

South Minneapolis Residential Soil Contamination – Site Narrative

The South Minneapolis Residential Soil Contamination, or South Minn, site is in Minneapolis, Hennepin County, Minn. The site covers around 1,480 acres, and soil sampling has been conducted at more than 3,500 residential properties in an ethnically and economically diverse community. While the area is largely residential, it also contains commercial, industrial and municipal properties.

The South Minn site is located close to a former pesticide manufacturing plant. The pesticide plant property was leased and operated by Reade Manufacturing, which made arsenic- and lead arsenate-based grasshopper pesticides from 1938 through 1963. From 1963 through 1968, U.S. Borax sub-leased the parcel and stored and shipped pesticide products. It is believed that during plant operations, powder-like arsenic trioxide was periodically blown by the wind off-site into the surrounding neighborhoods, which resulted in contaminated soil.

The pesticide plant property was owned by the Chicago, Milwaukee, St. Paul & Pacific Railway from the 1880s through 1985. After the railroad declared bankruptcy in 1985, the property was transferred to CMC Heartland Partners, or CMC, in November 1993. In August 2005, CMC sold the property to 2800 Hiawatha LLC. The CMC Heartland Partners Lite Yard was investigated and cleaned up by CMC Heartland Partners in 2004 and 2005 under the oversight of the Minnesota Department of Agriculture, or MDA, and other state authorities. The property is now in re-use by a light industrial/commercial facility.

In 1994, the Minnesota Department of Transportation investigated the Hiawatha Avenue corridor for road reconstruction and discovered elevated levels of arsenic on the eastern-most part of the former plant property. With oversight from the MDA's Agricultural Voluntary Investigation and Cleanup (AgVIC) Program, several organizations, including MDOT, completed investigations of the surrounding area for arsenic contamination. In 1995, CMC Heartland Partners completed soil investigations on its property through the AgVIC Program. Arsenic levels in the surface soil were found to be as high as 5,200 parts per million (ppm). By 1996, the operator of the former plant property (an asphalt company) had covered much of the property with 1 to 2 feet of clean fill and crushed bituminous asphalt.

The federal Agency for Toxic Substances and Disease Registry, or ATSDR, in conjunction with the Minnesota Department of Health, or MDH, issued two Health Consultations in 1999 and 2001 for the site that described public health hazards and contained recommendations to protect the public. Risks were identified concerning arsenic in the soil the public could come in contact with. Additionally, the Health Consultations expressed concern about the possibility of highly contaminated dust being windblown off the former plant property and affecting

residences in the Phillips Neighborhood located just to the northwest of the property. The arsenic concentration ATSDR and state health department considered being an acute exposure was 110 ppm.

In 2001 and 2003, MDA and MDH performed limited soil investigations in residential yards. One hundred sixty-seven properties were sampled showing arsenic levels as high as 635 ppm. Ten properties had arsenic concentrations considered to be at or above the acute exposure level.

In 2004, MDA issued a proposed cleanup plan at the former plant property and requested assistance from EPA's Superfund Removal Program to manage the residential arsenic contamination. At the former plant property, 62,000 cubic yards of soil were removed and sent to a landfill in Minnesota. EPA established an arsenic removal action level of 95 ppm for the neighborhoods. In 2004, EPA sampled over 400 properties and completed excavation work at thirty properties which exceeded the removal action level. In 2005, EPA sampled surface soils at over 600 residential properties, 13 daycare centers, and four schools, and excavated 95 properties that exceeded the removal action level.

In 2005, in an effort to identify areas for additional sampling, EPA ran an air dispersion model. The model estimated arsenic contamination from the former plant property could potentially have affected an area in a three-quarter mile radius of the property (3,578 residential properties). In 2006, EPA completed sampling at over 3,500 residential properties (all of the properties that had granted access to EPA) within this area.

Based on the final data in the established site boundary, a total of 206 properties tested for arsenic levels exceeding the removal action number and requiring excavation and restoration. By the end of 2008, 197 of those properties had removal work completed. The remaining nine properties had unresolved access issues and were referred to EPA's Superfund remedial cleanup program for additional follow-up.

In 2007 EPA completed a Remedial Investigation, or RI, at the South Minn site that included a baseline human health risk assessment. It found that arsenic concentrations greater than 25 parts per million could pose an unacceptable risk to the residents, primarily from accidental ingestion of contaminated soil. The risk assessment also determined an acceptable preliminary remediation goal for arsenic would be between 16 parts per million (background arsenic concentrations for the area) and 25 parts per million.

Based on the RI sampling data, EPA concluded wind-blown contamination from the former plant site may have contributed to the arsenic levels in the soil, but, only at very low levels in the three-quarter-mile radius study area. The high levels

of arsenic scattered throughout the study area, particularly at the outer edges of the sampling area, are not suggestive of wind-blown contamination being the sole contributor to arsenic levels in the area.

If windblown-contamination from the plant site was the sole contributor, then a pattern of decreasing concentrations would be seen as one moved away from the plant site. Decreasing patterns were seen in a few directions at some levels. However, the pattern of high levels scattered throughout the sampling area, or in some cases increasing concentrations, suggests people also applied or unknowingly brought in material with a high levels of arsenic on individual properties. Common fertilizers and pesticides contain high levels of arsenic, as does coal ash and pressure-treated lumber. The Agency, therefore, decided not to expand the sampling area and to limit cleanup work to properties within the sampling area.

A cleanup document called a "Record of Decision" for the site was signed on Sept. 5, 2008. The final cleanup plan required removing soil from residential yards with arsenic levels exceeding 25 mg/kg - approximately 487 properties. In 2009 EPA received funding through the American Reinvestment and Recovery Act to fund the cleanup work at the site. EPA contractors began work at the site in August 2009 and completed it in September 2011. To clean up a property, workers dug up a foot of soil from grass and play areas. Within gardens and planting beds, they removed 18 inches of soil. No soil was removed from beneath buildings or paved areas.

Soil samples were taken after a foot of contaminated soil had been removed. If those samples showed arsenic at levels above 95 mg/kg, workers kept digging until soil samples showed that remaining soils did not exceed 95 mg/kg. (Those most likely to come in contact with the deep soil are construction workers, and the risk assessment shows they will be safe even at levels higher than 95 mg/kg. Residents will also be safe from short-term exposure at these levels. EPA does not expect any long-term exposure to these levels.) Workers then filled the yard with clean dirt and restored the property. The contaminated soil was taken to permitted landfills in Minnesota.

By the end of the cleanup work in September 2011, 472 properties had been excavated and restored, which represents 97 percent of the properties EPA had targeted for cleanup. Owners of the remaining 3 percent of properties either chose not to have the cleanup conducted or did not respond to EPA requests for access, which were made over a number of years and in multiple languages. Properties that had the cleanup conducted are available for unlimited use and unrestricted exposure. Property owners are required by City of Minneapolis Code of Ordinances Section 248.30(a)(5) to disclose to potential buyers environmental testing performed on the property by or under the direction of EPA or other

governmental agencies. For properties where cleanup was needed, but for which access was not granted, the city of Minneapolis has assured that rental property permits will not be issued. EPA expects these measures will encourage the property owners to perform the necessary cleanup, at their own expense, when they wish to sell the property or attain a rental permit.