



## Alabama Redstone Arsenal

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### ***Facility and Location***

Redstone Arsenal (RSA) is located near Huntsville and has served for more than 40 years as the Army's center for missile and rocket programs. Between 1942 and 1945, the Army produced conventional and chemical munitions for World War II; including perchlorate based colored smoke munitions. In the late 1950s, RSA became the center for the Army's Guided Missile Development. RSA's aviation and missile expert's research, develop, test, purchase, repair, or maintain the high technology weapons. Other activities have included rocket motor research and development, manufacturing, testing, and demilitarization. RSA currently shares the installation with the NASA Marshall Space Flight Center which opened in 1960.

### ***Media Sampled and Findings***

**Drinking Water** — In 2011, 40 of 40 samples detected perchlorate from 0.16 to 12.4 ppb.

**Groundwater** — In 2011, 356 of 358 samples detected perchlorate from 0.09 to 88,200 ppb. In 2010, 32 of 39 samples detected perchlorate from 0.14 to 24,000 ppb. In 2009, 478 of 481 samples detected perchlorate from 0.01 to 74,000 ppb. In 2008, 636 of 880 samples detected perchlorate from 0.01 to 2,600,000 ppb. In 2007, 229 of 253 detected perchlorate from 0.1 to 80,000 ppb. Prior to 2007, samples were collected from several sites where activities such as rocket motor research and development, manufacturing, testing, and demilitarization activities have occurred. RSA has installed and tested 356 onsite groundwater monitoring wells, plus 450 screening points near various potential sources of perchlorate, such as the smoke munitions manufacturing area, rocket motor research and development, rocket motor manufacturing, rocket motor testing, and open burn/open detonation (OB/OD) operations. Of the 2,747 samples, the highest detection of perchlorate was 220,000 ppb near the rocket fuel research and development, manufacturing, and testing operations. In addition, 91 of 312 groundwater samples were taken from offsite wells to determine if perchlorate had migrated from the site. Perchlorate was detected ranging from 1.7 ppb to 59 ppb.

**Sediment** — In 2011, 46 of 46 samples detected perchlorate from 0.02 to 0.14 ppb. In 2008, 42 samples reported no detection. In 2007, seven samples reported no detection. Prior to 2007, 6 of 24 samples drawn near activities with the highest perchlorate use at the arsenal (i.e., rocket motor research and development, testing, and manufacturing) detected perchlorate.

**Soil** — In 2010, four of four samples detected perchlorate from 0.12 to 0.90 ppb. In 2009, 24 of 24 samples detected perchlorate from 0.001 to 28 ppb. In 2008, 372 of 835 samples detected perchlorate up to 17 ppb. In 2007, 292 of 544 samples detected perchlorate from 0.001 to 38 ppb. Prior to 2007, samples were collected from areas with historical perchlorate use. Of the 2,630 samples tested, the highest detection of perchlorate was 280,000 ppb.

**Spring** — In 2008, 27 of 43 samples detected perchlorate from 0.02 to 240 ppb.

**Surface Water** — In 2009, 81 of 81 samples detected perchlorate from 0.03 to 63 ppb. In 2008, 95 of 187 samples detected perchlorate from 0.01 to 250 ppb. In 2007, four of seven samples detected perchlorate from 0.26 to 0.36 ppb. Prior to 2007, 67 of 390 samples collected at



various locations downstream from areas of perchlorate use detected perchlorate from 0.08 to 4,800 ppb.

### ***Appropriate Actions***

Redstone is working with the Alabama Department of Environmental Management (ADEM) to address perchlorate in groundwater and surface water above the EPA and DoD Preliminary Remediation Goal of 15 ppb. Additionally, soil samples taken prior to 2007 were above the 7,800 ppb residential and 100,000 ppb commercial soil screening levels recommended by the state of Alabama.

ADEM has issued a new permit which requires RSA adhere to new sampling schedules. These schedules are being negotiated during the first quarter of 2011. RSA has been required to proceed expeditiously and, as such, has begun work on many of the sites requiring action under the permit.

A Remedial Investigation report was completed in July 2005. A Feasibility Study is underway to analyze remedial options. A health risk evaluation was conducted for surface water off post and found no health risk to recreational users and residents. Sampling showed non-detectable levels in the Tennessee River. Sites RSA 146 and RSA 151 are currently undergoing further monitoring.

The Municipal water system supplies drinking water and there is no human consumption of groundwater either on base or off base, thus no threat to human health.