

### Summary in Brief

The most recent groundwater testing for the cleanup program at the former Varian facility continues to show good progress is being made towards achieving cleanup goals. In continuing to move toward the end of the cleanup, Varian performed treatment activities during the summer and fall of 2013 to destroy the contamination (chemicals known as volatile organic compounds or VOCs) in the soil and groundwater. As part of those activities, Varian continued operation of two treatment system to cleanup VOCs beneath two of its former manufacturing buildings. In 2013, Varian also conducted tests at three commercial/industrial properties to the west to confirm previous results that showed VOCs from the 150 Sohier Road site do not present a risk to indoor air quality. Testing of groundwater will continue in 2014, as detailed below. Historic ENVIRONMENTAL UPDATES and reports, including those referenced below, can be accessed on the cleanup web site at [www.beverlycleanup.varian.com](http://www.beverlycleanup.varian.com), or in the Information Repository (see back page for locations).

### Varian Cleanup Moving Toward Completion

#### Permanganate Treatment

Varian is continuing the groundwater treatment program at its former facility. The cleanup program has involved injecting oxygen in the form of sodium permanganate to destroy VOCs in the soil and groundwater. Over time, as areas have been cleaned up, the extent of the injection areas and the injection volumes have been reduced.

In 2013, permanganate treatment focused on deep overburden around 150 Sohier Road buildings and the adjacent property at 28 Tozer Road in an effort to destroy isolated residual deep VOC concentrations. Wells with elevated levels of VOCs were selected for treatment (see map). Between July and December 2013, approximately 3,000 gallons of permanganate were applied at the Site. Groundwater test results from October 2013 are being evaluated to determine the success of treatment.

#### Bioremediation

Varian also uses a cleanup approach known as bioremediation in two areas, one shallow and one deep (see map). This approach provides nutrients to naturally occurring bacteria, along with supplemental natural bacteria, to accelerate the rate at which the VOCs are naturally broken down into harmless substances. Nutrient application in the shallow area was last conducted in July 2012; however, groundwater continues to be tested. Based on an evaluation of groundwater test results through April 2013, the limited bioremediation program appears to have successfully addressed the shallow overburden VOC contamination in the cleanup area at 150 Sohier Road.

The bioremediation program in a small deep overburden groundwater area at 150 Sohier Road had some positive results, but was less effective. In an effort to increase the effectiveness of treatment, additional groundwater cleanup wells were installed in the deep overburden in September 2013. Additional treatment was performed in the new groundwater wells in October 2013 to more effectively breakdown VOC contamination. Groundwater analytical results from January and April 2014 will be evaluated to assess the effectiveness of the program.

#### Soil Vapor Extraction

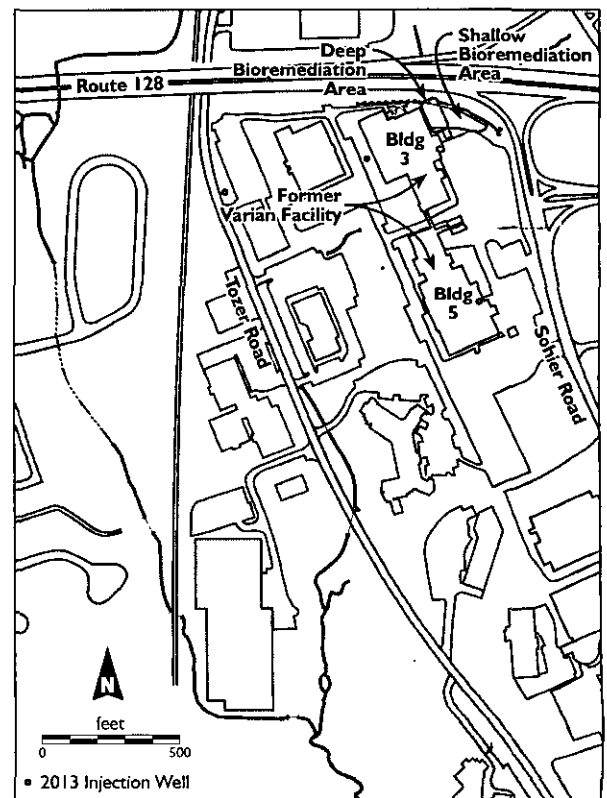
Due to residual VOCs in very shallow soil affecting indoor air in Building 3 with the potential for a regulatory risk condition known as an Imminent Hazard, Varian installed a system to remove the VOCs from beneath the manufacturing building (see map). The system uses a technology known as soil vapor extraction (SVE). Once this system began operation, indoor air quality inside the building significantly improved and the Imminent Hazard risk condition was eliminated. Operation of the system has removed VOCs from beneath the building and resulted in decreased VOC levels in the soil vapor. The soil vapor extraction system at Building 3 will continue to be operated as needed to remove VOCs from beneath the affected building.

