

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

APRIL 1 THROUGH APRIL 30, 2022

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SECTION I- OFFICE OF THE ASSISTANT DIRECTOR

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 April 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.

New Staff Reporting

On April 25, Sage Mitchell, Environmental Services Trainee started his career with the Bureau of X-ray Compliance as an x-ray equipment field inspector in the Machine Source Section. Welcome Sage!

IAEA Webinar: Establishment of Pediatric CT Diagnostic Reference Levels in the United States

On April 27, Bureau staff participated in the IAEA Webinar: Establishment of Pediatric CT Diagnostic Reference Levels in the United States.

Contact: Arthur Robinson (609) 984-5634

B. REGISTRATION SECTION

Machine Source Registration and Renewal Fees

The Registration Section has begun invoicing the registrants for FY2022 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.

Machine Source Fees Invoiced and Collected for FY 2022					
Monthly Invoiced	Monthly Collected	Fiscal YTD Invoiced	Fiscal YTD Collected	Fiscal YTD Adjustments	Percent Collected
\$14,409.00	\$19,520.00	\$3,117,282.00	\$3,093,428.00	\$3,896.00	99%

Progress on Collection of FY 2022 Registration Renewal Fees

Renewal Groups	Paid 7/31/21	Paid 8/31/21	Paid 9/30/21	Paid 10/31/21	Paid 11/30/21	Paid 12/31/21	Paid 1/31/22	Paid 2/28/22	Paid 3/31/22	Paid 4/30/22	Paid 5/31/22	Paid 6/30/22
0-F	49%	77%	87%	96%	98%	99%	99%	99%	100%	100%	0	0
G-L	N/A	51%	76%	88%	96%	98%	99%	99%	100%	100%	0	0
M-R	N/A	N/A	50%	74%	87%	95%	97%	98%	99%	100%	0	0
S-Z	N/A	N/A	N/A	34%	73%	86%	94%	97%	99%	100%	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, 25% percent paid on-line.

Monthly Machine Source Registration Activity FY 2022

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	YTD
New Facilities	13	14	16	23	16	20	22	18	36	20	0	0	198
Terminated Facilities	25	18	26	39	29	38	23	33	45	21	0	0	297
Net Change (Facilities)	-12	-4	-10	-16	-13	-18	-1	-15	-9	-1	0	0	-99
New Registrations	164	188	144	163	171	157	176	202	184	161	0	0	1710
Stored Registrations	62	34	37	53	59	79	47	59	100	42	0	0	572
Disposed registrations	84	88	82	95	85	85	79	90	113	78	0	0	879
Net Change (Machines)	18	66	25	15	27	-7	50	53	-29	41	0	0	259

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 April 2022, IQ evaluations were performed on 16 x-ray units with the following results:

- 10 units (63%) had excellent image quality scores.
- 6 units (37%) had good image quality scores.
- 0 units (0%) had fair image quality score.
- 0 units (0%) 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 April 2022, ESE measurements were calculated on twelve x-ray units that performed lumbo-sacral spine x-rays. Zero units (0%) had extremely high ESE measurements.
- In April 2022, ESE measurements were calculated on one x-ray unit that performed chest x-rays. Zero units (0%) had extremely high ESE measurements.
- In April 2022, ESE measurements were calculated on four x-ray units that performed foot x-rays. Zero 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.

An analysis of the historical data from May to December 2015, the Bureau inspected two thousand eight hundred and twenty-one (2,821) intra oral dental units. 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 than 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 to 100	101 to 285	286 to 350	≥351
E/F, F, Insight	0 to 50	51 to 150	151 to 205	≥206

- In April 2022, ESE measurements were calculated on one hundred twenty-seven dental x-ray units that used DR digital imaging. Seven units (6%) were measured as having extremely high ESE.
- In April 2022, ESE measurements were calculated on zero dental x-ray units that used CR (PSP) digital imaging. Zero units (0%) were measured as having extremely high ESE.
- In April 2022, ESE measurements were calculated on six dental x-ray units that used D speed film. Two units (33%) were measured as having extremely high ESE.
- In April 2022, ESE measurements were calculated on two dental x-ray units that used E/F, F, or Insight speed film. Zero 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 April 2022, 45 amalgam questionnaires were collected. The total dental amalgam questionnaires collected for FY2022 is 526.

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.

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 April. Statistical information follows in Appendix A of this report. In addition to its regular business functions, the following highlights are reported:

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 2022 Invoiced & Collected				
Invoice Type	Monthly Invoiced	Monthly Collected	Fiscal YTD Invoiced	Fiscal YTD Collected
Examinations	\$0	\$0	\$320	\$320
Initial Licenses	\$5,820	\$5,700	\$66,420	\$64,200
Renewal Licenses	\$630	\$1,710	\$12,150	\$39,600
Totals	\$6,450	\$7,410	\$78,890	\$104,120

Contact: Al Orlandi (609) 984-5890

E. MAMMOGRAPHY SECTION

Stereotactic Facilities Inspected

The Mammography Section inspected 0 facilities with a stereotactic/needle localization breast biopsy unit during the month of April. A total of 37 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 7 facilities in April. A total of 182 of the 233 facilities scheduled to be inspected under the contract that expires on August 20, 2022. There were three 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 three facilities with **Level 2** non-compliances:

- Failed to produce documents verifying that the interpreting physician met the continuing experience requirement of having interpreted or multi-read 960 mammograms in 24 months.
- The compression device QC was not adequate because the QC test was not done at the required frequency.
- The facility has not specified adequate written procedures for collecting and resolving consumer complaints or did not follow them when required.

