considerations. Following the presentation, the speakers addressed questions/concerns from the NRC Commissioners.

The second panel, consisting of NRC staff, provided an overview on the development of rule language; status of rulemaking; overview of stakeholder engagement; risk-informed licensing approach; staffing flexibilities; and fitness for duty and access authorization framework. Following the presentation, the speakers addressed questions/concerns from the NRC Commissioners.

Contact: Jerry Humphreys (609) 984-7469

NRC Meeting on Reactor Oversight Process (ROP)

On July 27th, the NRC held a teleconference to discuss ROP topics with the Nuclear Energy Institute (NEI) and the nuclear industry. The NRC staff provided on overview on the NRC Draft Artificial Intelligence Strategic Plan; Covid-19 Lessons Learned Working Group recommendations; ROP Self-Assessment Program and Calendar Year 2021 Results; ROP Enhancement Update; Very Low Safety System Issue Resolution (VLSSIR) Process Revision to clarify consideration of traditional enforcement issues; Engineering Inspection Program Update; Diablo Canyon SCRAM Proposed Response; and an Emergency Preparedness-related SECY (i.e., SECY is a paper submitted by the NRC Staff to the Commission concerning policy, rulemaking or adjudicatory matters). The NEI staff led the industry Frequently Asked Questions (FAQs) discussions. After the presentations were completed, the nuclear industry stakeholders participated in an open discussion regarding the ROP topics.

Contact: Jerry Humphreys (609) 984-7469

NES Staff Attends Department of Energy (DOE) National Transportation Stakeholders Forum (NTSF) Planning Committee Meeting

On July 21st, the NTSF Planning Committee held a virtual meeting. Planning for the 2023 Annual NTSF Meeting to be held in St. Louis was started and will continue monthly. A discussion about charging registration fees for speakers was discussed as a lesson-learned from the 2022 annual meeting. In addition to the 2023 discussions, status reports were presented for the Ad Hoc Working Groups (Rail/Routing, Spent Fuel Transportation Materials and 180(c)). Upcoming NTSF webinars were also discussed.

Contact: Jerry Humphreys (609) 984-7469

Radioactive Materials Shipment Notifications

The Bureau of Nuclear Engineering is responsible for tracking certain radioactive materials that are transported in New Jersey. Advance notification for these radioactive materials is in three categories: 1) Spent Fuel and Nuclear Waste; 2) Highway Route Control Quantity Shipments; and 3) Radionuclides of Concern. Each category must meet certain packaging and notification requirements established by the federal government. Following is a table representing the number of shipments completed in July 2022:

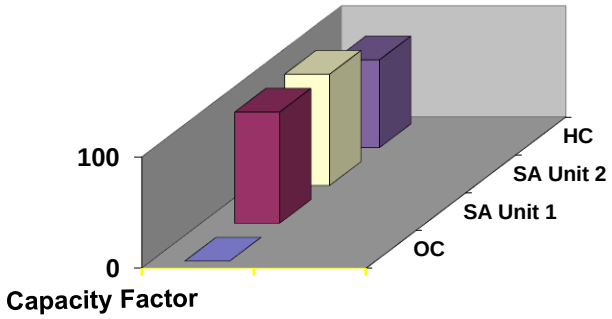
Spent Fuel and Nuclear Waste	Highway Route Control Quantity Shipments	Radionuclides of Concern
0	2	0

Contact: Veena Gubbi (609) 984-7457 or Jerry Humphreys (609) 984-7469

BUREAU OF NUCLEAR ENGINEERING

Plant Operating Performance – July 2022

Note: On September 17th, 2018 Oyster Creek permanently ceased operation.



STATISTICAL INFORMATION

EMERGENCY AND NON-EMERGENCY EVENT NOTIFICATIONS FOR JULY 2022

Emergency events (EEs) at nuclear power plants are classified, in increasing order of severity, as an Unusual Event (UE), Alert, Site Area Emergency (SAE), and General Emergency (GE). Non-emergency events (NEEs) are less serious events that require notification of the NRC within one to twenty-four hours. The nuclear power plants operating in New Jersey also notify the BNE of NEEs. The BNE analyzes the NEEs as part of its surveillance of nuclear power plant operation.

