

# Radiological Environmental Monitoring Program

## NH DPHS Radioanalytical Chemistry Laboratory

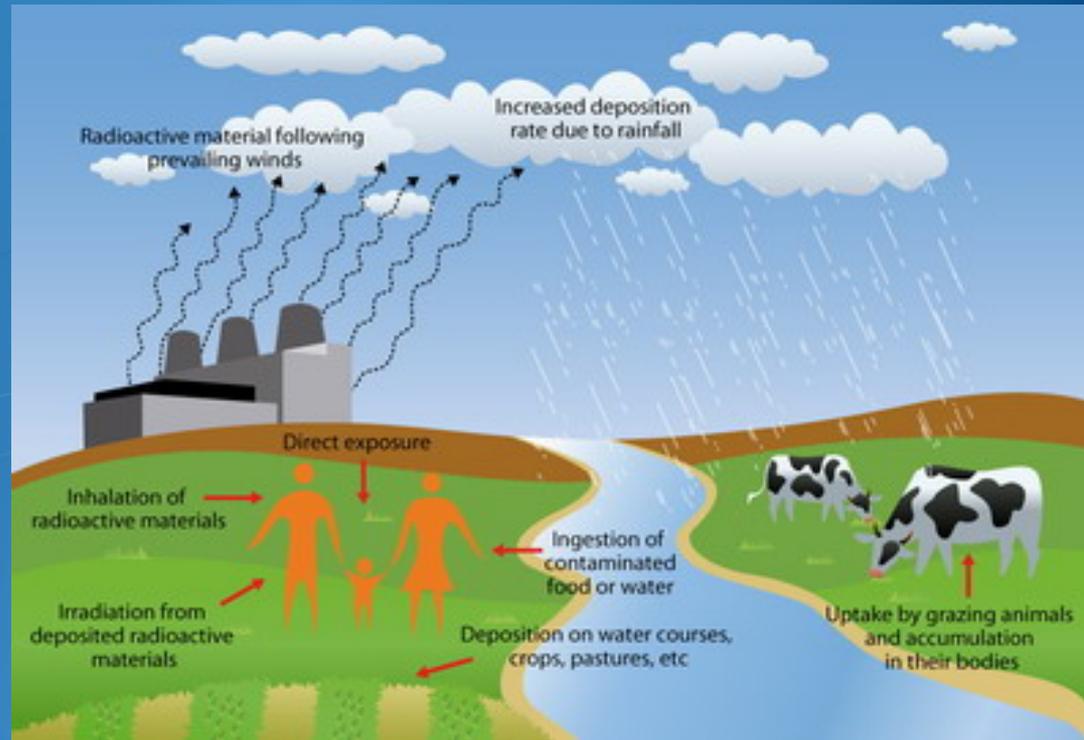
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# Radiological Chemistry Lab Mission

- To implement independent environmental surveillance and perform radioanalysis of environmental and food samples to assure the well being of the citizens of NH
- Since 1984 NH DPHS has been monitoring radiation levels in food and environmental samples collected near Seabrook Station and at more distant control locations

