

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

**JANUARY 1 THROUGH JANUARY 31, 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 January 4, 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.

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.

<b>Machine Source Fees Invoiced and Collected for FY 2022</b>					
Monthly Invoiced	Monthly Collected	Fiscal YTD Invoiced	Fiscal YTD Collected	Fiscal YTD Adjustments	Percent Collected
\$26,006.00	\$88,433.00	\$3,073,842.00	\$2,956,310.00	\$3,519.00	96%

#### **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%	0	0	0	0	0
G-L	N/A	51%	76%	88%	96%	98%	99%	0	0	0	0	0
M-R	N/A	N/A	50%	74%	87%	95%	97%	0	0	0	0	0
S-Z	N/A	N/A	N/A	34%	73%	86%	94%	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, 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
<b>New Facilities</b>	13	14	16	23	16	20	22	0	0	0	0	0	124
<b>Terminated Facilities</b>	25	18	26	39	29	38	23	0	0	0	0	0	198
<b>Net Change (Facilities)</b>	-12	-4	-10	-16	-13	-18	-1	0	0	0	0	0	-74
<b>New Registrations</b>	164	188	144	163	171	157	176	0	0	0	0	0	1163
<b>Stored Registrations</b>	62	34	37	53	59	79	47	0	0	0	0	0	371
<b>Disposed registrations</b>	84	88	82	95	85	85	79	0	0	0	0	0	598
<b>Net Change (Machines)</b>	18	66	25	15	27	-7	50	0	0	0	0	0	194

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 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 January 2022, IQ evaluations were performed on 29 x-ray units with the following results:

- 22 units (76%) had excellent image quality scores.
- 7 units (24%) had good image quality scores.
- 0 units (0%) had fair image quality scores.
- 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.

<b>Radiographic ESE Ranges in Milliroentgens (mR)</b>				
<b>Exam</b>	<b>Low</b>	<b>Average</b>	<b>High</b>	<b>Extremely High</b>
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 January 2022, ESE measurements were calculated on twenty-seven x-ray units that performed lumbo-sacral spine x-rays. Zero units (0%) had extremely high ESE measurements.
- In January 2022, ESE measurements were calculated on one x-ray unit that performed chest x-rays. Zero units (0%) had extremely high ESE measurements.
- In January 2022, ESE measurements were calculated on one x-ray unit 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.

<b>Dental ESE Ranges Measured in Milliroentgens (mR)</b>				
<b>Image Receptor</b>	<b>Low</b>	<b>Average</b>	<b>High</b>	<b>Extremely High</b>
Digital (DR)	0 to 20	21 to 110	111 to 160	≥161
CR (PSP)	0 to 35	36 to 170	171 to 215	≥216
<b>Film Speed</b>				
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 January 2022, ESE measurements were calculated on fifty-six dental x-ray units that used DR digital imaging. Two units (4%) were measured as having extremely high ESE.
- In January 2022, ESE measurements were calculated on two dental x-ray units that used CR (PSP) digital imaging. Zero units (0%) were measured as having extremely high ESE.
- In January 2022, ESE measurements were calculated on fifteen dental x-ray units that used D speed film. Two units (13%) were measured as having extremely high ESE.
- In January 2022, ESE measurements were calculated on five 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 January 2022, 23 amalgam questionnaires were collected. The total dental amalgam questionnaires collected for FY2022 is 361.

### **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 January. Statistical information follows in

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

**Medical Physicist and Medical Assistant Certification Renewal Update:**

On December 31, 2021, 318 medical physicist and medical physicist assistant certifications expired. Physicists and Assistants had the option to either renew on-line using the Department’s Business Portal or mail the invoice to the Department of Treasury. Processing time via on-line renewal is immediate and a license is issued within three days. Mailing a renewal may take up to two weeks to process.

As of January 31, 2022, 274 certifications have been renewed (86%). Sixty-six percent were renewed on-line. A current certification is needed to perform the annual medical physicist QC surveys that are required under N.J.A.C. 7:28-22.

**Annual School Fee Invoicing:**

On October 26, 2021, twenty-five schools of dental radiologic technology were invoiced for their annual school fee. The total amount invoiced was \$10,000. Payment was due January 3, 2022. On January 21, 2022, two schools did not pay, and second notices were generated and mailed.

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.

<b>Technologist Education &amp; Licensing Section FY 2022 Invoiced &amp; Collected</b>				
<b>Invoice Type</b>	<b>Monthly Invoiced</b>	<b>Monthly Collected</b>	<b>Fiscal YTD Invoiced</b>	<b>Fiscal YTD Collected</b>
<b>Examinations</b>	\$0	\$0	\$160	\$160
<b>Initial Licenses</b>	\$3,900	\$4,500	\$48,300	\$46,800
<b>Renewal Licenses</b>	\$1,440	\$3,960	\$10,260	\$32,670
<b>Totals</b>	\$5,340	\$8,460	\$58,720	\$79,630

Contact: Al Orlandi (609) 984-5890

**E. MAMMOGRAPHY SECTION**

**Stereotactic Facilities Inspected**

The Mammography Section inspected 7 facilities with a stereotactic/needle localization breast biopsy unit during the month of January. A total of 23 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 27 facilities in January. A total of 127 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:

- One of five random reports reviewed did not contain the acceptable assessment category.
- Failed to produce documents verifying that the interpreting physician met the continuing experience requirement of having interpreted or multiread 960 mammograms in 24 months.
- The compression QC is not adequate because the QC tests were not done at the required frequency.

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 January 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.

<b>Inspections and Enforcement Documents Issued</b>
<b>January 2022</b>

<b>Bureau of X-Ray Compliance</b>
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	<b>Month</b>	<b>YTD</b>
<b>Compliance Inspections entered into NJEMS</b>	22	152
<b>Dental/CBCT Inspections entered into NJEMS</b>	18	321

<b>Notice of Violations</b>	<b>Closed</b>	<b>Effective</b>	<b>Pending</b>	<b>Total</b>	<b>YTD</b>
	1	1	4	6	75

<b>Administrative Orders</b>	<b>Closed</b>	<b>Effective</b>	<b>Pending</b>	<b>Total</b>	<b>YTD</b>
	0	0	8	8	92

<b>Notice of Prosecutions</b>	<b>Closed</b>	<b>Effective</b>	<b>Pending</b>	<b>Total</b>	<b>YTD</b>
	0	0	8	8	87

<b>Amount Assessed in Penalties</b>	<b>Amount Assessed for Month</b>	<b>Total amount assessed for FY</b>	<b>Amount Collected from current FY</b>	<b>Amount Collected from previous FY</b>	<b>Total amount collected</b>
	\$3,700.00	\$38,200.00	\$35,850.00	\$19,450.00	\$55,300.00

