

This product is a part of the Radiological Education Monitoring and Outreach Project (REMOP) conducted by the University of Georgia Savannah River Ecology Laboratory in Burke County, Georgia with assistance from Georgia Women's Actions for New Directions. This project is supported by grants from the Department of Energy Savannah River Site.



**Savannah River
Ecology Laboratory**
UNIVERSITY OF GEORGIA

4. Environmental Monitoring Programs

Concepts

- What are the components of environmental monitoring programs?
- How are environmental monitoring programs implemented?
- Why do environmental monitoring programs exist in the Burke County area?
Where to find data from environmental monitoring programs?

Skills: critical thinking, decision-making, observation

Materials

- Powerpoint presentation
- DOE-SRS 2016 environmental report
- GA EPD 2002 environmental report
- SC DHEC 2015 environmental report
- NRC Plant Vogtle report
- Handouts
- Example sampling equipment with labels
- Computer with access to a projector

Time Consideration: Preparation 10-15 minutes, one 45-minute period

Objectives

- Participants will have an understanding of the components that make up an environmental monitoring program
- Participants will understand where environmental monitoring programs sample in Burke County
- Participants will understand what environmental monitoring programs sample in Burke County and the Savannah River

Key terms: monitoring, regulations, regulatory limits, quality assurance, quality control, chain of custody

Background

Environmental monitoring programs began in the 1960s and 1970s when governmental regulations and laws were enacted to protect human health. Environmental monitoring programs are typically conducted by state or federal environmental departments. In our area, the South Carolina Department of Health and Environment Control (SC DHEC), the Georgia Department of Environmental Protection (GA EPD), or the U. S. Environmental Protection Agency (EPA), or the company or group being regulated, like Southern Company's Plant Vogtle or the Department of Energy Savannah River Site (DOE-SR) perform the radiological monitoring programs. The radiological environmental monitoring programs in Burke County and surrounding areas, such as the Savannah River and counties in South Carolina, are here because of the industry and governmental operations located in the general vicinity.

The goal of general environmental monitoring programs is to determine what contaminants of interest or concern are present, how much of those contaminants are in the environment, and if those contaminant levels

are above or below regulatory limits. For radiological environmental monitoring programs, the goal is focused on radiological contaminants of interest. Resulting environmental monitoring program reports typically includes an introduction to the goals of the environmental monitoring program, a compliance summary, a results summary for each type of sample, information about quality assurance, and a brief summary of conclusions.

The general components of a radiological environmental monitoring program include the collection of samples, analysis of samples, analysis of data, and finally, the development of environmental reports highlighting findings. Throughout the process, quality assurance and quality control practices are implemented, including chain of custody protocols (a detailed date and time stamp with a signature every time a sample passes from one step to the next). Quality control steps include field duplicate samples, testing blank samples for identifying and tracing possible artificially introduced contamination into the analytical equipment or process, and double-blind testing (the person testing the sample does not know where it came from). These proactive and precautionary steps help ensure that the samples are not tampered with and the data are of high quality once the samples are analyzed. What samples an environmental monitoring program evaluate can vary in their form or matrix composition based on regulations, but most include water (surface and ground), soil or sediments, air, non-edible vegetation, edible vegetation, game meat, and fish.

The Savannah River watershed includes 436 industries and facilities that use water from the Savannah River and many of these emit pollutants into the river water (5). Samples taken from the Savannah River therefore often contain non-radiological contaminants sourced from such up-river industries and facilities; other, non-radiological monitoring programs typically test for these types of contaminants. More information about these non-radiological pollutants and facilities can be found at the Environmental Protection Agency's (EPA) website ECHO (echo.epa.gov). As a part of SC DHEC and DOE-SR's environmental monitoring programs, only limited non-radiological contaminants are tested for, but a more comprehensive list of contaminants in the Savannah River can be found at the EPA's website.

The Department of Energy Savannah River Site, Southern Company's Plant Vogtle, and South Carolina Department of Health and Environmental Control conduct radiological environmental monitoring programs that monitor radiological contaminants in the Burke County area or near Burke County. The Georgia Department of Environmental Protection monitored radiological contaminants in Burke County and other counties in Georgia from 1978 - 2002 when funding was discontinued. As a part of REMOP's second year, we will be looking at past radiological data from each of these groups and discussing their findings, as well as learning how the samples we're taking from Burke County compare to current and past monitoring data.

The radiological environmental monitoring programs listed above collect samples in either Burke County or the Savannah River, depending on the scope and goals of the individual program. The Department of Energy Savannah River Site performs groundwater well sampling in Burke County from nine wells and samples sediment, water, and fish from the Savannah River at multiple locations along the SRS border and downstream. South Carolina Department of Health and Environmental Control does not sample within the state of Georgia, but its environmental monitoring program does sample water, sediment, and fish in the Savannah River. The report compiled by Southern Nuclear to the Nuclear Regulatory Commission includes radiological monitoring information from three nuclear power plants: Hatch Nuclear Plant, Farley Nuclear Plant, and Vogtle Electric Generating Plant. The Plant Vogtle section of the report includes information about sample types are collected, the locations of sampling, results, information from surveys, and conclusions. This Southern Nuclear Operating Environmental Report does not include a radiological dose estimator.

Georgia Environmental Protection Division released its final environmental monitoring report in 2004, containing data from 2000-2002. This environmental monitoring program lost funding in 2005, so information included in this presentation today is from the last report released by the GA EPD in 2002. The GA EPD report includes monitoring information from 8 facilities throughout the state of Georgia. The radiological monitoring findings of the GA EPD for the Savannah River Site and Vogtle Electric Generating Plant are combined into a

single section in this report. The GA EPD sampled air, rainwater, soil, vegetation, milk, assorted crops, surface water, groundwater, and fish from Burke County as well as water, sediment, and fish from the Savannah River. This monitoring program does not include an estimated per person dose in its report.