# Radiological Environmental Monitoring

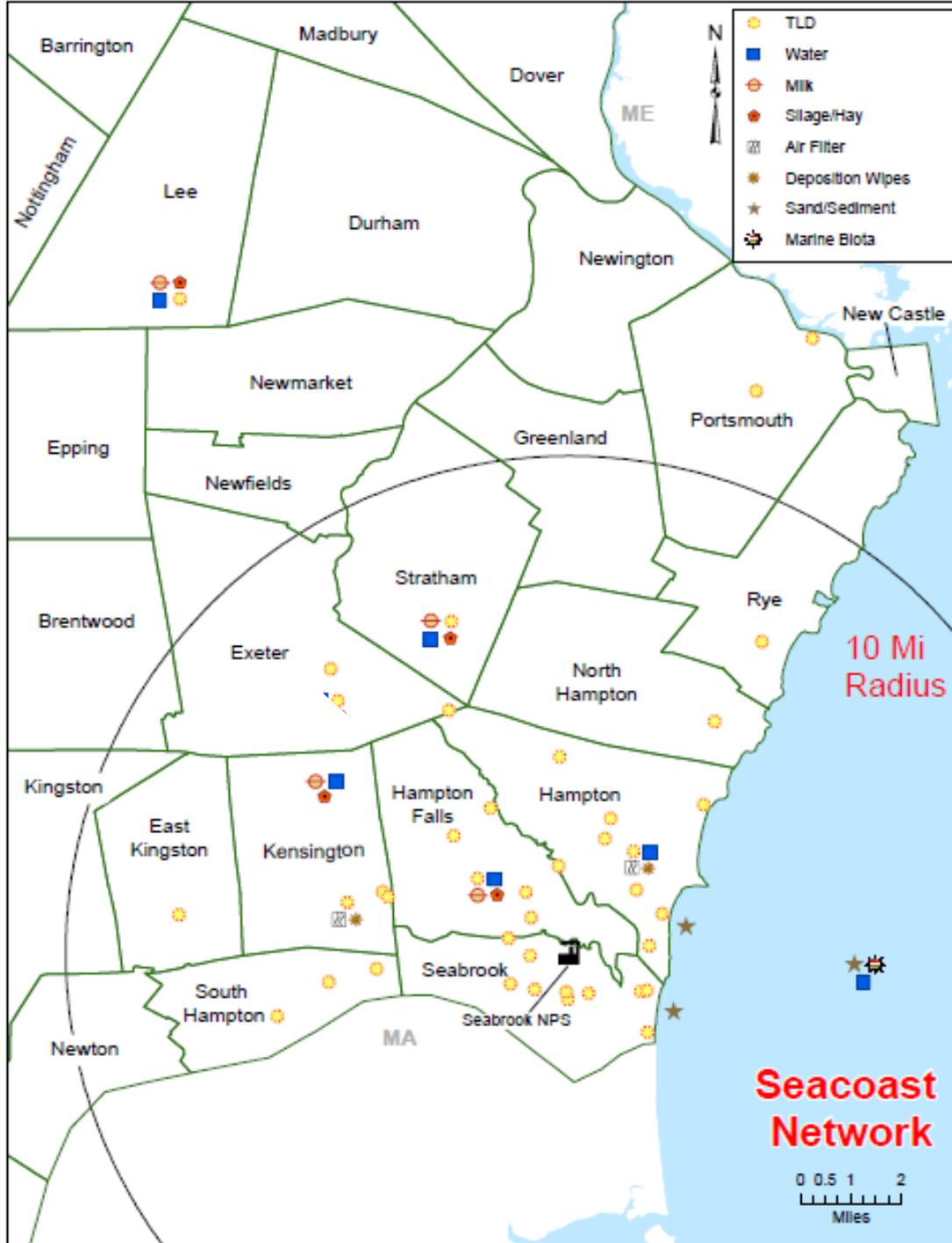
- Dairy (milk, water, cattle feed etc.)
- Seafood (fin-fish, lobsters, mussels etc.)
- Beach/Ocean sediment
- Ocean water
- Air filters
- Deposition wipes
- Thermoluminescent Dosimeters
- EPA's RADNet monitoring



*Approximately 700 samples  
are being analyzed each year*

# Sample Analysis At A Glance

Media	Site	Frequency	Gross Alpha	Gross Beta	Gamma Spec	Tritium	TLD
Particulate Air/ Deposition wipe	2	Monthly	✓	✓	✓	-	-
Surface/Ocean Water	2	Monthly	-	-	✓	✓	-
Ground Water	4	Quarterly	✓	✓	-	✓	-
Sediments	3	Twice-Yearly	-	-	✓	-	-
Vegetation	4	Twice-Yearly	-	-	✓	-	-
Milk	4	Monthly/ Quarterly	-	-	✓	-	-
Marine Biota	3	Twice-Yearly	-	-	✓	-	-
Direct Gamma	40	Quarterly	-	-	-	-	✓
USEPA RadNet: Air, Water	1	Twice-weekly	✓	✓	✓	-	-