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 April 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 Department's 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
April 2022

Bureau of X-Ray Compliance

	Month	YTD
Compliance Inspections entered in to NJEMS	71	297
Dental/CBCT Inspections entered in to NJEMS	37	449

Notice of Violations	Closed	Effective	Pending	Total	YTD
	5	1	12	18	121

Administrative Orders	Closed	Effective	Pending	Total	YTD
	0	2	40	42	171

Notice of Prosecutions	Closed	Effective	Pending	Total	YTD
	0	2	37	39	162

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
	\$10,950.00	\$80,350.00	\$61,700.00	\$19,450.00	\$81,150.00

Contact: Ramona Chambus (609) 984-5370

Inspector: ALL
Discipline: ALL

Number of Inspections Performed

Inspection Type	Inspection Description	Facilities Inspected	Machines Inspected	Machines Audited	Machines Uninspected
1	ROUTINE INSPECTION	152	384		36
2	VIOLATION INSPECTION ON SITE	2	3		
9	HAND DELIVERY	6			15
11	INVESTIGATION	16			
15	QA INSPECTION ROUTINE LEVEL 1	22	17	12	5
17	QA VIOLATION INSPECTION ON SITE	2		3	
28	DENTAL CBCT INSPECTION	11	49		4
29	DENTAL CBCT VIOLATION INSPECTION	1	1		
Total On-Site Inspections:		212	454	15	60
6	OFFICE VIOLATION RESPONSE REVIEW	15		18	
18	OFFICE QA VIOLATION RESPONSE REVIEW	9		9	
23	OFFICE TECH CERT INSPECTION	2		2	
30	DENTAL CBCT OFFICE REVIEW INSPECTION	6		6	
Total Office Inspections:		32		35	0

Number of Enforcement Documents Issued

NOV	18
AO	38
NOP	34
Amount of Penalties	\$21,800

Inspector: ALL
Discipline: ALL

<u>Violation Code</u>	<u>Glossary Information</u>	<u>Description Non-Compliance</u>	<u>Number of Violations By Code</u>
Violations Cited Non-QA			
Analytical			
A-001	8.1(g)	personnel monitoring records or true copy of same not available upon request.	1
A-002	21.6(a)1	Testing safety devices every six months.	13
A-005	21.6(a)3	Finger or wrist personnel monitoring equipment not provided.	10
A-006	8.1	Personnel monitoring records not available.	1
Cabinet			
C-002	17.7(e)	Requirements for surveys not met:	2
C-006	17.7(c)	Requirements for film badges not met.	8
C-014	17.7(f)5	Requirements for safety interlock tests not met.	2
C-021	17.7(i)3	Requirements for X-RAY ON warning light not met:	1
CB			
CB-001	22.3(i)	No Alternate QA program for CBCT	5
CB-003	22.7(a)3	CBCT No MPQCS	2
CB-005	22.3(a)	No QA Program for CBCT	1
Dental			
D-002	16.8(a)1	Survey of environs not available or not performed	7
D-015	16.3(a)6	Insufficient filtration. Measured HVL ____ mm Al at ____ kVp	1
D-016	16.3(a)7	kVp exceeds manufacturer's specifications (certified unit).	3
D-021	16.3(a)12	Visual indication of x-ray production not provided on control	1
D-022	16.3(a)13	Signal audible to operator indicating termination of exposure not provided for certified units	2
D-025	16.3(a)16	Timer accuracy exceeds manufacturer's specifications (certified units).	1
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	1
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

Inspector: ALL
Discipline: ALL

<u>Violation Code</u>	<u>Glossary Information</u>	<u>Description Non-Compliance</u>	<u>Number of Violations By Code</u>
Violations Cited Non-QA			
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
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-326	15.10(b)1	Initial survey completed and submitted within 60 days	2
Registration			
REG1	3.1 (a) and (b)	Failed to register the ionizing radiation producing machine within 30 days of acquisition.	13
TC			
TC-001	19.3(c)	x-rayed humans without a valid NJ license	2
Veterinary			
V-001	7.1(a)	veterinary unit no radiation safety survey of the environs	1
Total Violations Cited Non-QA			97
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.	3
QA-012	22.5(a)3	Medical Physicist's QC Survey not performed at required interval or all tests not performed.	1
QA-037	22.6(a)2	QC tests from Table 2 (Fluoroscopic) not performed at the required intervals.	2
QA-063	22.7(a)2	QC tests from Table 3 (CT) not performed at the required intervals.	2

Inspector: ALL
Discipline: ALL

<u>Violation Code</u>	<u>Glossary Information</u>	<u>Description Non-Compliance</u>	<u>Number of Violations By Code</u>
Violations Cited QA			
Quality Assurance			
QA-174	22.5(j)3	All images for QC tests for items 8, 11, 12 & 13 maintained for 1 year	1
Total Violations Cited QA			10
Total Violations			107

**APPENDIX A - TECHNOLOGIST EDUCATION AND LICENSING SECTION
MONTH OF APRIL 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	37	5	11	54	-	-	-	1	108	1,032	1,100
Licenses Renewed	5	-	3	11	-	-	-	-	19	458	N/A
Total Licensed	9,427	965	862	11,586	48	16	5	94	23,003	23,003	N/A
Exams Scheduled	-	-	-	-	-	-	-	-	0	2	N/A
Investigations Conducted	2	-	1	1	-	-	-	-	4	29	30
Licenses Verified	47	10	-	152	-	-	-	-	209	4,432	7,000
Expired Licenses	1	-	-	2	-	-	-	-	3	6	N/A
Unlicensed	-	-	-	1	-	-	-	-	1	13	N/A
Enforcement Documents Issued	2	-	-	12	-	-	-	-	14	76	N/A
NEAs Issued	-	-	-	-	-	-	-	-	0	0	N/A
Offer of Settlement	\$450	-	-	\$2,200	-	-	-	-	\$2,650	\$26,700	N/A
Licenses Sanctioned	-	-	-	-	-	-	-	-	0	3	N/A
Approved Educational Schools	15	2	3	26	-	-	-	-	46	46	N/A
New School Application Evaluated	-	-	-	-	-	-	-	-	0	12	8
School Inspections Conducted	-	-	-	1	-	-	-	-	1	1	4
Total Schools Reviewed	-	-	-	1	-	-	-	-	1	12	12
Curriculum Modifications Evaluated	-	-	-	4	-	-	-	-	4	20	20
Clinical Applications Approved	-	-	-	101	-	-	-	-	101	1,219	1,100

**Appendix A - Bureau of X-ray Compliance
Mammography Section
April 2022**

Type of Facility	INDUSTRY	PHYSICIAN	HOSPITAL	GOVERNMENT	TOTAL MONTH	FY TO DATE	TOTAL DUE THIS FY	
MQSA								
Facilities Inspected	0	5	2	0	7	182	233	
Machines Inspected	0	5	3	0	8	294		
FDA Violations Level 1	0	0	0	0	0	1		
FDA Violations Level 2	0	2	1	0	3	18		
Registered	0	0	0	0	0	26		
Canceled	0	0	1	0	1	40		
Stereotactic								57
Facilities Inspected	0	0	0	0	0	37		
Machines Inspected	0	0	0	0	0	38		
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		

SECTION III - BUREAU OF ENVIRONMENTAL RADIATION (BER)

A. OFFICE OF THE BUREAU CHIEF

Since our first meeting with the Society of Physics Students (SPS) at Northeastern University, members of the BER have met with SPS students from Seton Hall, Rowan, Stockton, Stevens Institute of Technology, Ramapo, and Georgian Court to discuss careers in Health Physics. This month, approval was granted for a paid summer internship at the BER. The student will work on some projects and will be able to shadow members of the Radiation Protection Program so that they get a broad understanding of health physics. The internship has been posted as an official coop position at Northeastern University.