Environmental monitoring programs provide citizens with the data to understand what contaminants are in their environment and in which samples those contaminants have been found. These data are typically summarized within the Environmental Monitoring Report, but these programs also give us (the public) a chance to read the raw data and draw our own conclusions. These environmental monitoring reports can be found online at each agency's website or through the federal government's regulatory agencies, the Nuclear Regulatory Commission and the Environmental Protection Agency. Because these reports can sometimes be difficult to find, there are instructions on the Handout on how to find the environmental reports for the three current environmental monitoring programs associated with Burke County as well as how to get to the EPA's compliance website (where you can search for all contaminants in your location).

Preparation

- Powerpoint slides include relevant figures and graphs
- Set out sampling equipment on a table with labels
- Set out environmental monitoring reports from each group with pages marked for local sampling (Burke County, Savannah River, etc.)
- Participant packet – handout, Powerpoint slides

Lesson

The purpose of this lesson is to teach participants 1) what is included in each environmental monitoring report and 2) how to find the Environmental Monitoring Report from each organization.

Before the Community Talk begins, make sure to have a web page open with all important tabs – SRS, SCDHEC, NRC, and GA EPD. It would also be beneficial to have open the EPA ECHO web page if there is time for the search demonstration in “Activity”. See “Resources” for links to these web pages.

Part A – Where and what do environmental monitoring programs in Burke County Sample (Powerpoint presentation)

1. Go through the Powerpoint below, but broadly each section includes:
 - a. Summary of samples taken, samples taken from Burke County, samples taken from the Savannah River
 - b. Image of sampling locations
 - c. Estimated dose if included in the environmental report for each monitoring program
 - d. A description of the two dose estimates with other sources of radiation (like x-rays)

Part B – Where can I find the data? Example of DOE Savannah River Site. Instructions for DOE-SR and the other environmental monitoring programs are included on the back of the Handout. If time allows, walk through how to find the data and reports for each.

1. Finding the environmental monitoring reports can be difficult. First, open an internet browser.
2. Type in www.srs.gov into the web address bar. This brings you to the homepage of the DOE Savannah River Site.
3. Hold your cursor over “Documents & Publications” on the top information bar.
4. Move your cursor down to “Environmental Publications” and then over to “Annual Environmental Reports”. Click on “Annual Environmental Reports”.
5. This page will include a history of the Environmental Reports, including the most recent publication. The PDF files are free to anyone to download.

Activity

The activity for this lesson is the presence of sampling equipment on display at the Community Talk. Sampling equipment can be held and looked at by all participants. Signs with explanations about what the equipment is and what they do will be present. This is similar to how a museum exhibit presents items with information.

In addition, if there is enough time and interest, you can go through the steps to finding the other environmental reports online as a group, South Carolina Department of Health and Environmental Control and Southern Company's Plant Vogtle. If the participants are interested in learning how to access the EPA's ECHO database, have that web page up and ready to show an example search using the Savannah River Basin watershed (echo.epa.gov, HUC 030601).

Figures and Tables

Table 1. Summary of radiological samples taken by each of the four radiological monitoring programs in the Central Savannah River Area (CSRA).

	Department of Energy Savannah River Site (2016)	South Carolina Department of Health and Environmental Control (2015)	Southern Company Plant Vogtle (2016)	Georgia Environmental Protection Division (2002)
All Samples Taken	Air (stack and ambient), rainwater, vegetation, soil, surface water, drinking water, stream and river sediment, aquatic food, wildlife, food products (milk, meat, fruit, nuts, and green vegetables)	Air, groundwater, drinking water, surface water, soil, terrestrial vegetation, edible vegetation, milk, fish, wildlife	Air, milk, vegetation, fish, game species, drinking water, river water, sediment, groundwater	Air, rainwater, vegetation, soil, surface water, sediment, fish, wildlife, food products (milk, fruit, nuts, and green vegetables)
Are samples taken from Burke County?	Yes	No	Yes	Yes
Samples taken from Burke County	All	None	Air, milk, vegetation, game species, drinking water, river water, sediment, groundwater	Air, rainwater, vegetation, soil, surface water, sediment, fish, wildlife, food products (milk, fruit, nuts, and green vegetables)
Are samples taken from the Savannah River?	Yes	Yes	Yes	Yes
Samples taken from the Savannah River	Sediment, water, fish (metals and radiological testing)	Water (metals and radiological), sediment, fish	Water, sediment, fish	Water, sediment, fish
Dose Estimation ¹	0.19 mrem	*AEI = 6.351 mrem MEI = 46.971 mrem	Not applicable	No

* AEI is the average exposed individual, MEI is the single highest detection per radionuclide per media detected in the environment

¹ SRS estimates dose based on releases, SCDHEC estimates dose based on single maximum detections

Resources

1. Georgia Department of Environmental Protection
 - a. <https://epd.georgia.gov/air/radiation-protection-programs>
 - b. Googled: Georgia department of natural resources environmental radiation surveillance report
2. South Carolina Department of Health and Environmental Control
 - a. <http://www.scdhec.gov/HomeAndEnvironment/Pollution/DHECPollutionMonitoringServices/MonitoringSurroundingSavannahRiverNuclearSite/>
 - b. Googled: South Carolina environmental surveillance and oversight program
3. Southern Company Plant Vogtle
 - a. Key Documents > “Plant Environmental Report”
 - b. <https://www.nrc.gov/info-finder/reactors/vog1.html>
 - c. Googled: nuclear regulatory commission plant Vogtle
4. Department of Energy Savannah River Site
 - a. <http://www.srs.gov/general/pubs/ERsum/index.html>
 - b. Googled: savannah river site environmental report
5. Environmental Protection Agency Enforcement and Compliance History Online
 - a. <https://echo.epa.gov/trends/loading-tool/water-pollution-search/results/?s=4f27d1c659a619438e446a84813f654aac1d62fb>
 - b. This tool allows you to search for specific pollutants, specific facilities, watershed or by location to see the top pollutants based on your search criteria

Disclaimer

Data collected as part of the Radiological Education, Monitoring and Outreach Project (REMOP) conducted by the University of Georgia’s Savannah River Ecology Laboratory are intended to be used for educational and outreach purposes only and are not for environmental monitoring or any regulatory purposes. Data collected under REMOP will not meet the requirements of a legally authorized monitoring program. For example, data collected under REMOP will not be gathered in compliance with the geographic, statistical, or site selection procedures required by a legally authorized monitoring program conducted by or on behalf of any regulatory agencies. If you have any questions, please call 803-725-2649 or email remop@srel.uga.edu.