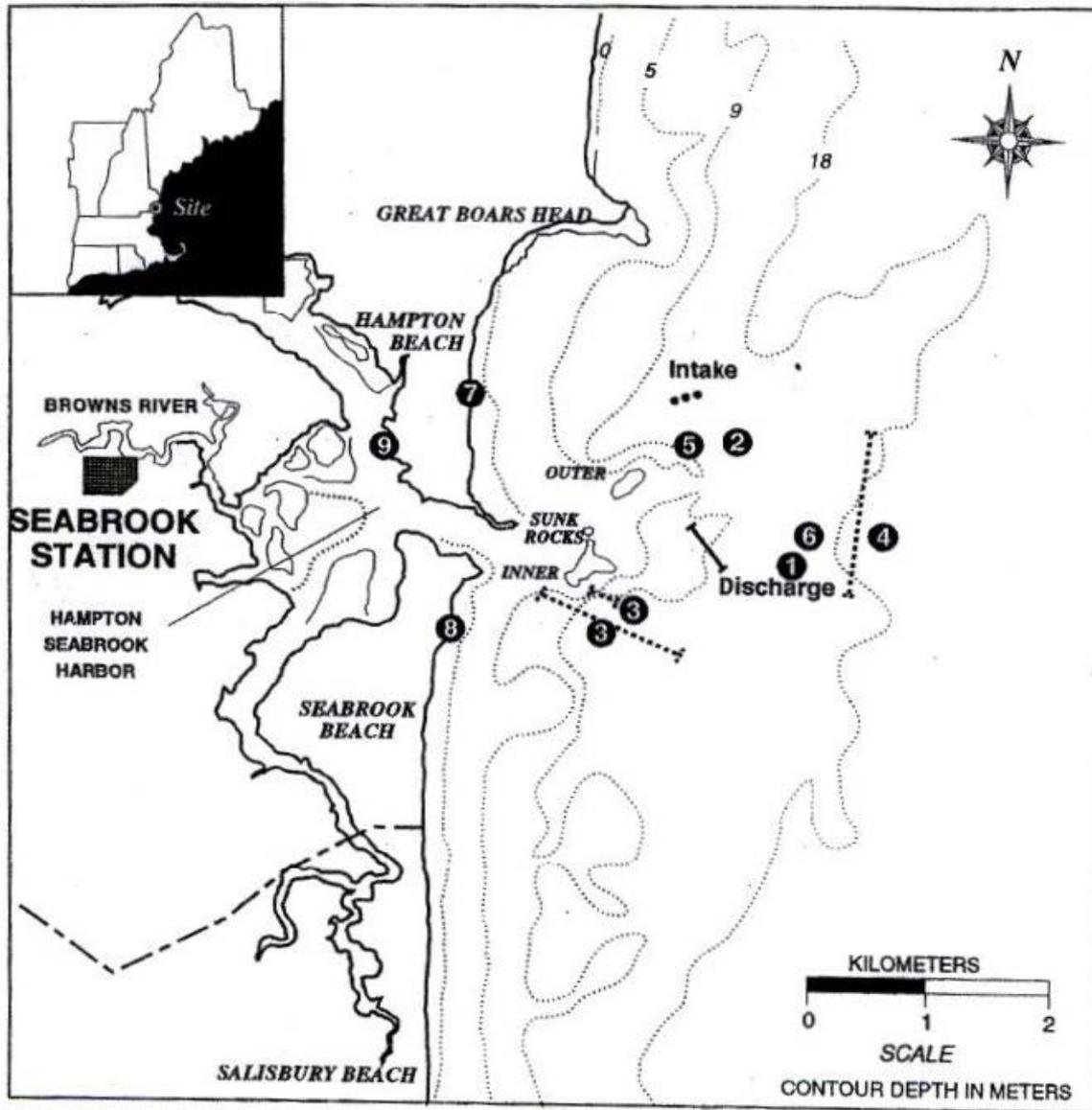


# Seabrook Station Sampling Locations

# Sampling Sites for Seabrook Station

- Hampton (air, wipe, TLD, sand, water)
- Kensington (air, wipe, TLD, dairy)
- Hampton Falls (TLD)
- Seabrook (TLD)
- South Hampton (air, wipe, TLD)
- Exeter (TLD)
- North Hampton (TLD)
- Portsmouth (TLD)
- Stratham (TLD, dairy)
- Lee (TLD, dairy)
- Rye (TLD)
- South Hampton (TLD)