Contact: Ramona Chambus (609) 984-5370

Inspector: ALL  
Discipline: ALL

**Number of Inspections Performed**

<u>Inspection Type</u>	<u>Inspection Description</u>	<u>Facilities Inspected</u>	<u>Machines Inspected</u>	<u>Machines Audited</u>	<u>Machines Uninspected</u>
1	ROUTINE INSPECTION	22	66		14
9	HAND DELIVERY	14			52
11	INVESTIGATION	12			
12	STEREOTACTIC INSPECTION	7	7		
15	QA INSPECTION ROUTINE LEVEL 1	37	29	33	1
28	DENTAL CBCT INSPECTION	4	17		3
<b>Total On-Site Inspections:</b>		<b>96</b>	<b>119</b>	<b>33</b>	<b>70</b>
6	OFFICE VIOLATION RESPONSE REVIEW	1		1	
18	OFFICE QA VIOLATION RESPONSE REVIEW	8		10	
30	DENTAL CBCT OFFICE REVIEW INSPECTION	3		3	
<b>Total Office Inspections:</b>		<b>12</b>		<b>14</b>	<b>0</b>

**Number of Enforcement Documents Issued**

NOV	7
AO	7
NOP	6
Amount of Penalties	\$4,600

Inspector: ALL  
Discipline: ALL

<u>Violation Code</u>	<u>Glossary Information</u>	<u>Description Non-Compliance</u>	<u>Number of Violations By Code</u>
<b>Violations Cited Non-QA</b>			
<b>CB</b>			
CB-001	22.3(i)	No Alternate QA program for CBCT	<b>3</b>
CB-003	22.7(a)3	CBCT No MPQCS	<b>2</b>
<b>Dental</b>			
D-002	16.8(a)1	Survey of environs not available or not performed	<b>1</b>
D-016	16.3(a)7	kVp exceeds manufacturer's specifications (certified unit).	<b>2</b>
D-025	16.3(a)16	Timer accuracy exceeds manufacturer's specifications (certified units).	<b>1</b>
<b>G</b>			
G-007	2.5(c)	device not working properly	<b>1</b>
<b>Registration</b>			
REG1	3.1 (a) and (b)	Failed to register the ionizing radiation producing machine within 30 days of acquisition.	<b>1</b>
<b>Total Violations Cited Non-QA</b>			<b><u>11</u></b>
<b>Violations Cited QA</b>			
<b>Quality Assurance</b>			
QA-011	22.5(a)2	QC tests from Table 1 (Radiographic) not performed at the required intervals.	<b>4</b>
QA-012	22.5(a)3	Medical Physicist's QC Survey not performed at required interval or all tests not performed.	<b>1</b>
QA-037	22.6(a)2	QC tests from Table 2 (Fluoroscopic) not performed at the required intervals.	<b>3</b>
QA-038	22.6(a)3	No Med Phys QC Survey for Fluoro	<b>2</b>
QA-050	22.6(f)	Failed to immediately initiate steps to bring fluoroscopic equipment into	<b>1</b>
QA-174	22.5(j)3	All images for QC tests for items 8, 11, 12 & 13 maintained for 1 year	<b>1</b>
<b>Total Violations Cited QA</b>			<b><u>12</u></b>
<b>Total Violations</b>			<b><u>23</u></b>

**APPENDIX A - TECHNOLOGIST EDUCATION AND LICENSING SECTION**

**MONTH OF JANUARY 2022**

<b>License Category</b>	<b>Diagnostic Rad</b>	<b>Nuc Med</b>	<b>Rad Therapy</b>	<b>Dental Rad</b>	<b>Chest Rad</b>	<b>Podiatric Rad</b>	<b>Orthopedic Rad</b>	<b>Fusion Imaging CT</b>	<b>Monthly Total</b>	<b>FY to Date</b>	<b>FY Projected</b>
Initial Licenses Processed	28	2	1	33	-	-	-	1	65	770	1,100
Licenses Renewed	12	-	1	24	-	-	-	1	38	377	N/A
Total Licensed	9,314	950	842	11,377	48	16	5	90	22,642	22,642	N/A
Exams Scheduled	-	-	-	-	-	-	-	-	0	1	N/A
Investigations Conducted	-	-	-	-	-	-	-	-	0	18	30
Licenses Verified	113	16	-	295	-	-	-	-	424	3,703	7,000
Expired Licenses	-	-	-	-	-	-	-	-	0	1	N/A
Unlicensed	-	-	-	-	-	-	-	-	0	7	N/A
Enforcement Documents Issued	-	-	-	-	-	-	-	-	0	36	N/A
NEAs Issued	-	-	-	-	-	-	-	-	0	0	N/A
Offer of Settlement	-	-	-	-	-	-	-	-	0	\$9,750	N/A
Licenses Sanctioned	-	-	-	-	-	-	-	-	0	3	N/A
Approved Educational Schools	15	2	3	25	-	-	-	-	45	45	N/A
New School Application Evaluated	-	-	-	1	-	-	-	-	1	10	8
School Inspections Conducted	-	-	-	-	-	-	-	-	0	0	4
Total Schools Reviewed	-	-	-	1	-	-	-	-	1	10	12
Curriculum Modifications Evaluated	-	-	-	1	-	-	-	-	1	12	20
Clinical Applications Approved	-	-	-	62	-	-	-	-	62	976	1,100

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

Type of Facility	INDUSTRY	PHYSICIAN	HOSPITAL	GOVERNMENT	TOTAL MONTH	FY TO DATE	TOTAL DUE THIS FY
<b>MQSA</b>							
Facilities Inspected	0	22	5	0	27	127	<b>233</b>
Machines Inspected	0	34	13	0	47	218	
FDA Violations Level 1	0	0	0	0	0	0	
FDA Violations Level 2	0	1	2	0	3	13	
Registered	0	1	0	0	1	14	
Canceled	0	4	0	0	4	25	
<b>Stereotactic</b>							
Facilities Inspected	0	3	4	0	7	23	<b>57</b>
Machines Inspected	0	3	4	0	7	23	
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	5	
Canceled	0	1	0	0	1	2	

## SECTION III - BUREAU OF ENVIRONMENTAL RADIATION (BER)

### A. OFFICE OF THE BUREAU CHIEF

#### National Radon Action Month

Governor Murphy issued a proclamation declaring January to be Radon Action Month (RAM). The Radon Section partnered with the Department of Health (DOH) to make a social media push to raise awareness. Staff created an educational video regarding radon that was posted to DEP’s Facebook, Twitter, and Instagram accounts and was also linked by both the CDC and DOH. All combined, there have been over 650 likes, shares, comments, and clicks on the posted content. The radon section’s main homepage has also been updated to reflect RAM. Staff also gave a presentation to a lung cancer screening navigator group via zoom and partnered with the U.S. Environmental Protection Agency to conduct a webinar to educate residents.

Contact: Brian Giancola (609) 984-5434

### B. RADIOACTIVE MATERIALS PROGRAM

During the month of January 2022, the Radioactive Materials Program responded to one (1) radiation incident:

Date	Type of Incident	Description	Status
2/7/22	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 a northern NJ hospital where it will decay in place in its compactor dumpster.	Pending

Contact: Nancy Stanley (609) 984-5452

### C. ROUTINE ACTIVITIES

	This Month 1/1/22-1/31/22	FY-To-Date 7/1/22-1/31/22
Number of Amendments Processed	24	144
Number of Renewals Processed	7	30
Number of Initial Applications Processed	1	8
Number of Active Licenses	556	556
Number of Terminations	0	4
Number of Reciprocity Requests Received	18	185
Number of Incidents	1	16
Number of Inspections	9	82

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. Six sources on the databases were verified during January.