	JULY 2022		JAN - JULY 2022		JAN - DEC 2021	
	EE	NEE	EE	NEE	EE	NEE
OYSTER CREEK	0	0	0	0	0	0
SALEM 1	0	0	0	0	0	0
SALEM 2	0	0	0	0	0	0
SALEM SITE	0	0	0	0	0	0
HOPE CREEK	0	0	0	0	0	0

C. NUCLEAR ENVIRONMENTAL ENGINEERING SECTION

Radiological Environmental Monitoring Program

The Bureau of Nuclear Engineering (BNE) conducts a comprehensive Radiological Environmental Monitoring Program (REMP) in the environs surrounding New Jersey's four nuclear generating stations. The program collected 70 samples during the month of July 2022. The number and type of samples collected are given in the table below.

Sample results are entered into the BNE's database for tracking and trending of environmental results. Data obtained from these analyses are used to determine the effect, if any, of the operation of New Jersey's nuclear power plants on the environment and the public. BNE staff review all results to ensure that required levels of detection have been met and that state and federal radiological limits have not been exceeded. Any exceedances, or anomalous data, are investigated. The REMP includes the development of annual data tables. The data tables, covering sampling results conducted during the prior calendar year in the environs of the Oyster Creek and Salem/Hope Creek nuclear power plants, can be found on the NJDEP website at http://www.nj.gov/dep/rpp/bne/esmr.htm, along with data tables from previous years.

Questions regarding specific test results or the annual environmental report can be directed to Karen Tuccillo at (609) 984-7443. Results of specific analyses can be obtained by request.

COUNT OF SAMPLES COLLECTED IN JULY 2022

SAMPLE MEDIUM	NUMBER OF SAMPLES
AIR FILTER	28
AIR IODINE	12
AIR PARTICULATE COMPOSITE	1
MILK (Cow)	3
SURFACE WATER	8
POTABLE WELL WATER	9
VEGETABLE	9
TOTAL SAMPLES	70

Contacts: Karen Tuccillo (609) 984-7443 or Paul E. Schwartz (609) 984-7539

Update on Salem Units 1 & 2 and Hope Creek Tritium Monitoring

During the month of July 2022, 4 groundwater monitoring well samples were collected and shipped to the BNE's contract laboratory, GEL Laboratories, for radiological analysis.

Contacts: Jay Vouglitois (609) 984-7514

Quarterly Thermoluminescent Dosimeter (TLD) Exchange

On July 12 and 13, 2022, technicians from the BNE's subcontractor retrieved second quarter 2022 TLD badges and deployed third quarter 2022 TLD badges in the surrounding environs and Independent Spent Fuel Storage Installations (ISFSI) of the Oyster Creek and Artificial Island nuclear power plant sites, as well as two background stations. BNE staff analyzed the retrieved TLD badges. Results will be reported in the BNE's Annual Environmental Surveillance and Monitoring Report tables, available for viewing on the DEP website at: http://www.state.nj.us/dep/rpp/bne/esmr.htm.

Contact: Compton Alleyne (609) 984-7455 or Paul E. Schwartz (609) 984-7539

Contract for Radioanalytical Laboratory Services

The BNE solicited bids for one year of radioanalytical laboratory services under a Direct Purchase Authorization (DPA) so that the Bureau could continue radiological laboratory analyses of environmental samples collected for its routine Radiological Environmental Monitoring Program and samples collected in response to tritium leaks at Salem Nuclear Generating Station and Radiological Groundwater Protection Programs at Salem/Hope and Oyster Creek plant sites. In addition to being advertised on the DEP's website on July 14, 2022, four (4) labs were directly notified of the solicitation. GEL Laboratories, LLC (GEL) was the sole responsive bidder for the solicitation.

Without an approved purchase order, routine collection and analysis would have been halted, impacting the BNE's ability to provide the public with assurance of no public health or environmental impacts. Future radiological laboratory analysis contracts will be awarded through an annual DPA.

Contact: Karen Tuccillo (609) 984-7443

Effluent Release Data

The BNE monitors the effluents released from all four nuclear generating stations each month. The reported effluents include fission and activation products, total iodine, total particulate, and tritium released to the atmosphere and water. At the Oyster Creek, Hope Creek and Salem nuclear power plants, releases to the air and water are monitored each month and compared to historic releases. Releases to the atmosphere are from the 112-meter stack (Oyster Creek) or various monitored building vents (Oyster Creek, Hope Creek, and Salem).

On September 17, 2018, Oyster Creek ceased to generate power leading to a reduction in gaseous effluents. On September 25, 2018, the plant officially entered decommissioning.

