



**Savannah River**  
Nuclear Solutions, LLC  
A Fluor Daniel Partnership

# An Overview of the SRS Environmental Report for 2008

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**SRS Citizens Advisory Board**

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# Abbreviations and Acronyms

**ANSP**

**Academy of Natural Sciences of Philadelphia**

**Diffuse &**

**An air emission source that is calculated rather than directly measured, such as vents or basins**

**Fugitive Source**

**MEI**

**Maximally Exposed Individual**

**mrem**

**millirem**

**NPDES**

**National Pollutant Discharge Elimination System**

**Unidentified Alpha**

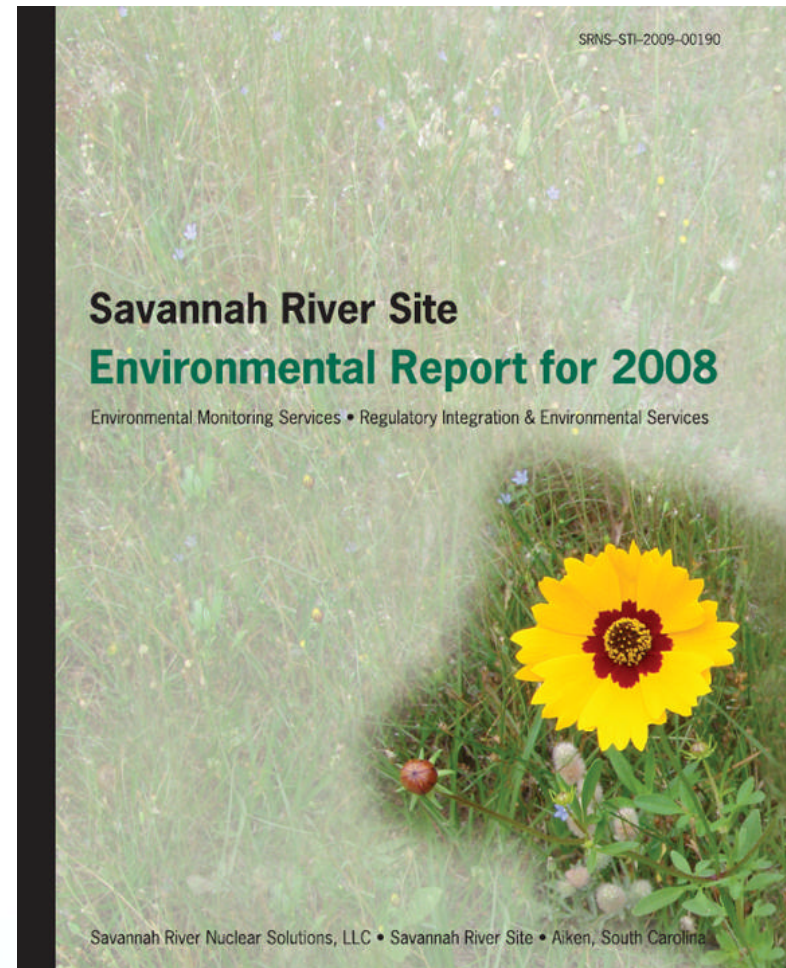
**Alpha activity that is determined by subtracting the sum of individually measured alpha-emitting radionuclides from gross alpha values**

**Unidentified Beta**

**Beta activity that is determined by subtracting the sum of individually measured beta-emitting radionuclides from gross beta values**

# Purpose

**Response to CAB request  
for a presentation and  
discussion of SRS  
*Environmental Report*  
results**



# Environmental Monitoring Purpose

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- **Characterize and quantify contaminants.**
- **Demonstrate compliance with applicable standards.**
- **Calculate potential radiation exposures to the public.**
- **Assess the effects, if any, on the local environment.**

