

## SAVANNAH RIVER SITE (SRS)

### Phase II of the SRS Dose Reconstruction Project

Phase II of the Savannah River Site Environmental Dose Reconstruction Project has focused on the quantities of chemical and radioactive materials released from 1954-1992. Later work (Phases IV and V) will complete the environmental pathways assessment estimating the amounts and possible effects of materials that may have reached nearby residents for those radionuclides and chemicals selected at the end of Phase III.

The draft results of the Phase II study are estimates of the amount of radioactive materials and toxic chemicals released to the environment from SRS from 1954-1992. These draft results were delivered to the CDC in September 1998 for initial review. Outside experts including the Citizens' SRS Health Effects Subcommittee will review the draft report that summarizes the findings of Phase II. CDC will address all comments in its final report which is scheduled for completion at the end of 1999. The final report will include a computer disk covering the information found in Phase II of the SRS Dose Reconstruction Project. The report will be available to anyone who requests it from the CDC.

A summary of the Phase II results are included in the following tables.

#### RADIONUCLIDES OF CONCERN

We have estimated the total releases to air and surface water for several *radionuclides*. The radionuclides listed in Table 1 are the principal radionuclides of concern released from the SRS from 1954 through 1992.

**Table I**

#### Median Radionuclide Releases from the SRS to Air and Surface Water in Curies

Principal Radionuclide Releases to Air (in curies)		Principal Radionuclide Releases to Surface Water (in curies)	
Iodine-131	57,000	Tritium	1,800,000
Tritium	26,000,000	Cesium-137	250
Argon-41	6,400,000	Strontium-90	100
Iodine-129	5.6		
Plutonium-238, 239, 240	16		

Details of all radionuclide and chemical releases can be found in the Phase II draft report. These will be used in the future to estimate doses and risks to people living near SRS. However the next phase (Phase III) in the project will involve screening methods to focus the efforts and resources on the highest priority radionuclides and chemicals. CDC will post the 1400 page Draft Phase II report on the internet in late spring. *Copies of the Community Summary and the fact sheets are available on the Internet at <http://www.cdc.gov/nceh>.* To receive a copy of the draft report and accompanying fact sheets, write the CDC at:

The Centers for Disease Control and Prevention  
Attn: Mr. Paul Renard, Mail Stop F-35  
4770 Buford Highway, NE  
Atlanta, GA 30341  
(770) 488-7040 email: [pgrl@cdc.gov](mailto:pgrl@cdc.gov)

## CHEMICALS AND HEAVY METALS OF CONCERN

We have made *preliminary* estimates of the release rates for the *chemicals and heavy metals* of concern. *Based on our approach, these release rates are more likely to be an overestimate than an underestimate of the actual releases.* Further research is needed to better define actual release rates for chemicals and heavy metals. *Our initial estimates* of the annual releases to air of selected chemicals are listed in Table II. Those to surface water are listed in Table III.

Chemical	AIR Range of release estimates in tons per year
Benzene	1.8–18
Lead	0.05–0.12
Manganese	0.07–1.9
Nickel	0.11–0.42
Nitric acid	30–150
Coal ash	4200
Mercury	0.3
Nitrogen dioxide	6050
Sulfur dioxide	11000

**Table II**  
**Annual Releases of Selected Chemicals to Air**

Released to Creek or Basin (Onsite SRS)	Chemical	Release Estimate in pounds/year (maximum or range)
To Tim's Branch	cadmium	2.2
To Beaver Dam Creek	hydrogen sulfide	2000
To Tim's Branch	lead	20-100
To the Separations Area Seepage Basins	lead	30-1400
To the Separations Area Seepage Basins	mercury	3300-7700
To Four Mile Creek in groundwater	mercury	0.2- 18
To Tim's Branch	nickel	250-4400
To the Separations Area Seepage Basins	nitrate	0–1383
To Four Mile Creek in groundwater	nitrate	Up to 3890
To Tim's Branch	nitrate	27–200

**Table III**  
**Summary of Estimated Releases of Chemicals to Surface Water**