B. RADIOACTIVE MATERIALS PROGRAM

During the month of April 2022, the Radioactive Materials Program responded to five (5) radiation incidents:

Date	Type of Incident	Description	Status
4/19/22	Trash	A load of MSW was rejected at a NJ incinerator facility. DOT SP 11406 was issued for the load to return to its origin at the DSNY in Staten Island, NY.	Closed
4/19/22	Trash	A load of MSW was rejected at a NJ incinerator facility. DOT SP 11406 was issued for the load to return to its origin in NJ, where it will be held for decay.	Pending
4/22/22	Trash	A load of MSW was rejected at a NJ incinerator facility. DOT SP 11406 was issued for the load to return to its origin at the DSNY in Staten Island, NY.	Closed
4/22/22	Other	A load of cement kiln bricks from a cement company in PA set off the radiation alarm at a NJ recycling & specialty waste facility. The load was rejected and was returned to the cement company in PA.	Closed
4/27/22	Other	The BER was notified that an asphalt roller bumped a density gauge (Troxler model 4640-B, serial #77923) at a NJ jobsite. The licensee surveyed the gauge to confirm the source was properly shielded prior to transporting it to the licensee's storage location in NJ. A sealed source leak test is pending.	Pending

Contact: Nancy Stanley (609) 984-5452

C. ROUTINE ACTIVITIES

	This Month 4/1/22-4/30/22	FY-To-Date 7/1/22-4/30/22
Number of Amendments Processed	18	224
Number of Renewals Processed	11	58
Number of Initial Applications Processed	1	12
Number of Active Licenses	558	558
Number of Terminations	1	6
Number of Reciprocity Requests Received	25	251
Number of Incidents	5	25
Number of Inspections	7	107

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. No sources on the databases were verified during March. Staff continues to maintain entry of quarterly reports from manufacturers and distributors into the generally licensed database. No reports were received reflecting quarterly transactions. Generally Licensed Device Registration Forms continue to be maintained. A total of 49 registrations are currently active.

Contact: Sarah Sanderlin (609) 984-5466

D. SUMMARY OF ENFORCEMENT – APRIL 2022

Bureau of Environmental Radiation – By Month (4/1/2022 -4/30/2022)				
Administrative Orders				
	Closed	Effective	Pending	Total
Radioactive Materials Section	0	1	2	3
Radon Section	0	1	4	5
Notice of Prosecution				
	Closed	Effective	Pending	Total
Radioactive Materials Section	0	0	0	0
Radon Section	0	1	1	2
Notice of Violations				
	Closed	Effective	Pending	Total

Radioactive Materials Section	0	0	1	1
Radon Section	0	0	2	2
Bureau of Environmental Radiation – Fiscal Year to Date 7/1/2021 - 4/30/2022				
Administrative Orders				
	Closed	Effective	Pending	Total
Radioactive Materials Section	10	1	2	13
Radon Section	0	1	4	5
Notice of Prosecution				
	Closed	Effective	Pending	Total
Radioactive Materials Section	4	1	0	5
Radon Section	0	1	1	2
Notice of Violations				
	Closed	Effective	Pending	Total
Radioactive Materials Section	8	3	1	12
Radon Section	0	0	2	2
Amount Assessed in Penalties = FY				
	Total Amount Assessed for FY22	Amount Collected from Current FY22	Amount Collected from FY21	Total Amount Collected (FY21+FY22)
Radioactive Materials Section	\$6,250.00	\$6,875.00	\$0.00	\$6,875
Radon Section	\$300.00	\$300.00	\$400.00	\$400.00
Amount Assessed in Penalties = By Month				
	Total Amount Assessed for 4/1/2022 - 4/30/2022		Amount Collected from 4/1/2022 - 4/30/2022	
Radioactive Materials Section	\$0.00		\$0.00	
Radon Section	\$300.00		\$300.00	

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

E. RADIOLOGICAL AND ENVIRONMENTAL ASSESSMENT SECTION (REAS)

Water Treatment

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 3 routine submittals 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 6 technical reports/referrals and 1 Decommissioning Financial Assurance submission. Staff worked on the following sites/projects:

- City of Bordentown Discharge Lagoons
- City of Vineland Water Utility
- FMC Site in Carteret
- Heritage Minerals site in Manchester
- Howmet site in Dover
- Ledoux License Decommissioning in Teaneck
- Maywood FUSRAP Site
- Middlesex Municipal Landfill Site
- Middlesex Sampling Plant Site
- National Lead site in Sayreville
- PSE&G Generating Station in Mercer
- Shieldalloy Metallurgical Corporation site in Newfield