Staff continues to maintain entry of quarterly reports from manufacturers and distributors into the generally licensed database. 17 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 – JANUARY 2022**

<b>Bureau of Environmental Radiation – By Month</b>				
<b>(1/1/2022 - 1/31/2022)</b>				
<b>Administrative Orders</b>				
	Closed	Effective	Pending	Total
Radioactive Materials Section	0	2	4	6
Radon Section	0	0	4	4
<b>Notice of Prosecution</b>				
	Closed	Effective	Pending	Total
Radioactive Materials Section	0	1	2	3
Radon Section	0	0	1	1
<b>Notice of Violations</b>				
	Closed	Effective	Pending	Total
Radioactive Materials Section	0	1	2	3
Radon Section	0	0	2	2
<b>Bureau of Environmental Radiation – Fiscal Year to Date</b>				
<b>7/1/2021 - 1/31/2022</b>				
<b>Administrative Orders</b>				
	Closed	Effective	Pending	Total
Radioactive Materials Section	3	2	4	9
Radon Section	0	0	4	4
<b>Notice of Prosecution</b>				
	Closed	Effective	Pending	Total

Radioactive Materials Section	2	1	2	5
Radon Section	0	0	1	1
<b>Notice of Violations</b>				
	Closed	Effective	Pending	Total
Radioactive Materials Section	5	5	2	12
Radon Section	0	0	2	2
<b>Amount Assessed in Penalties = FY</b>				
	Total Amount Assessed for FY22	Amount Collected from Current FY22	Amount Collected from FY21	Total Amount Collected (FY21+FY22)
Radioactive Materials Section	\$3,750.00	\$625.00	\$0.00	\$625.00
Radon Section	\$0.00	\$0.00	\$400.00	\$400.00
<b>Amount Assessed in Penalties = By Month</b>				
	Total Amount Assessed for 1/1/2022 - 1/31/2022		Amount Collected from 1/1/2022 - 1/31/2022	
Radioactive Materials Section	\$1,875.00		\$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)**

### **Water Treatment**

There are currently 23 active specific licenses for water treatment systems. Staff completed review of 7 routine submittals of dosimetry/discharge/resin analysis data per specific license conditions.

There are currently 17 active general license registrations for water treatment systems (12 radium systems and 5 uranium systems). Annual registration forms have been mailed to all general licensees. All forms have been returned.

Contact: Joseph Power (609) 777-4252

### **Decommissioning and Contaminated Site Reviews**

Staff completed review of 5 technical reports/referrals and 1 Decommissioning Financial Assurance submission. A site visit was conducted at Heritage Minerals. Staff worked on the following sites/projects:

- City of Bordentown Discharge Lagoons
- EPEC Site in Fords
- Heritage Minerals site in Manchester
- Howmet site in Dover
- Maywood FUSRAP Site
- Middlesex Municipal Landfill Site
- National Lead site in Sayreville
- Oyster Creek Nuclear Generating Station in Lacey & Ocean Twps
- Shieldalloy Metallurgical Corporation site in Newfield
- Welsbach Superfund Site

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

### **Fuel Cycle & Materials Decommissioning Inspection Program Working Group (WG)**

Since February of 2021, BER staff have participated in an NRC Working Group whose goal is to update NRC Inspection Manual Chapter (IMC) 2602 and its associated Inspection Procedures (IPs) to be more risk-informed and performance-based. At this time, the group has completed drafts of IMC 2602 and eight IPs. The group is seeking concurrence with its steering committee members that they are ready for stakeholder review. After stakeholder review, the documents will be revised as necessary and then put out for public comments. Ultimately, the revisions will be reviewed and incorporated by BER into their own inspection procedures, which largely incorporate NRC's procedures by reference.

## **F. RADON SECTION**

### **Radon Rule**

The rule adoption document was completed and sent to the Governor's office for review. Work continues on preparation for the rule implementation, including database upgrades and all new documents and procedures.

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

### **Electrets**

The two electret readers were sent for calibration. They were returned quickly by the manufacturer. Now the proficiency testing will be completed at Bowser Morner. That process will begin as soon as possible. When proficiency testing is completed, post-mitigation testing and confirmatory testing can begin again.

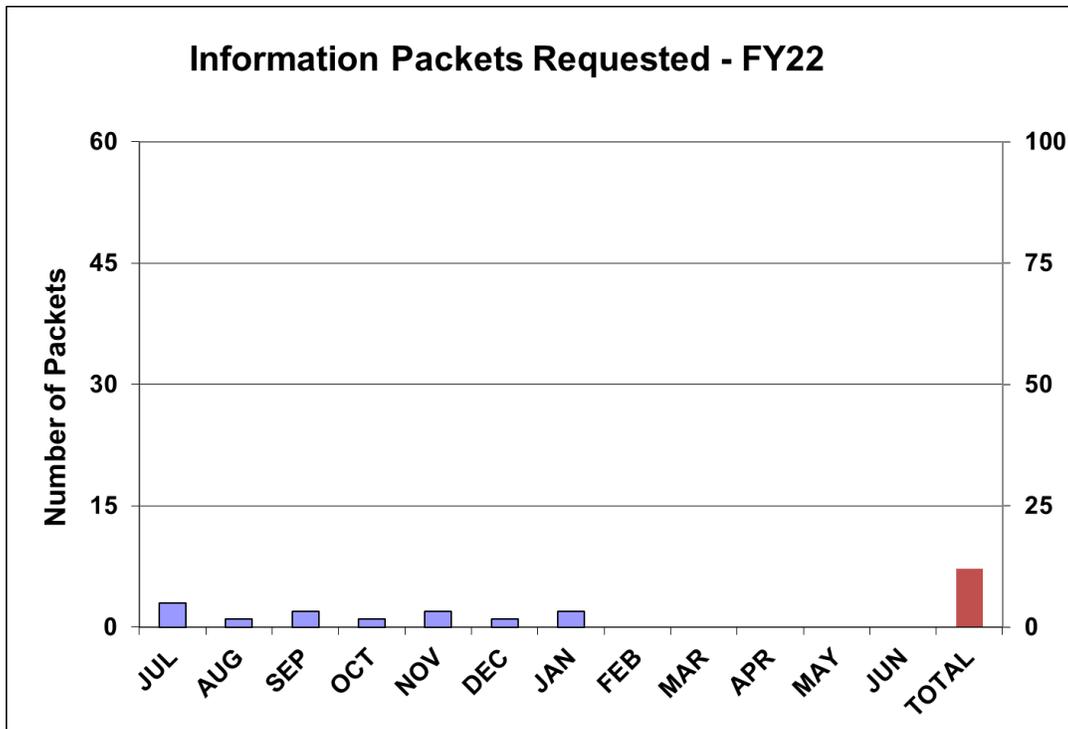
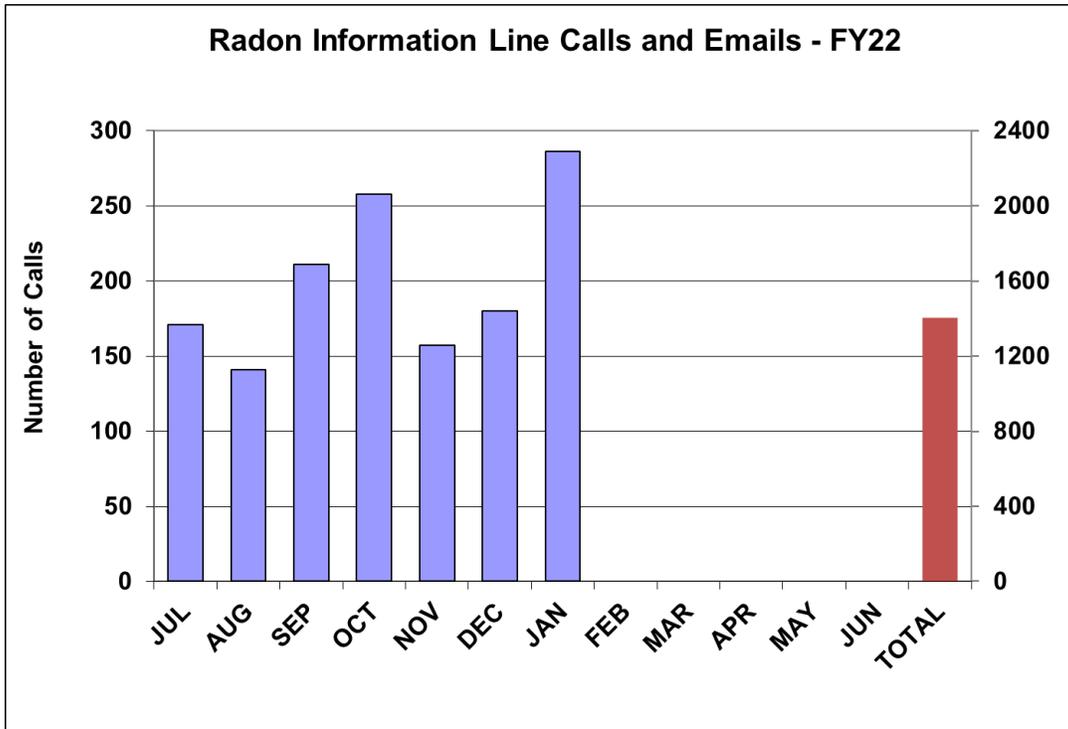
Contact: Charles Renaud (609) 984-5423