Definitions

Monitoring – observe and check the progress or quality of something over a period of time

Regulations – a rule or directive made and maintained by an authority (like the government)

regulatory limits – intended to regulate the limits of specific contaminants in the environment

quality assurance - the maintenance of a desired level of quality in a service or product, especially by means of attention to every stage of the process of delivery or production.

quality control - a system of maintaining standards in manufactured products by testing a sample of the output against the specification.

chain of custody - in legal contexts, refers to the chronological documentation or paper trail, showing the paper trail, custody, control, transfer, analysis, and disposition of physical or electronic evidence.

Handout 1

04: Environmental Monitoring Programs

This handout is to follow along with the presentation, Environmental Monitoring Programs. If you have questions while participating, please let us know.

The Radiological Education, Monitoring, and Outreach Project
University of Georgia Savannah River Ecology Laboratory

	Department of Energy Savannah River Site (2016)	South Carolina Department of Health and Environmental Control (2015)	Southern Company Plant Vogtle (2016)	Georgia Environmental Protection Division (2002)
All Samples Taken	Air (stack and ambient), rainwater, vegetation, soil, surface water, drinking water, stream and river sediment, aquatic food, wildlife, food products (milk, meat, fruit, nuts, and green vegetables)	Air, groundwater, drinking water, surface water, soil, terrestrial vegetation, edible vegetation, milk, fish, wildlife	Air, milk, vegetation, fish, anadromous species, game species, drinking water, river water, sediment, groundwater	Air, rainwater, vegetation, soil, surface water, sediment, fish, wildlife, food products (milk, fruit, nuts, and green vegetables)
Are samples taken from Burke County?	Yes	No	Yes	Yes
Samples taken from Burke County	All	None	Air, milk, vegetation, game species, drinking water, river water, sediment, groundwater	Air, rainwater, vegetation, soil, surface water, sediment, fish, wildlife, food products (milk, fruit, nuts, and green vegetables)
Are samples taken from the Savannah River?	Yes	Yes	Yes	Yes
Samples taken from the Savannah River	Sediment, water, fish (metals and radiological testing)	Water (metals and radiological), sediment, fish	Water, sediment, fish	Water, sediment, fish
Dose Estimation¹	0.19 mrem (Average) 4.9 mrem (50 mile population)	*AEI = 6.351 mrem MEI = 46.971 mrem	Not applicable	No

* AEI is the average exposed individual, MEI is the single highest detection per radionuclide per media detected in the environment

¹ SRS estimates dose based on releases, SCDHEC estimates dose based on single maximum detections

Resources

1. Georgia Department of Environmental Protection
<https://epd.georgia.gov/air/radiation-protection-programs>
Googled: Georgia department of natural resources environmental radiation surveillance report
2. South Carolina Department of Health and Environmental Control
<http://www.scdhec.gov/HomeAndEnvironment/Pollution/DHECPollutionMonitoringServices/MonitoringSurroundingSavannahRiverNuclearSite/>
Googled: South Carolina environmental surveillance and oversight program
3. Southern Company Plant Vogtle
Key Documents > "Plant Environmental Report"
<https://www.nrc.gov/info-finder/reactors/vog1.html>
Googled: nuclear regulatory commission plant Vogtle
4. Department of Energy Savannah River Site
<http://www.srs.gov/general/pubs/ERsum/index.html>
Googled: savannah river site environmental report
5. Environmental Protection Agency Enforcement and Compliance History Online
<https://echo.epa.gov/trends/loading-tool/water-pollution-search/results/?s=4f27d1c659a619438e446a84813f654aac1d62fb>
This tool allows you to search for specific pollutants, specific facilities, watershed or by location to see the top pollutants based on your search criteria

REMOP Community Talk #4

Environmental Monitoring Programs in the Burke County, Georgia area
October 2017

Savannah River Site

	All Samples Taken	Are samples taken from Burke County?	Samples taken from Burke County	Are samples taken from the Savannah River?	Samples taken from the Savannah River
DOE-SR Environmental Monitoring Program	Air, rainwater, vegetation, soil, surface water, drinking water, sediment, fish, wildlife, food products (milk, meat, fruit, nuts, and green vegetables)	Yes	Groundwater (tritium)	Yes	Sediment, water, fish (metals and radiological testing)

2016 Environmental Report



Table 6-6 2016 Sportsman Doses Compared to the DOE Dose Standard

	Committed Dose (mrem)	Applicable Standard (mrem) ^a	Percent of Standard (%)
Sportsman Dose			
Onsite Hunter	13.5	100	13.5
Creek-Mouth Fisherman ^b	0.22	100	0.22
Savannah River Swamp Hunter			
Offsite Hog Consumption	2.24	100	9.26
Offsite Deer Consumption	6.36		
Soil Exposure ^c	2.90		
Maximum Offsite Hunter Dose (Deer + Soil Exposure)	9.26		
Savannah River Swamp Fisherman			
Steel Creek Fish Consumption	0.14	100	0.81
Soil Exposure ^d	0.67		
Total Offsite Fisherman Dose (Fish + Soil Exposure)	0.81		

Notes:

^a DOE dose standard, 100 mrem/yr (DOE Order 458.1)^b In 2016, the maximum dose to a hypothetical fisherman resulted from consuming bass from the mouth of Fourmile Branch.^c Includes the dose from combining external exposure and incidentally ingesting and inhaling the worst-case Savannah River swamp soil.^d Includes the dose from combining external exposure and incidentally ingesting and inhaling Savannah River swamp soil near the mouth of Steel Creek.