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

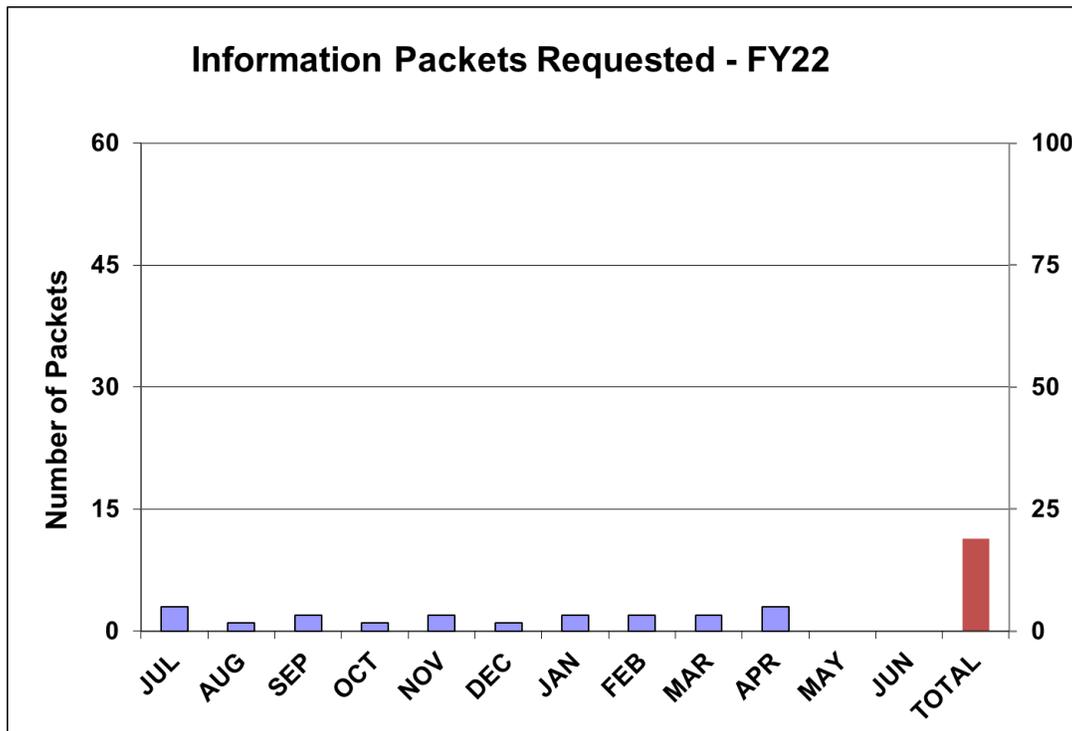
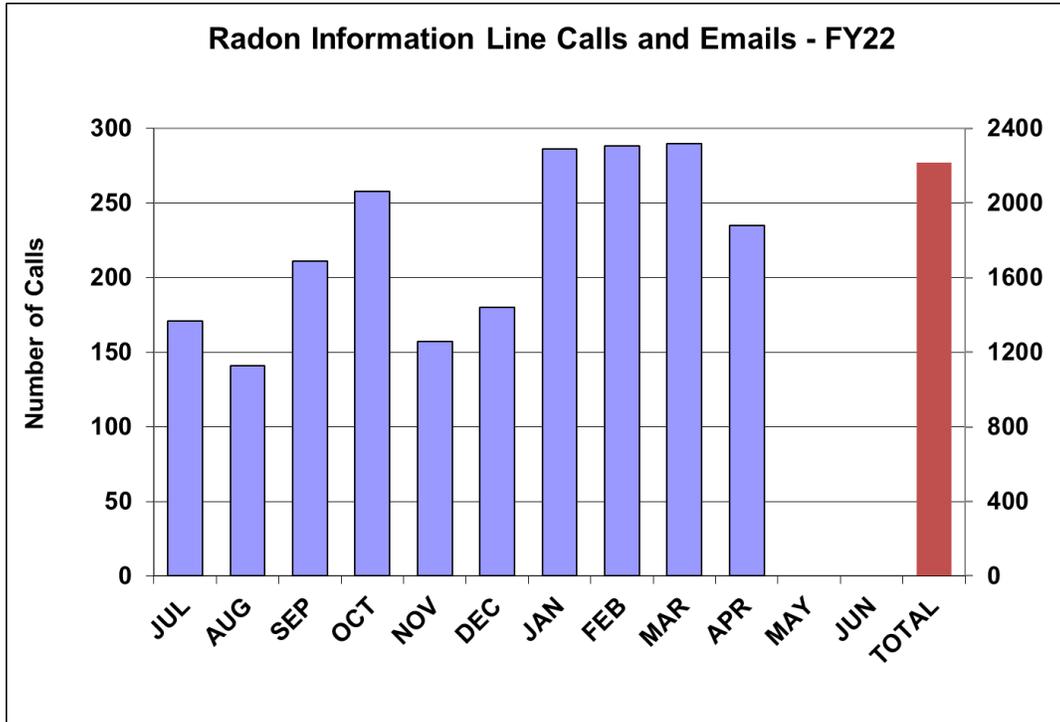
F. RADON SECTION

Radon Rule

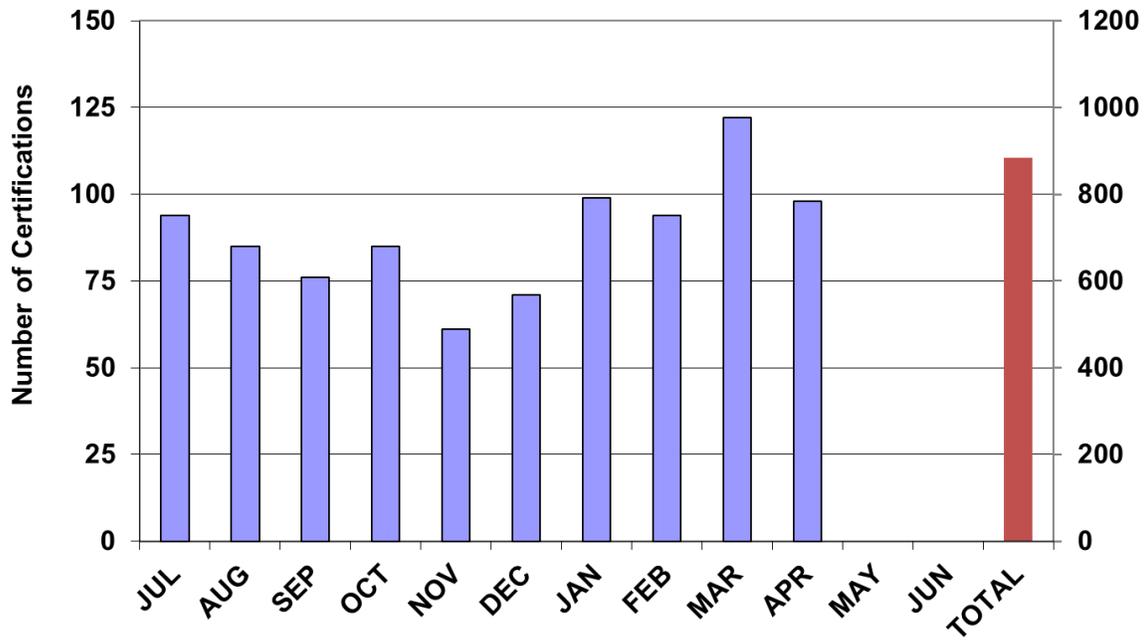
The rule adoption documents have been approved by the Governor's office and are currently at the Office of Administrative Law. Preparation for the rule implementation, database upgrades, new documents, and procedures, are currently in process.