**Measurement and Mitigation Radon Certifications**

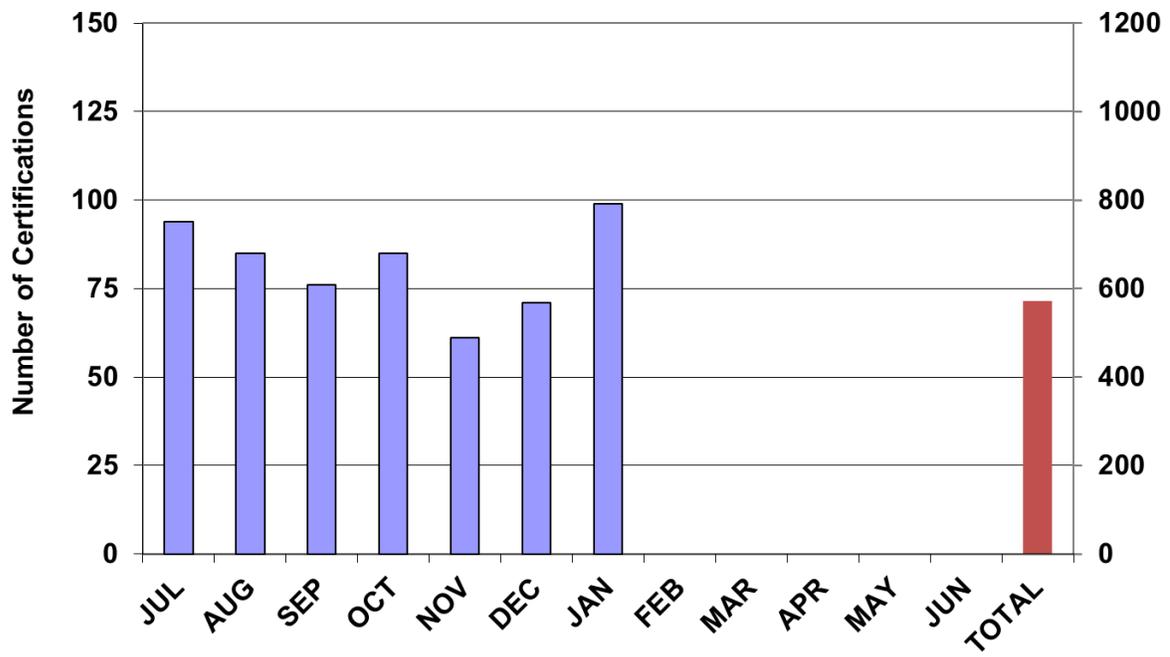
Certification Type	Initial	Renewal
MES	1	2
MET	14	75
MIS	1	3
MIT		1
MEB		1
MIB		1