Table 6-5a Potential Dose to the Representative Person from all Standard Pathways in 2016

Pathways	Committed Dose (mrem)	Applicable Standard (mrem)	Percent of Standard (%)
Near Site Boundary (All Pathways)			
Total Liquid Pathways	0.15	100 ^a	0.15%
Total Air Pathways	0.038	10 ^{a,b}	0.38%
Total All Pathways	0.19	100 ^a	0.19%

Notes:

^a DOE: DOE Order 458.1^b EPA: (NESHAP) 40 CFR 61, Subpart H

Table 6-5b Potential Collective Dose to the 50-Mile Population Surrounding SRS, Including the People Served by the Downriver Drinking Water Plants (Based on Dose to a Typical Person from all Standard Pathways in 2016)

Pathways	Collective Dose (person-rem)	Natural Background Dose (person-rem)	Percent of Natural Background (%)
50-mile Population Dose (All Pathways)			
Total Liquid Pathways	3.5	Not Applicable	Not Applicable
Total Air Pathways	1.4	Not Applicable	Not Applicable
Total All Pathways	4.9	243,000 ^a	< 0.01%

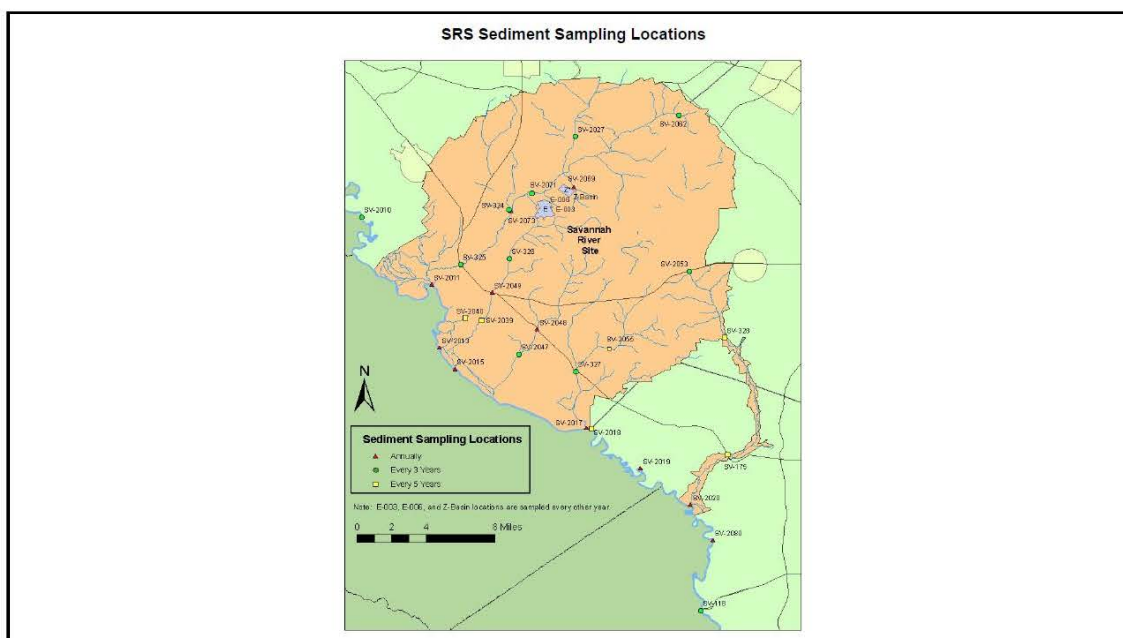
Note: ^a Calculated as 781,060 people (surrounding SRS population) times 311 mrem (0.311 rem) per person per year