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

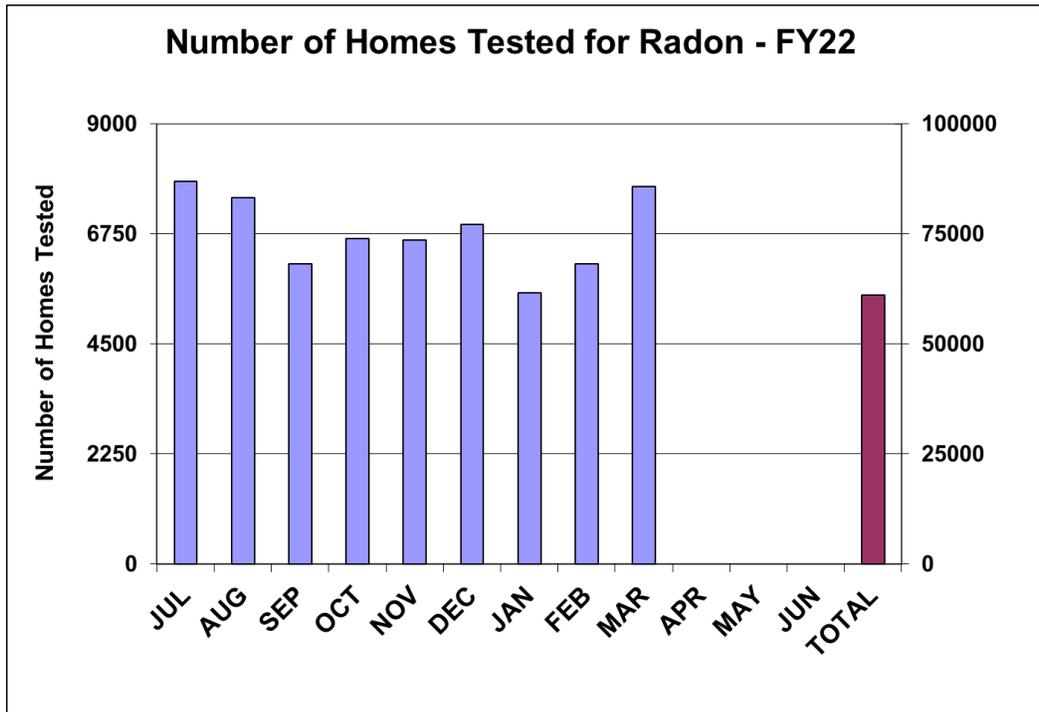
APPENDIX B: BUREAU OF ENVIRONMENTAL RADIATION SUMMARY OF STATISTICS



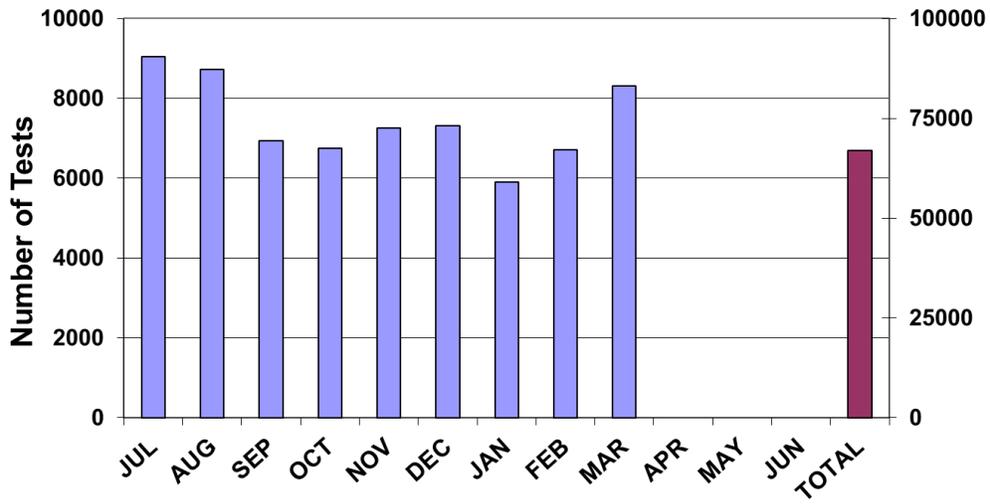
Radon Certifications Issued - FY22



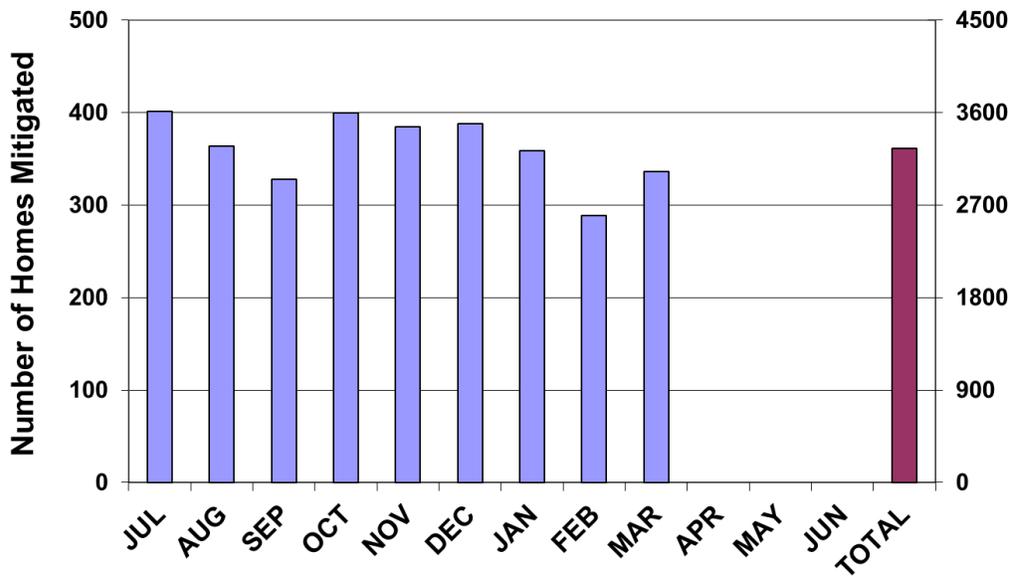
Radon testing and mitigation data is submitted to the Radon Section monthly by all certified radon businesses. This data has been collected for all building types since the implementation of the radon certification regulations in 1991. According to N.J.A.C. 7:28-27.28 (a) and (e), Radon test results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



