Emergency Response Sampling of Air from Caves Following a Diesel Fuel Release, Chickamauga-Chattanooga National Military Park, Lookout Mountain, Tennessee

By Connor J. Haugh[1] and Michael W. Bradley[2]
[1] U.S. Geological Survey, 640 Grassmere Park, Suite 100, Nashville, TN, 37211
[2] U.S. Geological Survey, 640 Grassmere Park, Suite 100, Nashville, TN, 37211

In February 1996, an interstate fuel pipeline rupture released an estimated 65,000 gallons of diesel fuel into a small ravine on the east side of Lookout Mountain at the Chickamauga-Chattanooga National Military Park in Hamilton County, Tennessee. A relatively small amount (about 1,500 gallons) of the fuel was recovered; the remainder infiltrated the ground and the cave system under Lookout Mountain. A cooperative study was conducted between the National Park Service Emergency Response Team and the U.S. Geological Survey in an effort to determine the spatial extent of the effect of the diesel fuel release on the cave system. As part of the emergency response, air flowing from cave entrances and cave vents at various locations and elevations on Lookout Mountain was sampled and analyzed using a portable gas chromatograph. Low concentrations of volatile hydrocarbons, including benzene, toluene, and xylene, were detected in several of the cave air samples. Chromatograms of the cave air samples were compared to a chromatogram of a "diesel fuel standard" in an attempt to "fingerprint" the air contaminants. Although "fingerprinting" the hydrocarbon contaminants detected in the cave air samples as a close match to the "diesel standard" was not possible, several of the hydrocarbons detected in the cave air samples also were present in the "diesel standard."

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