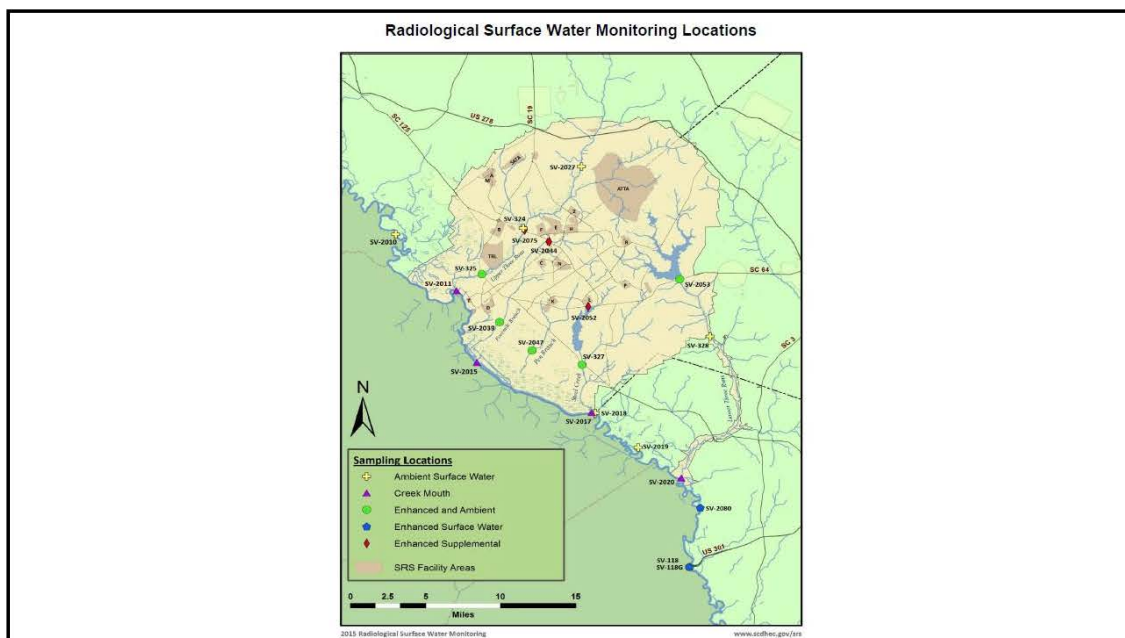
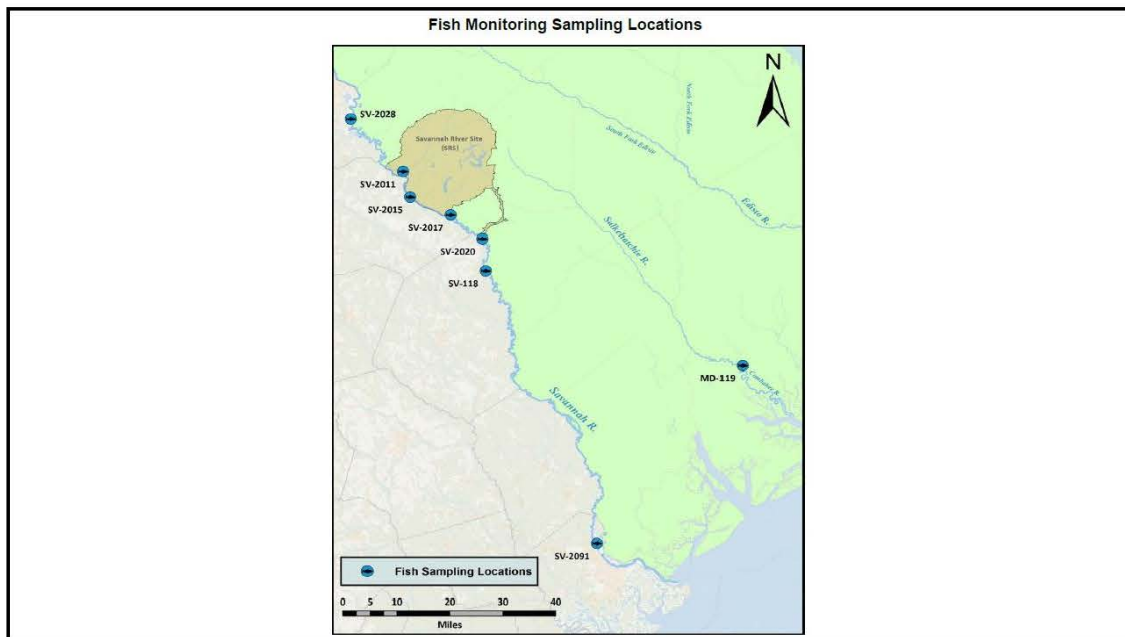


South Carolina Department of Health and Environmental Control (SCDHEC)

	All Samples Taken	Are samples taken from Burke County?	Samples taken from Burke County	Are samples taken from the Savannah River?	Samples taken from the Savannah River
SC DHEC	Air, groundwater, drinking water, surface water, soil, terrestrial vegetation, edible vegetation, milk, fish, wildlife	No	None	Yes	Water (metals and radiological), sediment, fish

2015 Environmental Report





South Carolina Department of Health and Environmental Control (SCDHEC)

• Potential Dose Calculations

- AEI = average exposed individual
- MEI = single highest detection per radionuclide per media detected in the environment

All of the following tables come from the South Carolina Department of Health and Environmental Control Environmental Monitoring Report found at www.scdhec.gov.

Table 1. DHEC Dose Estimates (mrem) for all Media: AEI and MEI

Pathway	Route	Source of Exposure	AEI	MEI
Atmospheric	Inhalation	Surface Soil Resuspension	0.009	0.017
Atmospheric	Inhalation	Inhalation of H-3 in Air	0.001	0.002
Air Inhalation Total			0.010	0.019
Liquid	Ingestion	Fish	0.004	0.633
Atmospheric	Ingestion	Cow Milk	0.002	0.008
Atmospheric	Ingestion	Wild Game (Hog)	4.09	40.62
Atmospheric	Ingestion	Wild Game (Deer)	0.57	2.33
Atmospheric	Ingestion	Vegetation (Leafy and Fruit)	0.270	0.327
Atmospheric	Ingestion	Fungi	1.348	2.389
Atmospheric	Ingestion	Soil Ingestion with Food	0.000	0.000
Food Ingestion Total			6.284	46.307
Liquid	Ingestion	Public System Drinking Water-Savannah River	0.009	0.046
Liquid	Ingestion	Public System Drinking Water-Groundwater	0.000	0.000
Liquid	Ingestion	DNR and Private Wells	0.005	0.013
Liquid	Ingestion	Nonpotable Drinking Water (SW)	0.016	0.272
Atmospheric	Ingestion	Nonpotable Drinking Water (Rainwater)	0.008	0.024
Liquid	Ingestion	Ingestion from Swimming	0.019	0.286
Drinking Water Total			0.057	0.641
Liquid	Direct	Direct Exposure from Swimming	0.000	0.000
Liquid	Direct	Direct Exposure from Wading	0.000	0.003
Atmospheric	Direct	Direct Exposure from Farm Soil	0.000	0.001
Direct Exposure Total			0.000	0.004
Overall Total Dose			6.351	46.971

mrem

Note: SW refers to surface water.