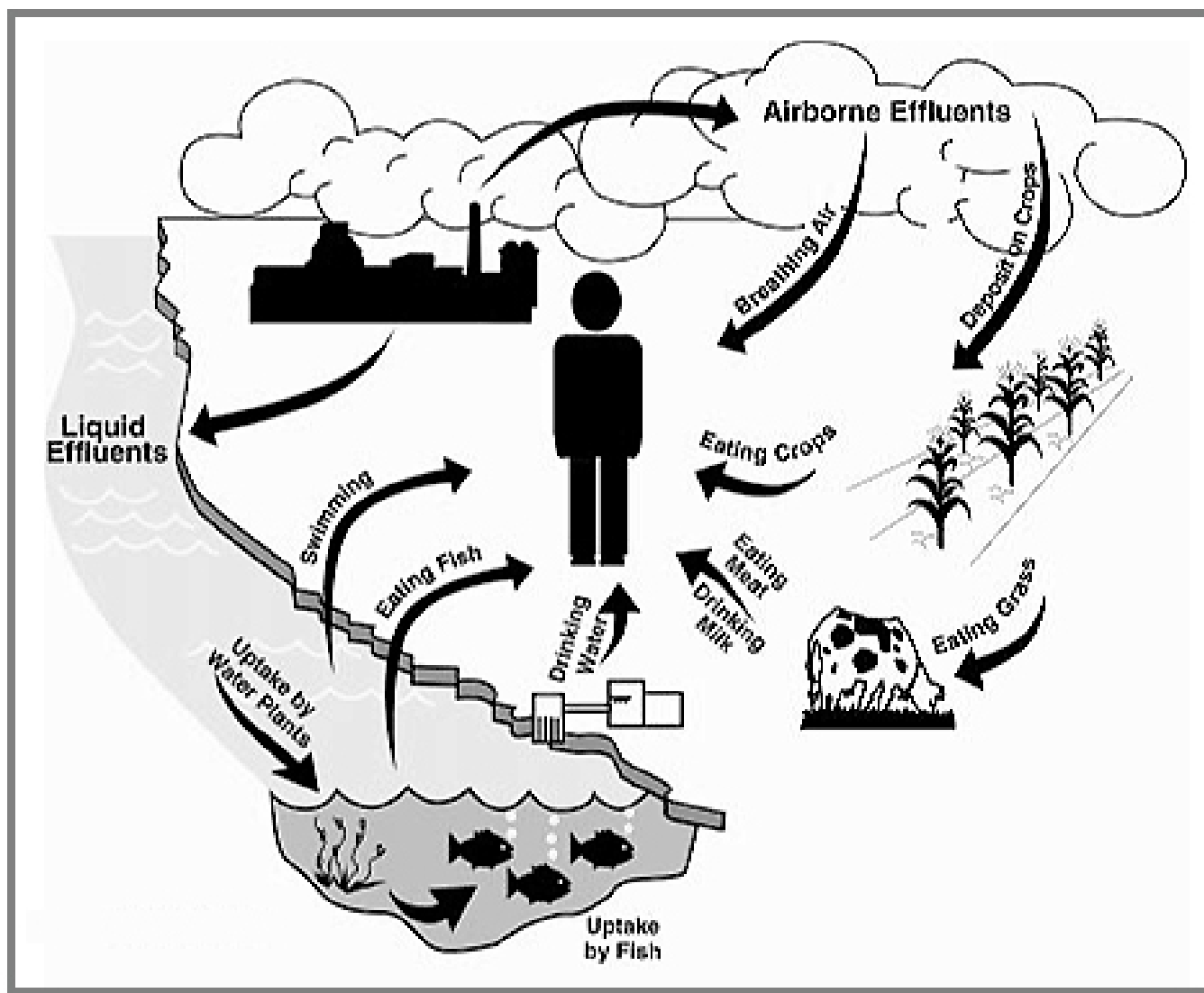
# 2008 Monitoring Program Summary

- For 2008, the radiation dose to the public living near SRS was well below DOE's 100-mrem/year standard.
- Savannah River Site's 2008 air and water releases, as well as all potential radiation doses from the site, were well below applicable regulatory standards.
- The potential dose to downriver water consumer was well below EPA's 4-mrem/year standard.

