

Since the 1990s Lockheed Martin has been investigating the presence of contaminants in the soil and groundwater at the Middle River Complex and in the sediments of the adjacent Cow Pen Creek and Dark Head Cove. These contaminants are likely the byproduct of historic operations at the Complex. Results of these investigations are being used to plan for the cleanup of the site, which has already begun. More information on the investigations and cleanup can be found in the general site Fact Sheet (*note: a web link for more information is enclosed at the end of this update*).

Sampling of soil and groundwater has revealed the presence of elevated levels of solvents (chlorinated hydrocarbons) and petroleum-related hydrocarbons, both of which are volatile organic compounds, as well as other contaminants. Volatile organic compounds have also been detected in the vapor beneath the Lockheed Martin and Middle River Aircraft Systems (MRAS) facilities.

Underground volatile organic compounds have the potential to move into buildings through cracks in foundations and basement floors, and through sump and utility openings, in a process known as vapor intrusion. Since 2006, Lockheed Martin has conducted 15 rounds of tests of air quality inside Buildings A, B, and C, and of the vapor in soils directly beneath these buildings, to ensure that indoor air quality at the Middle River Complex is acceptable for workers.

Sampling is conducted generally twice a year to account for differences in conditions between summer and winter, when heating, ventilation and air conditioning can affect the rate at which soil vapors may be pulled into, be blocked from entering, or be pushed out of a building. Indoor air was sampled once inside the Vertical Launching System (VLS) building in 2006, and has not been sampled again, because no chemicals of concern were detected there. To confirm this determination, resampling is planned in February 2014 at the VLS building along with two additional buildings

rounds of monitoring expanded the number of indoor air and sub-slab sampling locations to provide a more detailed picture of what was occurring beneath the Complex. The current monitoring program analyzes 25 chemicals in 36 indoor air and 35 soil-vapor samples collected throughout Buildings A, B and C. *See figures on pages 5 and 6 for sampling locations.*

Based on monitoring results, chemical concentrations detected in the indoor air in the Middle River Complex do not exceed air quality standards established by the U.S Occupational Safety and Health Act and its Maryland counterpart, nor do they typically exceed the conservative (meaning, low), health risk-based screening levels established by the U.S. Environmental Protection Agency (EPA) and its Maryland counterpart, the Maryland Department of the Environment (MDE). Detections that exceed screening levels are very infrequent, and may or may not be related to releases or spills into the environment associated with historic operations at the Middle River Complex. Elevated concentrations of volatile organic compounds have been found in sub-slab vapor beneath the floor of the Plating Shop in Building A, and beneath the floor in the south end and eastern side of Building C.

While indoor air sampling in the Plating Shop in Building A and in Building C did not indicate an unacceptable risk to workers, the possibility of it occurring in the future led Lockheed Martin to proactively install vapor mitigation systems in the Building A Plating Shop and the south side of Building C Basement in 2008. These sub-slab depressurization systems remove and treat volatile organic compounds from the air spaces beneath the buildings, and reduce their potential for moving inside. The vapor is collected through vacuum lines, treated in pressure vessels, and then clean air is discharged through an outside stack above the roofline.

In March 2013, the Building A system was shut down for maintenance. While it was down, Lockheed Martin sampled th( )5(p)3(r)-20(o)5(ac)11(t)9(i)-8(v)-4(el)-1(l)-8 L7(i)-8(-Tat)9( 2m)-4(p)3(l)-8(n)3( )9(t)557e8(n)3( )9(t)



potential source for vapor intrusion. Naphthalene is widely found in motor vehicle emissions, tobacco smoke, solvents, lubricants and even from deodorizers. However, it has been found to exceed screening levels in soil vapor in recent years, causing the Lockheed Martin team to speculate what its source may be, and whether naphthalene found in indoor air could be the result of vapor intrusion. For example, an evaluation of the August 2013 data found nine out of 38 of the indoor air samples exceeded an indoor air health risk-screening level for naphthalene. Lockheed Martin intends to continue analyzing for naphthalene as part of its on-going vapor intrusion-monitoring program. It will collect information on chemicals used at locations where naphthalene was found in excess of indoor air screening levels during the August 2013 sampling in order to identify other possible sources of volatile organic compounds in indoor air.

Lockheed Martin will review existing inventories of chemicals found in the workplace. Employees are being asked to help identify all chemicals being used in the three areas where screening levels were exceeded. Local Lockheed Martin management supports this request. Some product containers may not cite ingredients such as trichloroethene on their labels; so, environmental experts need to evaluate all product

o-3(ei)-r3(sed )10(i)-8(n)3( t)9(h)3(e )JD -13.44 TD (t)9(h)sd