In prior monthly reports, the BNE reported tritium results for a remedial pumping well that was part of the Oyster Creek liquid effluent groundwater extraction. In accordance with a NJDEP Directive and Notice to Insurers issued to Oyster Creek, former Oyster Creek owner Exelon Generation Corporation was required to clean up and remove tritium discharges released onsite

from underground pipe leaks that occurred during 2009. With DEP approval, Exelon sampled groundwater from a dedicated pumping well (MW-73), measuring the concentration of tritium in the extracted groundwater, and discharging it into the plant's intake structure. In a letter from the NJDEP to the HDI (current owner of Oyster Creek) Plant Manager of Oyster Creek on January 9, 2020, the DEP concurred that the Oyster Creek site had complied with the requirements outlined in paragraph 41 of the Directive and Notice to Insurers, thereby closing it out. Pumping Well MW-73 was placed out of service (Idle) and monitoring of this well was discontinued. Pumping has been terminated unless tritium activity is identified that would require restoration of groundwater extraction by returning MW-73 to service. Therefore, tritium results for pumping well MW-73 will no longer be reported by the BNE. While the pump and treat remediation of tritium has been completed, HDI continues onsite groundwater monitoring as part of their Radiological Groundwater Protection Program. Additional information on the Oyster Creek tritium leak is available at the DEP website, http://www.state.nj.us/dep/rpp/bne/octritium.htm.

In addition to groundwater monitoring, it is necessary for Oyster Creek to process and discharge liquid effluents as a necessary activity during decommissioning of the site and eventual license termination. Radioactive liquid effluent discharged due to decommissioning activities will be monitored by HDI and reported in the licensee's "Annual Radiological Effluent Release Report". This report can be found on the USNRC website at: https://www.nrc.gov/reactors/operating/ops-experience/tritium/plant-info.html.

There were no controlled liquid effluent releases from Oyster Creek during the month of June 2022. Beginning in 2022, gaseous effluent data from Oyster Creek are reported by the licensee on a quarter-annual basis. The gaseous effluent data for the period from January through June 2022 were not available at the drafting of this report. However, the data shall be included in the BNE's August 2022 monthly report.

The June 2022 gaseous and liquid effluent release data for the Salem and Hope Creek nuclear plants have been included in this report.

PSEG Nuclear
Radioactive Effluent Releases[1]
Nuclear Environmental Engineering Section
For the Period of 06-01-22 to 06-30-22

Hope Creek Gaseous Effluents

Effluent		
Fission Gases	0	Ci
Iodines	0.00020	Ci
Particulates	0.000013	Ci
Tritium	18.6	Ci

Hope Creek Liquid Effluents

Effluent		
Fission Products	0.00040	Ci
Tritium	12.5	Ci

Salem Unit 1 Gaseous Effluents

Effluent		
Fission Gases	0.0118	Ci
Iodines	0	Ci
Particulates	0.000004	Ci
Tritium	20.6	Ci

Salem Unit 1 Liquid Effluents

Effluent		
Fission Products	0.00008	Ci
Tritium	10.3	Ci

Salem Unit 2 Gaseous Effluents

Effluent		
Fission Gases	0.0318	Ci
Iodines	0	Ci
Particulates	0	Ci
Tritium	13.2	Ci

Salem Unit 2 Liquid Effluents

Effluent		
Fission Products	0.00026	Ci
Tritium	22.4	Ci

[1] Effluent releases are preliminary totals. The official radioactive effluent releases from each facility are contained in the licensee's "Annual Radioactive Effluent Release Report" and can be found on the USNRC website at, https://www.nrc.gov/reactors/operating/ops-experience/tritium/plant-info.html. These reports are submitted annually by the licensee to the NRC by May 1st of the following calendar year.

Holtec Decommissioning International (HDI)
Radioactive Effluent Releases[2]
Nuclear Environmental Engineering Section
For the Period of 06-01-22 to 06-30-22[3]

Oyster Creek Liquid Effluents

Effluent		
Fission Products	No Release	Ci
Tritium	No Release	Ci

Contact: Paul E. Schwartz (609) 984-7539

[2] Effluent releases are preliminary totals. The official radioactive effluent releases from each facility are contained in the licensee's "Annual Radioactive Effluent Release Report" and can be found on the USNRC website at, https://www.nrc.gov/reactors/operating/ops-experience/tritium/plant-info.html. These reports are submitted annually by the licensee to the NRC by May 1st of the following calendar year.
[3] There were no scheduled controlled liquid discharges during the month of June 2022

D. NUCLEAR EMERGENCY PREPAREDNESS SECTION

Continuous Radiological Environmental Surveillance Telemetry System

Thirty-three Continuous Radiological Environmental Surveillance Telemetry (CREST) sites are located in the environs of Oyster Creek, Salem I, II, and Hope Creek nuclear generating stations. CREST is a part of the Air Pollution/Radiation Data Acquisition and Early Warning System, a remote data acquisition system whose central computer is located in Trenton, New Jersey. Sites are accessed via cellular communication and polled for radiological and meteorological data every minute.