Table 3. DHEC Added Dose Basis (SRNS 2016)

Pathway	Media Comparison Additional Dose	DOE-SR ¹	DHEC ²	Add to DHEC ³
All-Pathway	DHEC All Pathway Approximation ⁴	0.18	1.30	0.00
Sportsman	Onsite Hunter	12.90	NS	12.9
	Onsite Turkey	ND	NS	0.00
	Fish (On and Offsite) ^{5,6}	1.23	0.63	0.60
	Offsite Hunter (Hog and Deer)	12.9	42.95	0.00
	Hunter Soil Exposure	2.90	0.00	2.90
Mushroom Consumer	Edible Fungi	NS	NS	NA
Totals	DHEC MEI ⁷	NA	46.97	NA
	Total Difference to be Added for MEI	NA	NA	16.40
	DHEC plus DOE-SR MEI Additions ^{8,9}	NA	62.37	NA

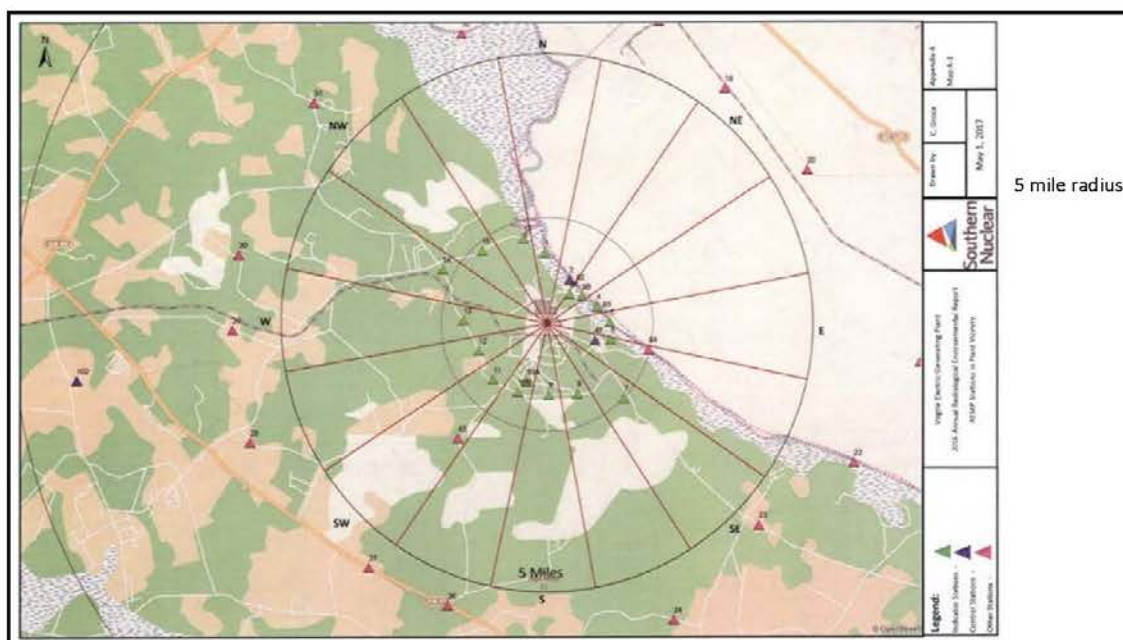
Notes:

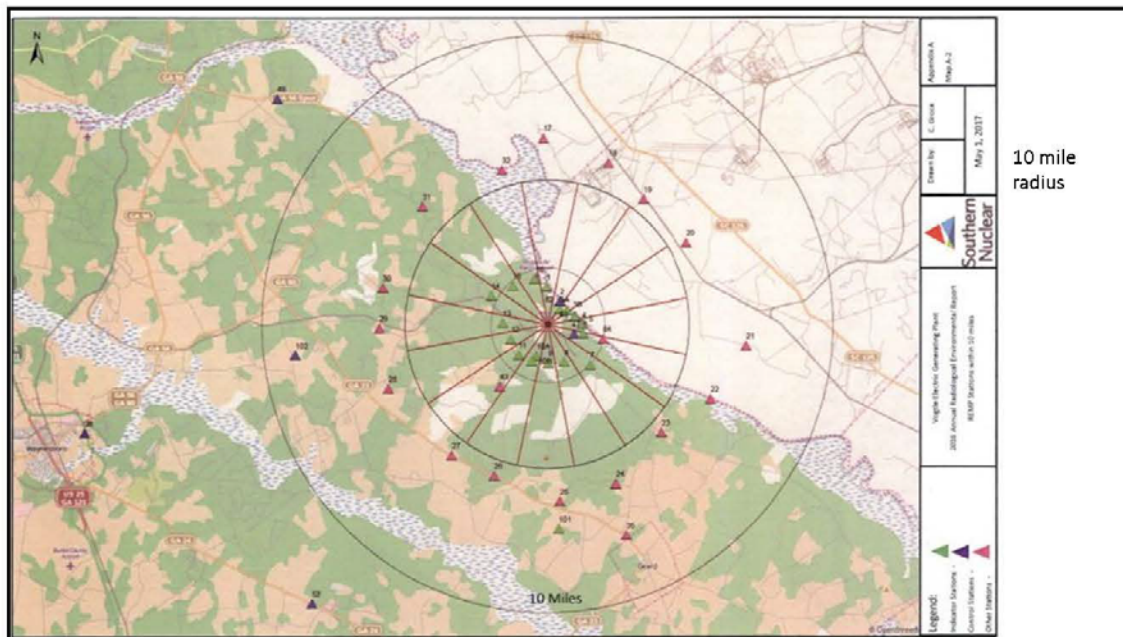
1. DOE-SR data primarily from Tables 6-5 (SRNS 2016)
2. DHEC maximums or single highest detection basis for all media per route of exposure (Table 1.)
3. MEI all-source 2015 dose additions (some DOE-SR dose is based on computer modeling)
4. Sum of DHEC fish, wading exposure, swimming ingestion, Savannah River derived drinking water, vegetation, and milk (all MEI)
5. DOE-SR fish dose is the sum of the creek-mouth fisherman and the total offsite fisherman doses. DHEC fish dose includes fisherman soil exposure dose.
6. Soil sources were from Creek Plantation (DOE-SR) and direct exposure from farm soil (DHEC).
7. DHEC MEI comes from the Section 4.0 Table 1. MEI Column. (It is not a summation of the DHEC column.)
8. Biased high, primarily due to single maximums, DHEC and DOE-SR dose based on releases.
9. The DHEC Added Dose Basis serves as a quantification of combined offsite and onsite dose that is available to a hypothetical individual, the MEI. It should not be construed as a measurement of dose that any one individual is likely to receive.