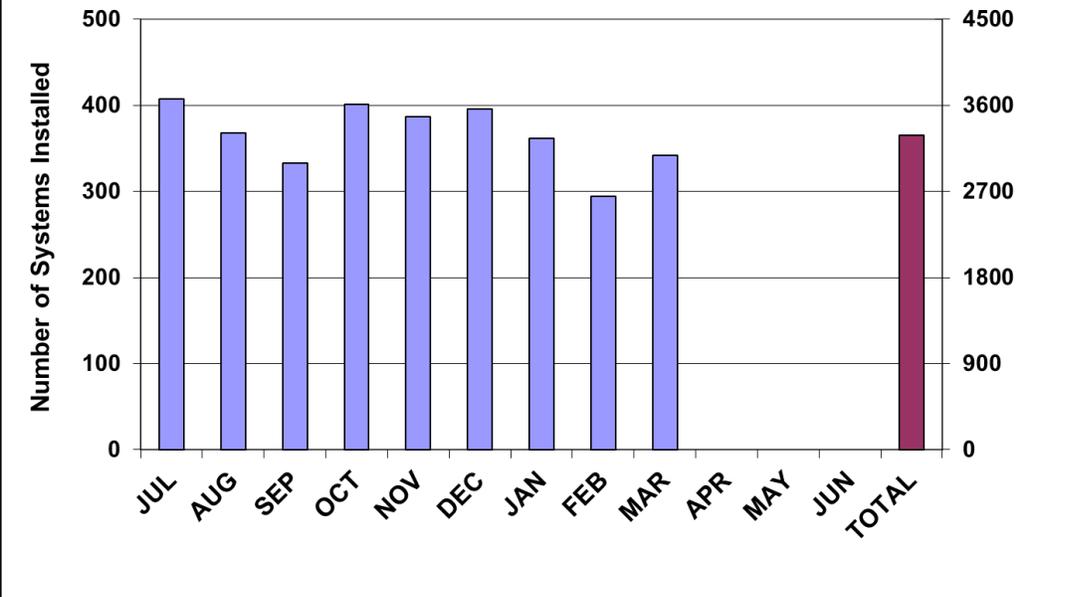
Radon Tests Conducted in All Building Types - FY22



Number of Homes Mitigated for Radon - FY22



Radon Mitigation Systems Installed in All Building Types - FY22



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 is completed. Segmentation of the control rod guide tubes are in progress. Removal of the lower core plate for segmentation is underway. Segmentation of the reactor head into smaller pieces is in progress.

After CDI withdrew the construction permit application from Lacey Township for the expansion of the Independent Spent Fuel Storage Installation (ISFSI) concrete pad, the dry runs to demonstrate the spent fuel loading/transfer operations of the dry storage system were completed in December 2020. On December 14, 2020, Oyster Creek began its final spent fuel dry cask storage campaign. The campaign consisted of loading spent nuclear fuel from the Oyster Creek spent fuel pool into multi-purpose canisters, installing the canisters into dry cask storage casks, and transporting the casks to the ISFSI. On May 21, 2021, the last dry spent fuel storage cask was placed on the ISFSI pad, which safely completed Oyster Creek's final spent fuel campaign. Oyster Creek loaded and placed a total of 33 casks on the ISFSI pad in 21 weeks, thus setting a world record by completing the fastest transfer of all spent nuclear fuel from a plant's spent fuel pool to its dry storage facility. All of Oyster Creek's spent fuel assemblies are now safely stored in robust dry storage casks at the ISFSI awaiting transport to either an interim storage or permanent disposal location.

As a result of having transferred all the spent nuclear fuel from the spent fuel pool to the ISFSI, Oyster Creek, on August 12th, moved its security classification from a nuclear security facility to an ISFSI only/industrial security facility. Since Oyster Creek is now an ISFSI only facility, entry and exit to the ISFSI will remain under NRC security regulations. Access to the general site will be done via Holtec industrial security requirements

Oyster Creek has completed moving the fourth and final Greater-Than-Class-C (GTCC) storage cask to the ISFSI. Oyster Creek's GTCC campaign is now complete. GTCC radioactive waste

is waste generated at nuclear reactors which has concentrations of certain radionuclides above the Class C limits as stated in 10 CFR 61.55. In accordance with the regulations, GTCC waste is considered a form of low-level radioactive waste that is not suitable for near-surface disposal. Therefore, it must be packaged, stored, and disposed of in a manner similar to spent nuclear fuel.

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 also has 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 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 April, with the following exceptions: Power was reduced to 98% on April 15th for a reactor control rod pattern adjustment and returned to 100% later that day. Power was reduced to 74% on April 22nd for main turbine valve testing and returned to 100 % power on April 23rd. Power was reduced to 90% on April 24th for a reactor control rod pattern adjustment and returned to 100% on April 25th. Power was reduced to 97% on April 28th for a reactor control rod pattern adjustment and returned to 100% on April 29th.

Contact: Veena Gubbi (609) 984-7457

Salem Unit 1

Salem Unit 1 ran at an average power of 26% in April. On April 9th plant operators conducted a planned manual shutdown of the unit to begin its 28th refueling outage (S1R28). The outage is scheduled to end on May 15th, with a duration of 36.4 days.

The three PSEG Nuclear units at Artificial Island are refueled every eighteen months, on an alternating schedule. During a refueling outage, each station uses the shutdown to perform maintenance, inspections, tests and modifications on equipment that cannot be accessed while the plant is operating.

The major work planned for this outage includes: defuel/refuel operations; replacement of three remaining reactor thermal shield flexure assemblies; replacement and inspection of thermal shield bolts; in-core neutron flux instrumentation maintenance; 4 KV group bus digital relay upgrade; replacement of two essential control inverters; installation of a design change package for a component cooling water heat exchanger inlet valve motor; replacement of mechanical

seals on two reactor coolant pumps; and replacement of inlet water trash racks on selected condenser circulating water pumps.

Removal of safety-related mechanical and electrical equipment from service for refueling maintenance and modification activities will be done in accordance with the approved refueling outage schedule. The schedule incorporates the requirements of the operating license and reflects the risk assessment as determined by PSEG Nuclear's Probabilistic Risk Assessment Program.

Contact: Jacob Fakory (609) 984-7458

Salem Unit 2

Salem Unit 2 ran at essentially full power throughout April.

Contact: Jacob Fakory (609) 984-7458

NRC Performs Wind Port Inspection at Hope Creek

During the weeks of April 11th and April 18th, the NRC conducted a virtual inspection concerning an Unresolved Issue (URI) arising from its review of the 10 CFR 50.59 report performed by PSEG addressing the building of the New Jersey Wind Port on the property north of Hope Creek at Artificial Island. The purpose of the inspection was to discuss the safety evaluations and associated hazards analysis. The results of the inspection will be included in the NRC Second Quarter 2022 Integrated Inspection Report for Hope Creek.