Contact: Maxine Williams (609) 984-5628

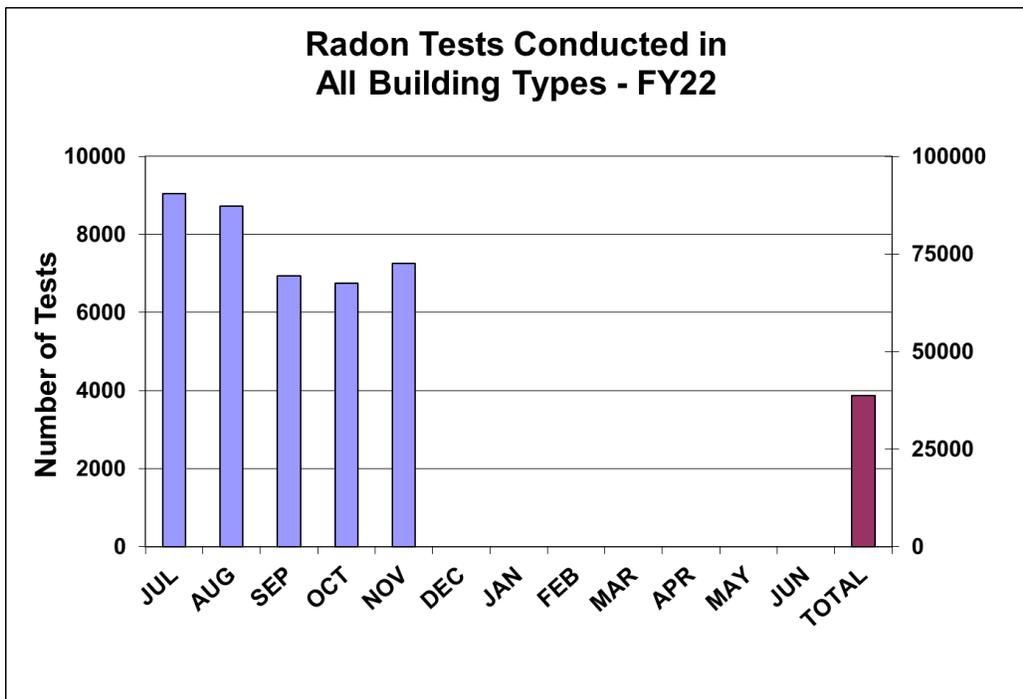
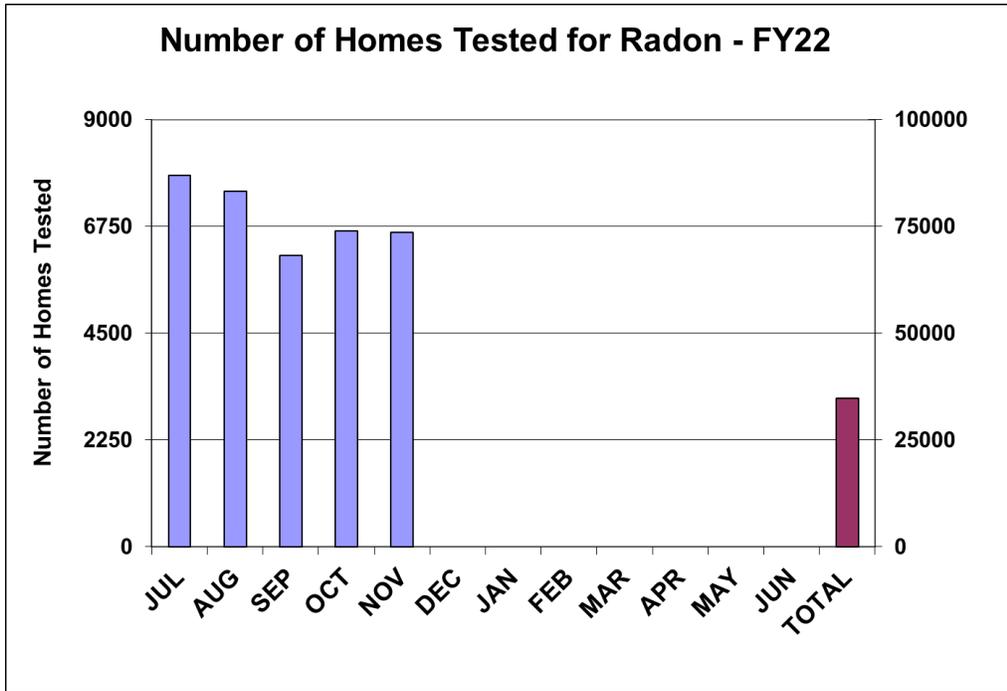
## APPENDIX B: BUREAU OF ENVIRONMENTAL RADIATION SUMMARY OF STATISTICS

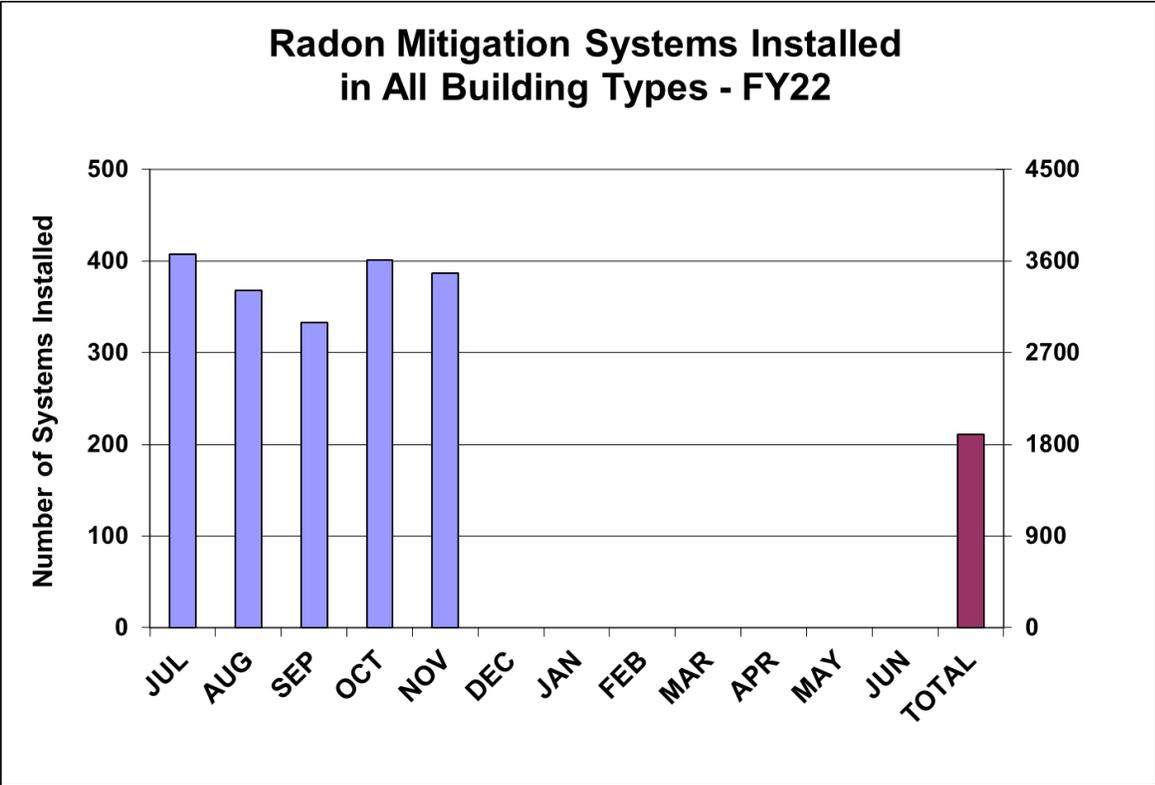
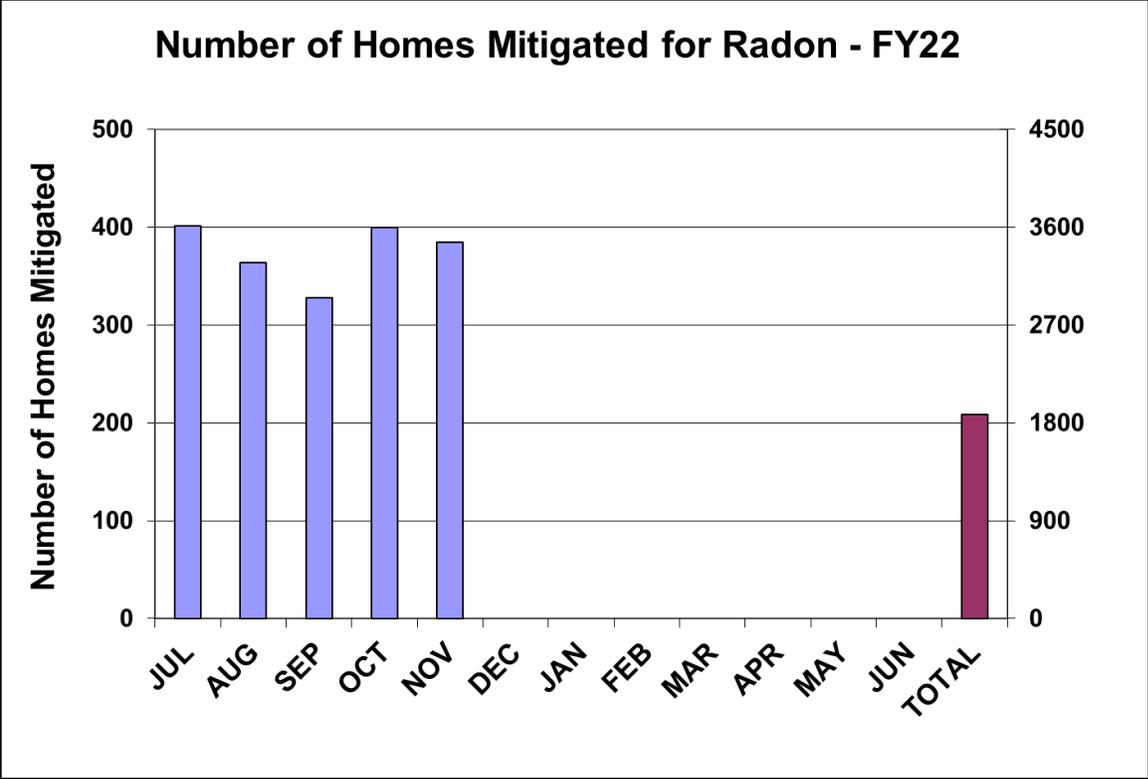