Southern Company Plant Vogtle

	All Samples Taken	Are samples taken from Burke County?	Samples taken from Burke County	Are samples taken from the Savannah River?	Samples taken from the Savannah River
Plant Vogtle	Air, milk, vegetation, fish, anadromous species, game species, drinking water, river water, sediment, groundwater	Yes	Air, milk, vegetation, game species, drinking water, river water, sediment, groundwater	Yes	Water, sediment, fish

2016 Environmental Operating Report

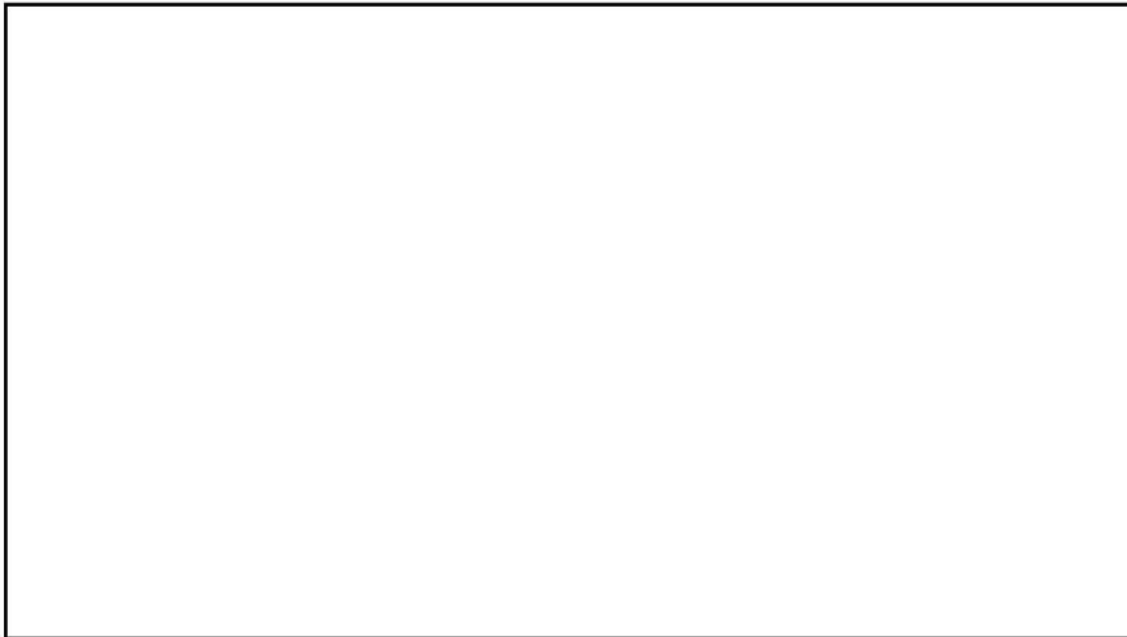




Southern Company Plant Vogtle

- MDC = minimum detection concentration
 - an estimate of the true concentration of an analyte required to give a specified high probability that the measured response will be greater than the critical value
- No total dose estimated
- Groups
 - Indicator – location where radiological levels are more likely to be affected by plant operation
 - Control – locations where radiological levels are not expected to be affected by plant operation
 - Community – areas of higher population

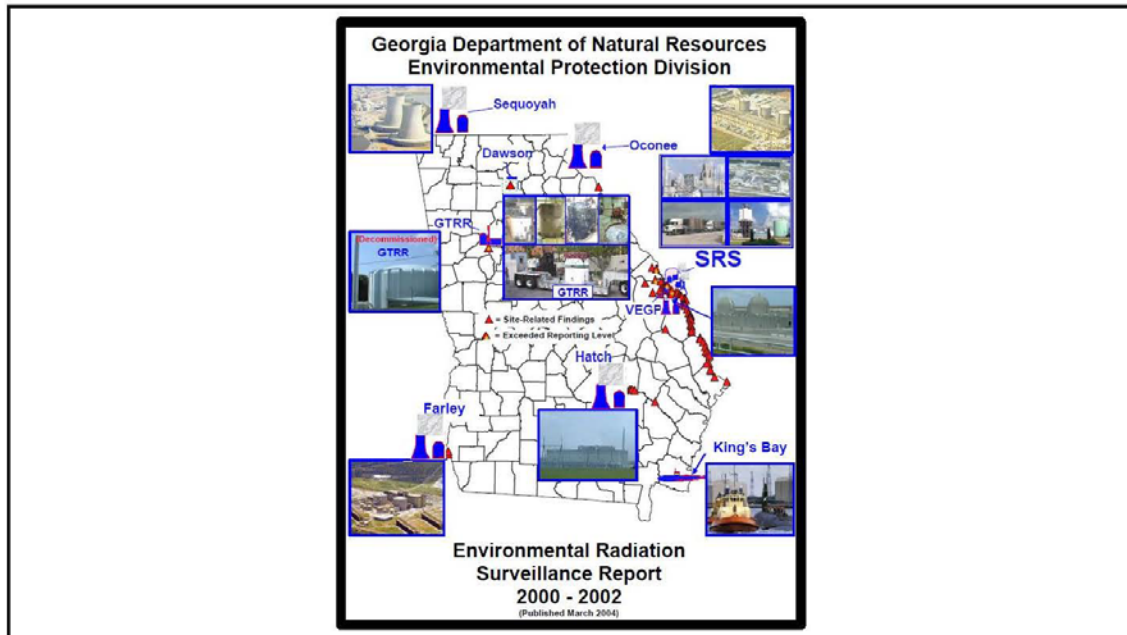
All of the following tables come from the SRS 2016 Environmental Operating Report found at www.nrc.gov.