# Maximally Exposed Individual

- **Dose is expressed in terms of a hypothetical maximally exposed individual, using both airborne and liquid pathways.**
- **For airborne releases**
  - Lives at the SRS boundary 365 days per year
  - Consumes milk, meat, and vegetables produced at that location
- **For liquid releases**
  - Lives downriver of SRS (near River Mile 118.8) 365 days a year
  - Drinks 2 liters of untreated water per day from the Savannah River
  - Consumes 19 kilograms per year of Savannah River fish
  - Spends majority of time on or near the river

# Contaminant Pathways



# 2008 Dose Summary

All values are mrem/yr

|                    | Standard | Potential Dose<br>from SRS |
|--------------------|----------|----------------------------|
| DOE All-Pathway    | 100      | 0.12                       |
| EPA Clean Air Act  | 10       | 0.04                       |
| EPA Drinking Water | 4        | 0.04                       |
| Annual Background  | 360      |                            |



## 2008 Dose Summary, cont.

| Drinking Water Dose                          |           |
|----------------------------------------------|-----------|
| Beaufort-Jasper (Chelsea), South Carolina    | 0.03 mrem |
| Beaufort-Jasper (Purrysburg), South Carolina | 0.04 mrem |
| Savannah, Georgia                            | 0.04 mrem |

# Maximally Exposed Individual Potential Dose

| Individual Dose |           |           |
|-----------------|-----------|-----------|
|                 | 2007      | 2008      |
| Water           | 0.05 mrem | 0.08 mrem |
| Air             | 0.04 mrem | 0.04 mrem |
| Total           | 0.10 mrem | 0.12 mrem |