## Seabrook Offshore Sampling (marine biota, sand, water)

- |   |                           |   |                           |
|---|---------------------------|---|---------------------------|
| ① | Surface water             | ⑥ | (19 Aux.) <i>Modiolus</i> |
| ② | (ID) Subtidal sediments   | ⑦ | Beach sediments           |
| ③ | Finfish                   | ⑧ | Beach sediments           |
| ④ | Lobster                   | ⑨ | <i>Mytilidae</i>          |
| ⑤ | (17 Aux.) <i>Chondrus</i> |   |                           |

# Conclusion

No activity greater than the normal and expected background levels was detected with the exception of the detection of Iodine -131 in rainwater collected in Concord following the Fukushima nuclear accident in March, 2011.

**Regulatory Agency: USNRC, USEPA, USFDA, NH Rules for the Control of Radiation**

<b>Annual Radiation Dose Limits</b>	<b>Agency</b>
Radiation Worker - 50 mSv	(NRC, "occupationally" exposed)
General Public - 1 mSv	(NRC, member of the public)
General Public - 0.25 mSv	(NRC, D&D all pathways)
General Public - 0.10 mSv	(EPA, air pathway)
General Public - 0.04 mSv	(EPA, drinking-water pathway)

# Thank You!

## References

Multi-Agency Radiological Laboratory Analytical Protocol (MARLAP) guidance and methods, NUREG-1576, EPA 402-B-04-001A, NTIS PB2004-105421, July 2004.

“Prescribed Procedures for Measurement of Radioactivity in Drinking Water,” EPA 600/4-80-032, August 1980. Available at U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161 (Telephone 800-553-6847), PB 80-224744.

Federal Radiological Monitoring and Assessment Center Monitoring and Analysis Manual, Sample Preparation and Analysis, Vol.2, National Nuclear Security Administration, Jun 2004.

Accidental Radioactive Contamination of Human Food And Animal Feeds: Recommendations For State And Local Agencies, U.S. Department of Health And Human Services, Food and Drug Administration, August 13, 1998.

U.S. EPA (2000). National Primary Drinking Water Regulations. Notice of Data Availability. Proposed Rule. 40 CFR Parts 141, and 142. Federal Register Vol. 65, No. 78:76707-76753. Friday, April 21, 2000.

Standard test method for tritium in drinking water, American Society for Testing and Materials (ASTM), D 4107-98, 2002.

ANSI N545-1975. “Performance, Testing, and Procedural Specifications for Thermoluminescence Dosimetry (Environmental Applications).”

Code of Federal Regulations, Title 10, Part 20, Section 20.1301 Dose Limits for Individual Members of the Public.

Code of Federal Regulations, Title 10, Part 20, Appendix B to Part 20—Annual Limits on Intake (ALIs) and Derived Air Concentrations (DACs) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sewerage.

LB523 FDA/FERN Screening for Alpha-Beta Radioactivity in Foods, US FDA.

Determination of Gamma-Ray Emitting Radionuclides in Foods by High-Purity Germanium Spectrometry, FDA Office of Regulatory Affairs, Winchester Engineering and Analytical Center, 2003.

US EPA, "Drinking Water Regulations: Radionuclides." *Federal Register*, Vol. 41, No. 133, pp. 28402–28409, July 9, 1976 (1976b).

*Code of Federal Regulations*, Title 40, "Protection of Environment," Section 141.16, "Maximum Contaminant Levels for Beta Particle and Photon Radioactivity from Man-Made Sources." (See Appendix 8 in the Reference Method for Gross Alpha and Gamma Activity in Drinking Water.)

New Hampshire Rules for the Control of Radiation, Section He-P 4021.21 Permitted