Georgia Department of Environmental Protection Division (GA EPD)

	All Samples Taken	Are samples taken from Burke County?	Samples taken from Burke County	Are samples taken from the Savannah River?	Samples taken from the Savannah River
GA EPD	Air, rainwater, soil, vegetation, milk, assorted crops, surface water, groundwater, fish, river sediment	Yes	Air, rainwater, soil, vegetation, milk, assorted crops, surface water, groundwater, fish, river sediment	Yes	Water, sediment, fish

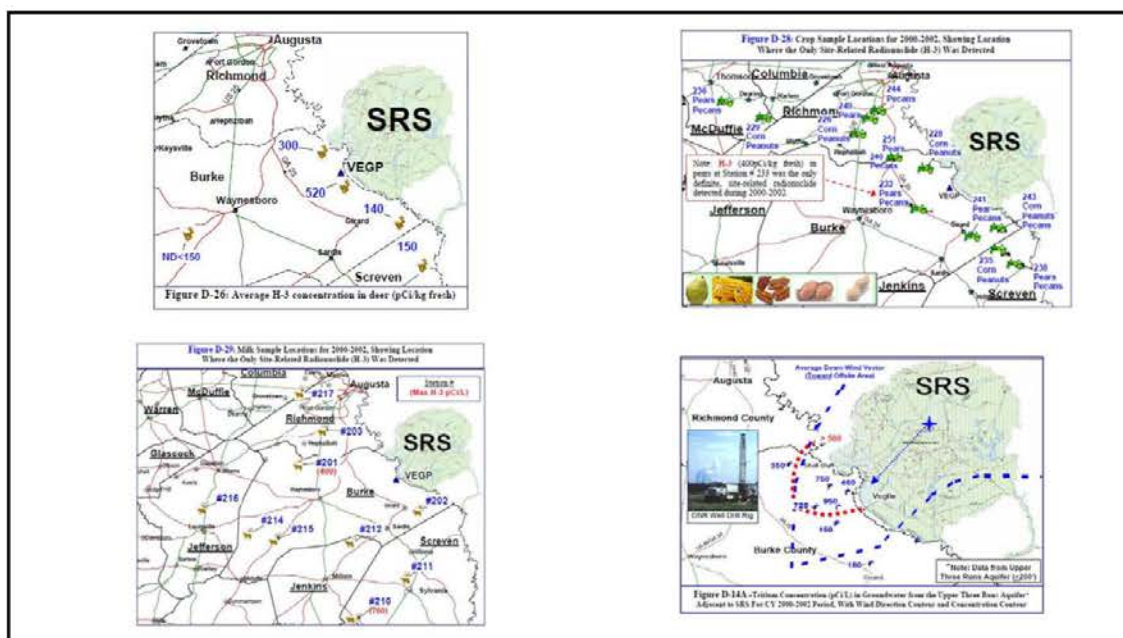
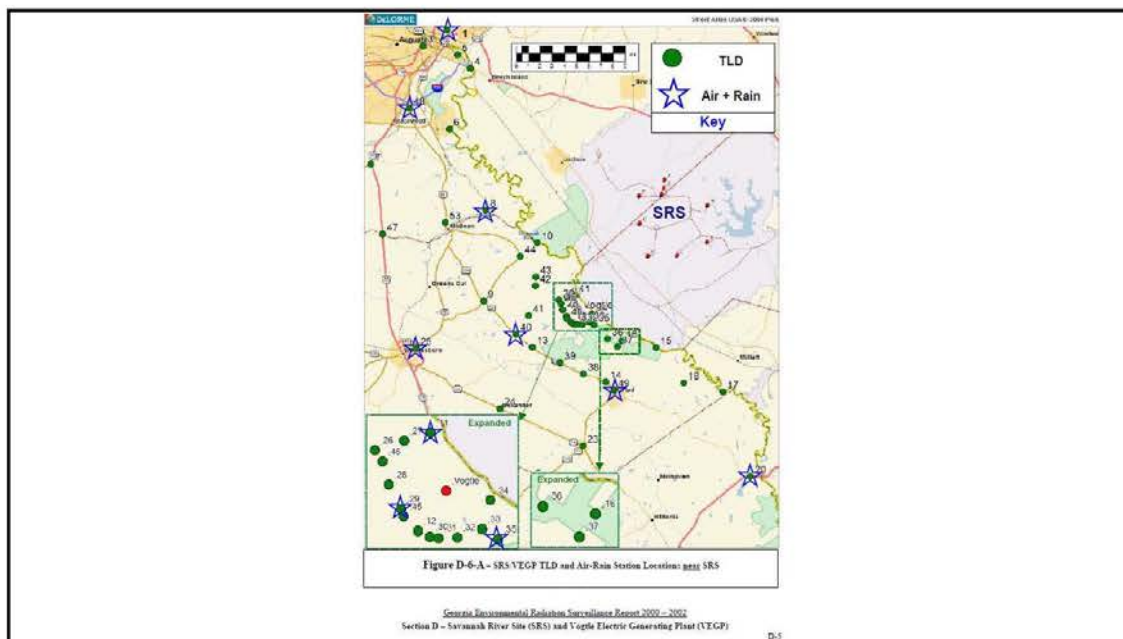
2002 Environmental Report (last report released by GA EPD)



Georgia Department of Environmental Protection Division (GA EPD)

- No estimated dose per person

All of the following tables come from Georgia EPD 2000-2002 Environmental Radiation Surveillance Report.



Dose Estimation

	mrem
DOE-SR	.19
SC DHEC – AEI	6.351
SC DHEC - MEI	46.971
Chest x-ray	6
Abdomen	53
Pelvis or hips	83