The Air Pollution/Radiation Data Acquisition and Early Warning System is equipped with a threshold alarm of twenty-five (25) microRoentgens per hour. The system notifies staff via text messages and email alerts if the threshold is exceeded, providing 24-hour coverage of potential radiological abnormalities surrounding each nuclear facility.

Contact: Ann Pfaff (609) 984-7451

The following tables include the average ambient radiation levels at each site for the month of July:

Artificial Island CREST System Ambient Radiation Levels July 2022 Derived From One Minute Averages UNITS = mR/Hr				
AI1	AI2	AI3	AI4	AI5
.0064	.0065	.0080	.0064	.0065
AI6	AI7	AI8	AI9	AI10
.0067	.0057	.0055	.0074	.0052

Oyster Creek CREST System Ambient Radiation Levels July 2022 Derived From One Minute Averages UNITS = mR/Hr			
OC1	OC2	OC3	OC4
.0039	.0053	.0057	.0048
OC5	OC6	OC7	OC8
.0053	.0055	.0046	.0050
OC9	OC10	OC11	OC12
.0058	****	.0058	.0055
OC13	OC14	OC15	OC16
.0054	.0053	.0051	.0054

**** indicates insufficient valid data

Contact: Ann Pfaff (609) 984-7451

Nuclear Emergency Response Plan Public Hearings

The Department of Environmental Protection in cooperation with the Division of State Police held their annual public hearings to determine the adequacy and effectiveness of the New Jersey Radiological Emergency Response Plan pursuant to the Radiation Accident Response Act, N.J.S.A. 26:2D-37 et seq. The hearings were held on Wednesday, July 13, 2022 at the Salem County Office of Emergency Management in Woodstown and on Thursday, July 14, 2022 at Woodland Country Day School in Bridgeton, both beginning at 6:00 p.m. Representatives of the Bureau of Nuclear Engineering and the Office of Emergency Management, Division of State Police provided statements and were prepared to respond to questions and comments from the public impacted by the operation of Salem Units 1 and 2 and Hope Creek Nuclear Generating Stations in Salem and Cumberland Counties. No members of the public attended either hearing. Last year was the final hearing for Ocean County for Oyster Creek Nuclear Generating Station since all spent fuel has been moved to dry cask storage at the Independent Spent Fuel Storage Facility and it now falls under an All-Hazards Plan.

Contact: Ann Pfaff (609) 984-7451

Radio Committee Meeting

BNE Manager Pfaff attended the DEP Radio Committee meeting held virtually on Wednesday, July 13, 2022. Agenda topics included discussion of Island Beach State Park Signal Strength Enhancement Project, various Interoperability Projects, DEP radio needs and radio user fee billings.

Contact: Ann Pfaff (609) 984-7451

Licensee EP Meeting

On July 25, 2022, NEPS staff held their monthly emergency preparedness meeting with PSEG and NJOEM on Microsoft Teams. Discussion topics included: August 17th Salem Exercise Extent of Play, scenario, and Public Information Officer participation; PSEG Annual Calendar; Hostile Action Based Exercise Planning; electronic Initial Contact Message Form; Cumberland County Reception Center Exercise June 29th After-Action Report; draft Evacuation Time Estimate study.

Contact: Ann Pfaff (609) 984-7451

State/FRMAC Semi-Annual Conference Call

On July 27, 2022, staff attended the Federal Radiological Monitoring and Assessment Center's (FRMAC) semi-annual conference call with its state partners. FRMAC offered updates from each of their Working Groups: Monitoring & Sampling; Assessment; Lab Analysis. DOE's Regional Radiological Assistance Program (RAP) also provided updates as did RadResponder. There was a briefing on the National Radiological Emergency Preparedness

(NREP) Conference in April and the Conference of Radiation Control Program Directors Conference in May. Federal partners, FDA, EPA, CDC, and FEMA, reported on current projects.

Contact: Ann Pfaff (609) 984-7451