One (1) NES Engineer and the NES Supervisor followed this inspection virtually.

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

NRC Performs Inspection of Salem Unit 1's Inservice Inspection (ISI) Program

On April 11th to 29th, the NRC performed an inspection of the in-service inspection (ISI) activities being performed by PSEG during Salem Unit 1's twenty-eighth refueling outage (S1R28). This inspection was performed in accordance with NRC Inspection Procedure 71111.08, "Inservice Inspection Activities". The inspection assessed the effectiveness of the licensee's program for monitoring degradation of the reactor coolant system boundary, risk-significant piping system boundaries, and the containment boundary. The results of the inspection will be included in the NRC Second Quarter 2022 Integrated Inspection Report for Salem Unit 1. One (1) NES Engineer observed the inspection onsite.

Contact: Jacob Fakory (609) 984-7458

NRC Teleconference on Recommendations for the COVID-19 Lessons Learned Working Group

On April 6th, the NRC held a public meeting to obtain information and receive perspectives from industry and external stakeholders related to the development of the recommendations and conclusions for the NRC's COVID-19 Lessons Learned Working Group. The NRC team is seeking additional input and comments in areas related to hybrid inspections, access to license information resources, use of third-party platform for document sharing, and long-term monitoring of impacts from activities during the public health emergency. After each topic mentioned above, industry comments and concerns were addressed by the NRC staff.

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

NTSF Planning Committee Meeting

On April 13th, the NTSF Planning Committee held a virtual meeting. The Northeast (NE) Task Force will be the host of the 2022 Annual NTSF Meeting scheduled to be held in Philadelphia in June 2022. Agenda deadline, registration, and moderators/coordinators for the 2022 meeting were discussed by the representative from the NE Task Force. Preliminary discussions for the 2023 annual meeting continued with a review of proposed cities for the 2023 meeting location. The Midwestern Radioactive Materials Transportation Committee (MRMTC) will host the 2023 meeting.

Contact: Jerry Humphreys (609) 984-7469

Vermont Yankee Nuclear Decommissioning Citizens Advisory Panel's (NDCAP) Federal Nuclear Waste Policy Committee Holds Public Meeting

On December 7th, 2020, the NDCAP voted to create a Federal Nuclear Waste Policy Committee to take a deeper look at current and potential policies on nuclear waste (spent nuclear fuel) and to provide information to the NDCAP concerning the spent fuel storage and disposal issues in the United States. The Committee will develop recommendations on the nuclear waste policies for the full panel to consider.

On March 28th, the Federal Nuclear Waste Policy Committee held a virtual public meeting. At this meeting, the panel members discussed DOE's consent-based siting. A representative from Deep Isolation, a California based startup company, provided information on Deep Isolation's concept of placing spent nuclear waste canisters deep into horizontal drillholes to safely store the nuclear waste. According to Deep Isolation, horizontal drilling technology is highly developed and can be implemented at a relatively low cost. Following the presentation, questions and concerns from the panel members were addressed by the presenter.

Contact: Veena Gubbi (609) 984-7457

Pilgrim Nuclear Power Station Nuclear Decommissioning Citizens Advisory Panel (NDCAP) Holds Public Meeting

On March 28th, the Pilgrim NDCAP held a virtual public meeting. The NDCAP advises the Massachusetts Governor and educates citizens across the state on activities related to the shut down and decommissioning of the Pilgrim Nuclear Power Station. The NDCAP holds public meetings at least four times per year.

A representative of Holtec provided an update on the current decommissioning activities at the Pilgrim site (fuel move campaign; building demolition; reactor segmentation; regulatory affairs update; liquid radiological waste disposal; NRC chairman Chris Hanson’s visit; and transition from CDI to HDI). Holtec stated that it has no scheduled radiological waste discharge for 2022 at this time. A representative of the Commonwealth’s Interagency Working Group (IWG) provided an update on the IWG activities and an update on the decommissioning activities. A representative from the NRC provided an overview of nuclear plant effluent discharges; discharge requirements; radiation doses; and NRC inspection activities. Following the presentations, questions and concerns from the panel members were addressed by the presenters. After the panel question and answer session, questions, and concerns from the members of the public were heard.

Contact: Veena Gubbi (609) 984-7457

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 April 2022:

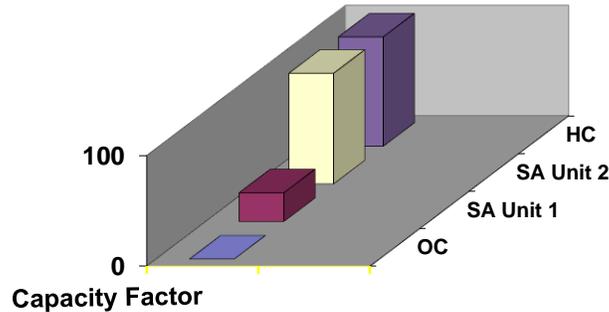
Spent Fuel and Nuclear Waste	Highway Route Control Quantity Shipments	Radionuclides of Concern
0	1	0

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

BUREAU OF NUCLEAR ENGINEERING

Plant Operating Performance – 1

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



STATISTICAL INFORMATION

EMERGENCY AND NON-EMERGENCY EVENT NOTIFICATIONS FOR APRIL 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.

	APRIL 2022		JAN - APRIL 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 75 samples during the month of April 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 APRIL 2022

SAMPLE MEDIUM	NUMBER OF SAMPLES
AIR FILTER	28
AIR IODINE	12
AIR PARTICULATE COMPOSITE	13
MILK (Cow)	3
SURFACE WATER	10
POTABLE WELL WATER	9
TOTAL SAMPLES	75

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

During the month of April 2022, seventeen (17) groundwater monitoring well samples were collected and shipped to the BNE's contract laboratory, GEL Laboratories, for radiological analysis.

NEES staff reviewed PSEG's Site-wide Tritium Management Program Quarterly Data Report for the fourth quarter of 2021. Trending graphs and tables were prepared for tritium results from seventy-nine (79) monitoring wells, monthly Seismic Gap drain tritium and gamma results for Salem Units 1 & 2, and weekly Spent Fuel Pool tritium results for Salem Units 1 & 2.