### Radon Certifications Issued - FY22



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 November 2021 are due by January 1, 2022.





## **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. CDI has completed the removal of the reactor vessel internal piping. Segmentation of the upper shroud is complete. CDI has completed Spent Fuel Pool cleanup in preparation for removal of the spent fuel racks. CDI is currently working on removal of the control rod guide tubes, lower core plate and lower shroud for segmentation.

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 12<sup>th</sup>, 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 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.

Contact: Veena Gubbi (609) 984-7457

### **BNE Activities at Oyster Creek**

None

### **BNE Activities at Artificial Island**

None

### **Hope Creek**

Hope Creek ran at essentially full power throughout January, with the exception that power was reduced to approximately 74% on January 15<sup>th</sup> to perform scheduled main turbine valve testing. Power was returned to 100% on January 16<sup>th</sup>.

Contact: Veena Gubbi (609) 984-7457

### **Salem Unit 1**

Salem Unit 1 ran at essentially full power throughout January.

Contact: Jacob Fakory (609) 984-7458

### **Salem Unit 2**

Salem Unit 2 ran at essentially full power throughout January.

Contact: Jacob Fakory (609) 984-7458

### **NRC Performs Radioactive Gaseous and Liquid Effluent Treatment Inspection at Hope Creek**

On January 24<sup>th</sup> thru 27<sup>th</sup>, the NRC performed the first week of the Radioactive Gaseous and Liquid Effluent Treatment Inspection at Hope Creek. This inspection was conducted in accordance with NRC Inspection Procedure (IP) 71124, Attachment 06 - "Radioactive Gaseous and Liquid Effluent Treatment". The inspection objectives were to verify that: 1) the gaseous and liquid effluent processing systems are maintained so that radiological discharges are properly mitigated, monitored, and evaluated with regard to public exposure; 2) abnormal radioactive gaseous or liquid discharges and conditions, when effluent radiation monitors are out-of-service, are controlled in accordance with applicable regulatory requirements and Hope Creek procedures; 3) Hope Creek's quality control program ensures radioactive effluent sampling and analysis requirements are satisfied so that discharges of radioactive materials are adequately quantified and evaluated from all established release points and any unmonitored and uncontrolled discharge path; 4) adequacy of public dose calculations and projections resulting from radioactive effluent discharges; and, 5) problem identification and resolution activities are performed per IP 71152, "Problem Identification and Resolution."

The second week of the inspection will be performed from February 22<sup>nd</sup> to 24<sup>th</sup>.

One (1) NES Engineer remotely observed the inspection.

Contact: Jacob Fakory (609) 984-7458

### **NES Staff Attends Meeting with New Jersey State Police (NJSP) and Department of Environmental Protection (DEP)**

On January 6<sup>th</sup>, the DEP and NJSP held a meeting to discuss the Radioactive Materials (RAM) Category 1 Shipments from Hope Creek scheduled for the 1<sup>st</sup> Quarter 2022. The purpose of the meeting to discuss the logistics and notification process for the shipments.

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

### **NES Staff Attends NRC Teleconferences/Webinars**

#### **NRC Teleconference to Discuss Proposed Rule Language Changes to Fitness for Duty Programs**

On January 6<sup>th</sup>, the NRC held a public teleconference to provide an opportunity for external stakeholders and the NRC staff to exchange information on the NRC's development of specific sections of the 10 CFR Part 53 preliminary proposed rule language for advanced nuclear reactors. The NRC staff also discussed the preliminary proposed rule language for changes to 10 CFR Part 26, "Fitness for Duty Programs." The purpose of the meeting was to provide an opportunity for the NRC staff to hear insights and answer questions from the public about the Part 53 rulemaking effort.

One (1) NES Engineer and the NES Supervisor attended the meeting.

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

NRC Commissioners' Meeting to Discuss the Strategic Programmatic Overview of the Decommissioning and Low-Level Waste and Nuclear Materials Users Business Lines

On January 27<sup>th</sup>, the NRC Commissioners held a teleconference to provide the NRC staff an opportunity to discuss the strategic considerations associated with the Decommissioning and Low-Level Waste and Nuclear Materials Users Business Lines. The meeting consisted of two sessions which included speakers from different NRC divisions. The first panel of NRC staff provided a strategic overview of the decommissioning and low-level waste business line; key successes and strategic direction; trends in reactor decommissioning; license transfer for purposes of decommissioning; decommissioning funding assurance and reactor and materials decommissioning inspection activities. Following the presentation, the speakers addressed questions/concerns from the NRC Commissioners. The second panel of NRC staff discussed the strategic overview of the nuclear materials user business line; transforming the NRC's health physics workforce strategy; data foundation; update on emerging medical technologies review process; leveraging external partnerships to identify new technologies; programmatic enhancements in a dynamic environment and cross- regional support efforts.

One (1) NES Engineer and the NES Supervisor attended this meeting.

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

**NES Staff Attends Department of Energy (DOE) National Transportation Stakeholders Forum (NTSF) Teleconferences/Webinars**

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 informs states and tribes about ongoing, upcoming, or tentatively planned DOE shipments or shipping campaigns that may have an impact on their jurisdictions. It also allows the DOE to obtain input from states and tribes about concerns, needs, or logistics that are relevant to shipment planning and execution. Additionally, the NTSF can identify emerging issues for DOE and its transportation stakeholders that may affect shipment planning, preparedness, and execution, including intergovernmental consultation and cooperation.

NTSF Planning Committee Meeting

On January 5<sup>th</sup>, the NTSF Planning Committee held a virtual meeting. The Northeast (NE) Task Force will be the host of the 2022 meeting scheduled to be held in Philadelphia in June 2022. Agenda for the 2022 Annual NTSF Meeting was discussed by the representative from the Northeast High-Level Radioactive Waste Transportation Task Force (NE Task Force). Topics for the breakout sessions and plenary sessions were also discussed.