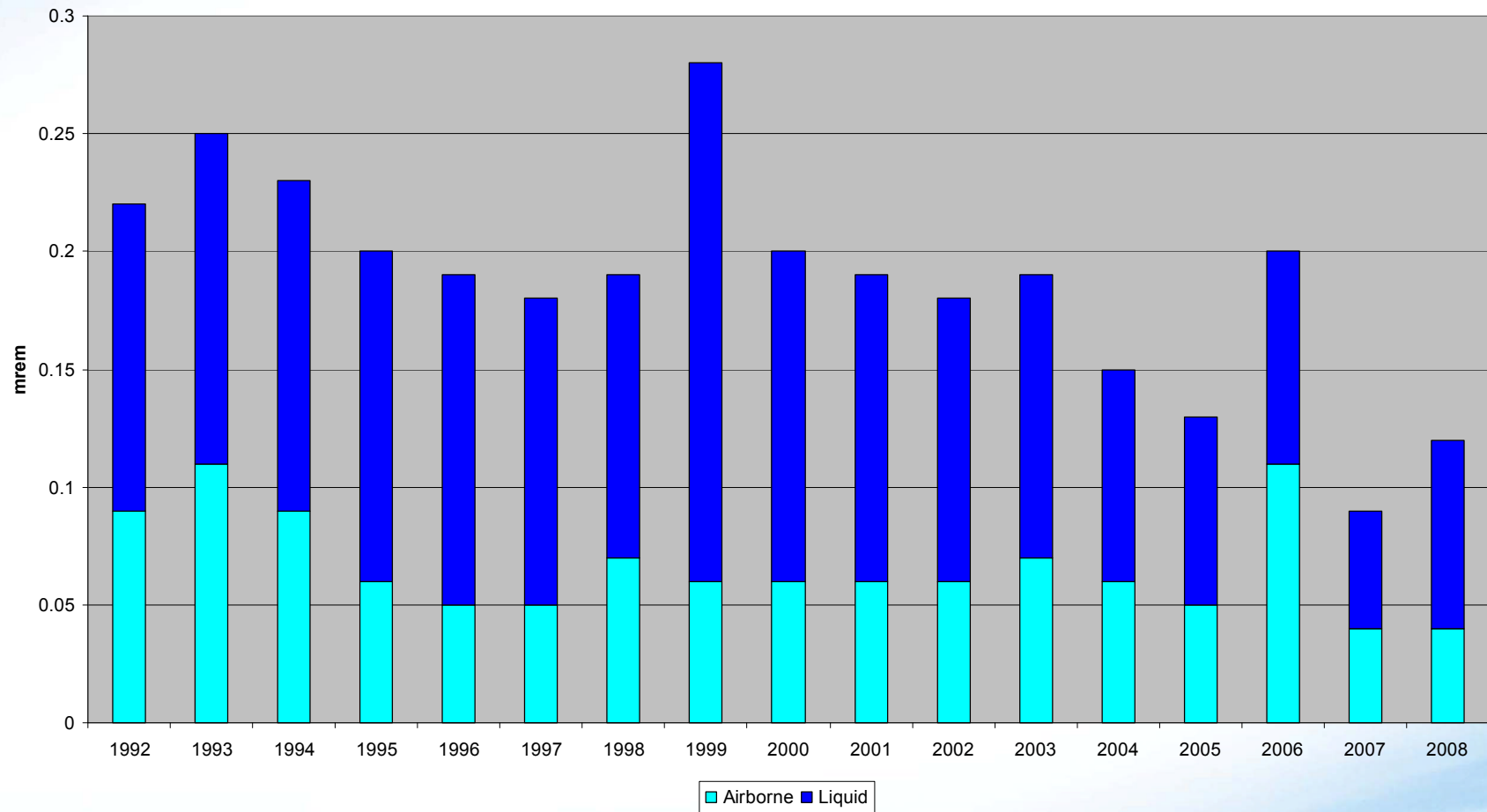
# Air Pathway Highlights

- The 2008 dose estimate was consistent with 2007 levels.
- Tritium oxide (82%) and iodine-129 (11%) were the primary contributors.
- Major pathways
  - Inhalation 43%
  - Vegetation Consumption 39%
  - Meat and Milk Consumption 17%

# Water Pathway Highlights

- **Dose estimate 0.08 mrem in 2008 vs. 0.05 mrem in 2007**
  - Tritium contribution increased 50%, primarily due to record low Savannah River flow rate.
  - Pu-238 contribution increased, primarily due to H Area operations
- **Major Dose Contributors**
  - 38% from Cs-137, from fish consumption
  - 24 % from tritium, mainly water consumption
  - 19% from unspecified alpha emitters
  - 11% from Pu-238

# Historic Dose Trend



# 2008 Special-Case Doses

- **Sportsman Dose**

- 30-mrem Annual Limit

- Fish

- 0.11 mrem (maximum, Upper Three Runs catfish)

- Deer/Hogs

- 13 mrem (maximum, onsite deer/hog hunter)

- 5.7 mrem (maximum, offsite deer hunter)

- 7.7 mrem (maximum, offsite hog hunter)

# Compliance Status

- **Clean Air Act – Particulate matter emission limit exceeded during biennial stack test of A-Area Boiler #2**
  - Notice of Alleged Violation issued by SCDHEC
  - Enforcement resolved through a Consent Order in 2009
- **Clean Water Act - Five NPDES permit condition exceptions reported; two resulted in Notice of Alleged Violation:**
  - Total suspended solids above limit at K-12 Outfall
  - High fecal coliform results at G-10 Outfall
  - No further enforcement action taken for either exception

# Closing Comments

- **SRS has a comprehensive environmental monitoring program.**
- **The site's airborne and liquid releases to the environment show a long-term decrease.**
- **For 2008, the radiation dose to the**
  - public living near SRS was well below DOE's 100-mrem/year standard.
  - downriver water consumer was well below EPA's 4-mrem/year standard.

# Contact Information

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- **The report is available on the web at**  
<http://www.srs.gov/general/pubs/ERsum/index.html>
- **To inquire about the report, contact:**  
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