Contacts: Jay Vouglitois (609) 984-7514 or Karen Tuccillo (609) 984-7443

Quarterly Thermoluminescent Dosimeter (TLD) Exchange

On April 12, 2022, and April 13, 2022, technicians from the BNE's subcontractor retrieved 1st quarter 2022 TLD badges and deployed 2nd 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

Social Media Strategy and Practice for Radiation Emergencies

A staff member participated in a virtual training course on "Social Media Strategy and Practice for Radiation Emergencies" on April 19, 2022, presented by www.summitet.com and sponsored by the U.S. Department of Energy's Office of Nuclear Incident Policy and Cooperation. The objectives of the course were to (1) discuss strategies for incorporating social media and new technology into the Information Management Cycle; (2) understand the importance of social listening, rumor management and monitoring social media during a radiation emergency; and (3) address challenges for implementing, sustaining, and effectively managing social media during a radiation emergency.

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.

The March 2022 gaseous and liquid effluent release data for the Salem and Hope Creek nuclear plants have been included in this report. In addition, the March 2022 liquid effluent data from Oyster Creek also are included. 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 March 2022 were not available at the drafting of this report. However, the data shall be included in the May 2022 monthly report available in early June 2022.

**PSEG Nuclear
Radioactive Effluent Releases¹
Nuclear Environmental Engineering Section
For the Period of 03-01-22 to 03-31-22**

**Hope Creek
Gaseous
Effluents**

<u>Effluent</u>		
Fission Gases	0	Ci
Iodines	0.00058	Ci
Particulates	0.00003	Ci
Tritium	32.5	Ci

**Hope Creek
Liquid Effluents**

<u>Effluent</u>		
Fission Products	0.00017	Ci
Tritium	2.07	Ci

**Salem Unit 1
Gaseous
Effluents**

<u>Effluent</u>		
Fission Gases	0.0194	Ci
Iodines	0	Ci
Particulates	0	Ci
Tritium	26.1	Ci

**Salem Unit 1
Liquid Effluents**

<u>Effluent</u>		
Fission Products	0.00345	Ci
Tritium	65.1	Ci

**Salem Unit 2
Gaseous
Effluents**

<u>Effluent</u>		
Fission Gases	0.0117	Ci
Iodines	0	Ci
Particulates	0	Ci
Tritium	12.5	Ci

**Salem Unit 2
Liquid Effluents**

<u>Effluent</u>		
Fission Products	0.00959	Ci
Tritium	45.9	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
Nuclear Environmental Engineering Section
For the Period of 03-01-22 to 03-31-22**

Oyster Creek Liquid Effluents

<u>Effluent</u>		
Fission Products	0.0000	Ci
Tritium	0.212	Ci

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

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 April:

Artificial Island CREST System Ambient Radiation Levels April 2022 Derived From One Minute Averages UNITS = mR/Hr				
AI1	AI2	AI3	AI4	AI5
.0062	.0063	.0059	.0062	.0065
AI6	AI7	AI8	AI9	AI10
.0064	.0055	.0054	.0072	.0052

Oyster Creek CREST System Ambient Radiation Levels April 2022 Derived From One Minute Averages UNITS = mR/Hr			
OC1	OC2	OC3	OC4
.0038	.0054	.0058	.0048
OC5	OC6	OC7	OC8
.0053	.0056	.0048	.0050
OC9	OC10	OC11	OC12
.0058	.0058	.0053	.0054
OC13	OC14	OC15	OC16
.0048	.0054	.0051	.0053

**** indicates insufficient valid data

Contact: Ann Pfaff (609) 984-7451

Licensee EP Meeting

On April 4, 2022, NEPS staff held their monthly State and Licensee emergency preparedness meeting with PSEG and NJOEM on Microsoft Teams. Discussion topics included: exercise schedule for 2022; March 29th exercise feedback; preparations for the May 10th FEMA/NRC graded exercise; upcoming siren test; review of PSEG annual preparedness calendar.

Contact: Ann Pfaff (609) 984-7451

Post Exercise Debrief

On March 29, 2022, Radiation Protection Element (RPE) 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. This was the first in-person, full-scale exercise in more than two years and was geared to prepare participants for the FEMA/NRC evaluation on May 10, 2022. On April 5th, RPE players gathered for a post-exercise debrief. They discussed what things went well, needed improvements and suggestions of how to do things better. The discussions between facilities are especially valuable to refine interactions and communications for future responses. Also, integration of new tools such as Microsoft Teams and the role they will play was considered and will aid in planning for May 10th.

Contact: Ann Pfaff (609) 984-7451

NREP

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.

Contact: Ann Pfaff (609) 984-7451

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.

Contact: Ann Pfaff (609) 984-7451

Training in Donning and Doffing

On April 27, 2022, NEPS staff worked with Bureau of Emergency Response for demonstration of donning and doffing of personal protective equipment (PPE) in advance of the May 10th nuclear emergency response exercise. Best practices were discussed, recommendations for availability of larger sized PPE and protocols for decontamination also were considered.

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National Guard Training

On April 28, 2022, NEPS staff provided field monitoring team training for the 21st Civil Support Team (CST). The training focused on field team operations as the National Guard will form one of the three field monitoring teams for the FEMA evaluated May 10th exercise. The training reviewed Standard Operating Procedures, use of new Teletrix equipment for radiation detection during exercises and implementation of CBRNResponder app for uploading field readings. 21st CST members also reviewed use of the BNE's Nuclear Emergency Response vehicles and the radiation detection equipment installed to take real-time measurements.

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Meeting with FEMA Region 2

On April 29, 2022, Assistant Director Mulligan and Manager Pfaff met with FEMA Region 2 Technological Hazards Branch, Region Assistance Committee Chair and her staff, NJ OEM and PSEG Nuclear to finalize plans and scenario details for the May 10, 2022, nuclear emergency response exercise. Pre and post exercise meetings with participants and the public were discussed, as well as evaluator assignments, and general logistics.

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Evaluated Exercise Preparations

During April 2022, NEPS staff covered a myriad of preparations in advance of the May 10th FEMA evaluated exercise. A full review and revision of SOPs was completed. All updated procedures were made available on the shared drive, given to responders and included in a current revision of the State Radiation Assessment Officer's electronic manual. Nuclear emergency response vans and all their highly sensitive radiation detection equipment were ensured to be calibrated and fully operational. Handheld detectors also were ensured to be operational and within calibration guidelines. Training sessions were prepared for all participants. Issues with the new Teletrix simulation probe packs were diligently diagnosed and resolved with the vendor. Scenario software was reviewed and loaded on appropriate computers. Emergency facilities were inspected and readied for the exercise. This was a significant undertaking since the section was down two staff members. The two staff members handling the preparations had never participated in a full scale in-person FEMA evaluated exercise since joining the Department subsequent to the last one.

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