One (1) NES Engineer and the NES Supervisor attended the meeting.

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

**Tribal Radioactive Materials Transportation Committee (TRMTC) Meeting**

On January 26<sup>th</sup>, TRMTC held a virtual meeting. Participating, among others, were members and/or representatives of TRMTC, DOE Office of Environmental Management, DOE Office of Nuclear Energy (NE), Department of Transportation (DOT), the Federal Railroad Administration (FRA) and the four State Regional Groups (SRG). The representatives from the DOE provided an update on DOE activities for 2022; the railcar development program; consent-based siting for consolidated interim storage facility; intergovernmental engagement; DOE Order 460.2B; and the Transportation Emergency Preparedness Program (TEPP). A representative from DOE’s Waste Isolation Pilot Program (WIPP) presented an update on activities at the WIPP DOE burial site for DOE generated radwaste located in New Mexico. The representatives from TRMTC provided an update on Tribal activities pertaining to radioactive waste. Representatives from the four SRGs provided brief updates on the activities of their respective groups. The representative from the NRC provided an update on the status and results of NRC’s transport regulatory readiness review.

One (1) NES Engineer and the NES Supervisor attended the meeting.

Contact: Veena Gubbi (609) 984-7457 or 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 January 2022:

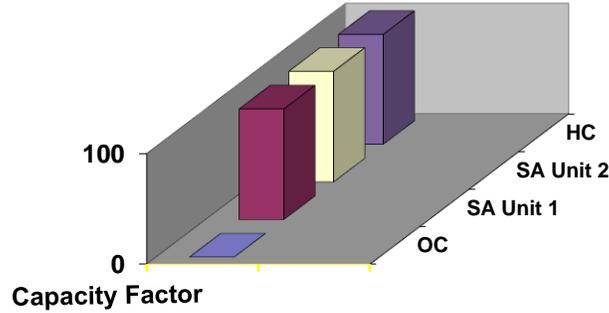
Spent Fuel and Nuclear Waste	Highway Route Control Quantity Shipments	Radionuclides of Concern
0	0	2

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

## BUREAU OF NUCLEAR ENGINEERING

### Plant Operating Performance – 1

**Note: On September 17<sup>th</sup>, 2018 Oyster Creek permanently ceased operation.**



### STATISTICAL INFORMATION

#### EMERGENCY AND NON-EMERGENCY EVENT NOTIFICATIONS FOR JANUARY 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.

	JANUARY 2022		JAN - DEC 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 74 samples during the month of January 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 JANUARY 2022

<b>SAMPLE MEDIUM</b>	<b>NUMBER OF SAMPLES</b>
AIR FILTER	29
AIR IODINE	12
AIR COMPOSITE	13
MILK (Cow)	3
SURFACE WATER	8
POTABLE WELL WATER	9
TOTAL SAMPLES	74

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

During the month of January 2022, three (3) 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 third 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. In conjunction with the NJ Geological and Water Survey, NEES reviewed and commented on PSEG Nuclear's 2020 Remedial Action Progress Report for Salem Nuclear Generating Station.

The report documents the groundwater monitoring and remediation activities performed at Salem Units 1 and 2 during 2020.

Contacts: Jay Vouglitois (609) 984-7514 or Karen Tuccillo (609) 994-7443

### **Quarterly Thermoluminescent Dosimeter (TLD) Exchange**

On January 11<sup>th</sup> through January 13<sup>th</sup>, 2022, technicians from the BNE's subcontractor retrieved 4th quarter 2021 TLD badges and deployed 1<sup>st</sup> 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

### **NJDEP / EPA Energy and Radiation Program Coordination Meeting**

Staff members attended a virtual meeting with the United States Environmental Protection Agency on January 11, 2022, to discuss a variety of topics for the purpose of potential coordination between the two (2) groups (USEPA and NJDEP). Topics discussed at the meeting included (1) Updates on Organization Structure / Personnel, (2) Superfund and Formally Utilized Site Remedial Action Program (FUSRAP) sites in the state of New Jersey, (3) Radium sites in New Jersey and Radon Updates, (4) Nuclear Power Plant issues including Oyster Creek decommissioning status and Emergency Planning support during State and Federal Emergency Management Agency (FEMA) exercises / events. A future set of coordinated meetings is being planned during the calendar year.

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

### **Oyster Creek Historical Site Assessment for Decommissioning**

NEES staff reviewed the revised Historical Site Assessment (HSA) for the Oyster Creek Nuclear Generating Station, prepared by Holtec/Comprehensive Decommissioning International. NEES provided extensive technical comments on a previous version of the document and this review was performed to verify that those 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.

Contacts: Paul E. Schwartz (609) 984-7539, Karen Tuccillo (609) 994-7443 or Jay Vouglitois (609) 984-7514.

## **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, the Oyster Creek Nuclear Generating Station ceased to generate power leading to a reduction in gaseous effluents. On September 25, 2018, the plant officially entered Decommissioning.

Prior to November 2010, Oyster Creek did not routinely release liquid effluents to the environment. In accordance with a DEP Directive (EA ID #: PEA100001) issued to the Oyster Creek Nuclear Generating Station, and the Spill Compensation and Control Act (N.J.S.A. 58:10-23.11), former Oyster Creek owner Exelon Corporation was required to cleanup and remove tritium discharges released onsite from underground pipe leaks that occurred during 2009. In late November 2010, the pumping of groundwater at Oyster Creek was initiated in support of the ongoing tritium groundwater monitoring project. 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.

On June 20, 2019, the NRC approved the transfer of the Oyster Creek license from Exelon Corporation to Oyster Creek Environmental Protection, as owner, and Holtec Decommissioning International (HDI), as decommissioning operator. The license transfer officially took place on July 1, 2019. HDI continued the sampling and measurement of tritium concentrations in groundwater from MW-73.

On January 9, 2020, in a letter from the State of New Jersey DEP to the Holtec International Decommissioning Plant Manager of Oyster Creek, the Bureau of Nuclear Engineering and Site Remediation Program concurred that the Oyster Creek site had complied with the requirements outlined in the paragraph 41 of the Directive and Notice to Insurers EA ID #: PEA100001, thereby closing the Directive. While the pump and treat remediation of tritium has been completed, HDI continues groundwater monitoring as part of their Radiological Groundwater Protection Program.

In addition to groundwater monitoring, it is necessary for the plant to process and discharge liquid effluents as a necessary activity during decommissioning of the site and eventual license termination. Radioactive liquid effluent discharged as a result of decommissioning activities will be monitored by HDI. All liquid effluent data are reported below. Additional information on the Oyster Creek tritium leak is available at the DEP website, <http://www.state.nj.us/dep/rpp/bne/octritium.htm>.

The December 2021 gaseous and liquid effluent release data for the Oyster Creek, Salem, and Hope Creek nuclear plants have been included in this report.

**PSEG Nuclear  
Radioactive Effluent Releases<sup>1</sup>  
Nuclear Environmental Engineering Section  
For the Period of 12-01-21 to 12-31-21**

**Hope Creek  
Gaseous  
Effluents**

<u>Effluent</u>		
Fission Gases	0	Ci
Iodines	0.00048	Ci
Particulates	0.00003	Ci
Tritium	82.1	Ci

**Hope Creek  
Liquid Effluents**

<u>Effluent</u>		
Fission Products	0.0034	Ci
Tritium	4.99	Ci

**Salem Unit 1  
Gaseous  
Effluents**

<u>Effluent</u>		
Fission Gases	0.0254	Ci
Iodines	0	Ci
Particulates	0	Ci
Tritium	53.3	Ci

**Salem Unit 1  
Liquid Effluents**

<u>Effluent</u>		
Fission Products	0.00004	Ci
Tritium	0.013	Ci

**Salem Unit 2  
Gaseous  
Effluents**

<u>Effluent</u>		
Fission Gases	0.0224	Ci
Iodines	0	Ci
Particulates	0	Ci
Tritium	23.5	Ci

**Salem Unit 2  
Liquid Effluents**

<u>Effluent</u>		
Fission Products	0.00006	Ci
Tritium	0	Ci

<sup>1</sup> 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 1<sup>st</sup> of the following calendar year.

**Holtec Decommissioning International (HDI)  
Radioactive Effluent Releases  
Nuclear Environmental Engineering Section  
For the Period of 12-01-21 to 12-31-21**

**Oyster Creek  
Gaseous Effluents  
Elevated Releases**

<u>Effluent</u>			
Fission Gases	0	Ci	
Iodines	0	Ci	
Particulates	0	Ci	
Tritium	0.054	Ci	

**Oyster Creek  
Gaseous Effluents  
Ground Releases**

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

**Holtec Decommissioning International (HDI)  
Radioactive Effluent Releases  
Nuclear Environmental Engineering Section  
For the Period of 12-01-21 to 12-31-21**

**Oyster Creek Liquid Effluents**

<u>Effluent</u>			
Fission Products	0.00002	Ci	
Tritium	0.134	Ci	

**Oyster Creek Liquid Effluent Groundwater Extraction<sup>2</sup>**

<u>Effluent</u>			
Tritium	Not in Service	Ci	

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

<sup>2</sup> On November 4, 2019, Pumping Well MW-73 failed and was placed out of service (Idle). The current plan is to discontinue monitoring MW-73 and to terminate pumping unless activity is identified that would require restoration of groundwater extraction by returning the pump for MW-73 to service.

**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 January:

Artificial Island CREST System Ambient Radiation Levels January 2022 Derived From One Minute Averages UNITS = mR/Hr				
AI1	AI2	AI3	AI4	AI5
.0063	.0063	.0058	.0062	.0066
AI6	AI7	AI8	AI9	AI10
.0064	.0055	.0055	.0073	****

Oyster Creek CREST System Ambient Radiation Levels January 2022 Derived From One Minute Averages UNITS = mR/Hr			
OC1	OC2	OC3	OC4
.0040	.0056	.0061	.0048
OC5	OC6	OC7	OC8
.0055	.0057	.0050	.0051
OC9	OC10	OC11	OC12
.0059	.0054	.0054	.0054
OC13	OC14	OC15	OC16
.0049	.0055	.0052	.0054

\*\*\*\* indicates insufficient valid data

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## **Exercise Planning Conference for 2022 Federally Evaluated Exercise at Salem/Hope Creek**

On January 5, 2022, Assistant Director Pat Mulligan and Manager Ann Pfaff attended the second meeting of the Exercise Planning Committee (EPC) for the Salem/Hope Creek federally-evaluated exercise scheduled on May 10, 2022. FEMA Regions 2 and 3, State Police OEM, Delaware Emergency Management Agency, Salem and Cumberland Counties and PSEG were represented as the scope and extent of the exercise were discussed. This is the beginning of the new eight-year exercise cycle, so the decision was made to hold a plume-focused exercise with Hostile Action Based (HAB) slated later in the cycle to allow sufficient time to prepare. The State will begin implementing guidance from FEMA's Radiological Emergency Preparedness Program Manual and the NUREG 0654/FEMA Rep 2, Rev 2., both issued December 2019. Exercise timelines and submissions to FEMA were identified, as well as out-of-sequence demonstrations and extent of exercise participation. Potential impacts of COVID-19 were considered, but must be determined closer to the exercise date. The next EPC will be held in February, while development of the scenario and associated parameters continues with the State and licensee.

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## **Scenario Working Group Meeting**

On January 5, 2022, Assistant Director Pat Mulligan and Manager Ann Pfaff attended a meeting of the Scenario Working Group to prepare for the March and May Hope Creek nuclear emergency response exercises. Representatives of New Jersey Office of Emergency Management (NJOEM), Delaware Emergency Management Agency (DEMA) and PSEG Nuclear discussed their organizations needs and preferences for timing and duration of release, wind speed and direction and offsite dose projections to satisfy FEMA, NRC and all offsite response organizations. The scenario synopses and associated Virtual Plumes simulation files will be developed by PSEG and shared with the NJOEM, BNE and DEMA for testing and evaluation in advance of both exercises. The next working group meeting will be held in February.

Contact: Ann Pfaff (609) 984-7451

## **Licensee EP Meeting**

On January 10, 2022, NEPS staff held a virtual State and Licensee emergency preparedness meeting with PSEG Nuclear, and New Jersey Office of Emergency Management. Discussion topics included: revisions to standard operating procedures; emergency response notifications and notification methods; eight-year exercise cycle planning; Emergency Action Level training; medical services training.

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### **Meeting with New Jersey Office of Emergency Management**

On January 21, 2022, Assistant Director Mulligan, Manager Pfaff and NEPS staff met with New Jersey Office of Emergency Management's Radiological Emergency Planning and Technical Unit to consider multiple topics of shared interest. Included in the discussions were the Memorandum of Understanding with NJ Department of Health on the use and distribution of potassium iodide (KI) during a nuclear emergency, Protective Action Recommendations (PARs) and Protective Action Decisions (PADs) for Hostile Action Based events (HABs) and Rapidly Progressing Severe Accidents, emergency worker dose tracking and upcoming exercise expectations regarding Public Information Officer briefings and out-of-sequence demonstrations. Several training initiatives also were discussed, including NJ Office of Homeland Security and Preparedness (OHSP) use of NJ Learn virtual platform and the request to PSEG Nuclear to provide focused Emergency Action Level training for Bureau of Nuclear Engineering State Radiation Assessment Officers, as well as Delaware Emergency Management Agency staff.

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### **FEMA Annual Letter of Certification**

In January, 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 that 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.

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### **FEMA REPP Learning Session**

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. More information and related materials to this learning series can be found on the REPP Recovery Initiative Preparedness Toolkit community.

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### **State/FRMAC Semi-Annual Conference Call**

On January 26, 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. Conference of Radiation Control Program Directors representatives briefed on current initiatives, and federal partners FDA, EPA, CDC and FEMA reported on current projects.

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### **FEMA REPP Learning Session- Fukushima Lessons Learned**

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 hosted by the Federal Emergency Management Agency (FEMA). 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*.

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### **Radio Committee Meeting**

BNE Manager Pfaff attended the DEP Radio Committee meeting held virtually on Wednesday, January 5, 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.

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