Air testing in Building 5 indicated the presence of VOCs in indoor air that may have been affecting long term risk in Building 5 (see map). Therefore

a second SVE system has been installed in Building 5. It is effectively removing VOCs from beneath the building. VOC levels in soil vapor beneath Building 5 have decreased substantially since operation of the Building 5 SVE system began in 2013. The soil vapor extraction system at Building 5 will continue to be operated, as needed to remove VOCs from beneath the affected building.

#### Cleanup Summary

Groundwater test data continue to show that the cleanup program is effectively treating site groundwater consistent with treatment goals. Improvements to the ongoing treatment program will continue



Former Varian Facility

to be made based on site conditions, monitoring data, and groundwater test results. The permanganate treatment program has resulted in dramatic decreases of contaminants in many wells. The bioremediation program has accelerated the rate at which VOCs are completely broken down. Both SVE systems are removing VOCs from beneath the buildings and air tests show there is no significant risk with the systems operating.

Results of groundwater testing conducted in April 2013 and details of cleanup activities conducted in that period are available in the October 31, 2013 "Phase V Remedy Operation Status Inspection and Monitoring Report."

### Evaluation of Other Areas

To confirm the conclusion that VOCs from the 150 Sohler Road site do not present a significant risk to indoor air, Varian conducted tests at three other industrial/commercial properties along Tozer Road to the west in 2013. Two properties are next to the southern portion of the former Varian facility. The third is located to the west across Tozer Road. Results of tests completed through September 2013 to evaluate possible effects on indoor air are detailed in the April 30, 2013 and October 31, 2013 Remedy Operation Status Reports. The results consistently demonstrate that there are no concerns with indoor air at the three Tozer Road facilities tested.

### Continuing Activities in 2014

The SVE systems in Building 3 and Building 5 will continue to operate in 2014. Indoor air in some of the 150 Sohler Road

### More Information Available

Varian will continue to produce copies of this ENVIRONMENTAL UPDATE during site cleanup. Copies of all previous ENVIRONMENTAL UPDATES, the reports mentioned here, and past reports containing environmental data for the site can be found at the web site: [www.beverly-cleanup.varian.com](http://www.beverly-cleanup.varian.com), which also contains a regularly-updated schedule of events. The documents can also be reviewed at the Information Repository at the Beverly Public Library, 32 Essex Street, 978.921.6062. They are also on file at the Department of Environmental Protection Northeast Regional Office, 978.694.3320, [nero.service@state.ma.us](mailto:nero.service@state.ma.us) or [www.mass.gov/dep/about/region/northeast.htm#filereview](http://www.mass.gov/dep/about/region/northeast.htm#filereview); the Beverly Board of Health at 90 Colon Street; and the Beverly Conservation Commission Office at 191 Cabot Street.

For more information or to be added to the cleanup mailing list, please contact either:

Raymond J. Cadorette  
Shaw Environmental (a CB&I company)  
150 Royall Street  
Canton, MA 02021  
[raymond.cadorette@cbi.com](mailto:raymond.cadorette@cbi.com)  
617-589-6102

John Buchanan  
Varian Medical Systems, Inc.  
3120 Hansen Way, M/S G-100  
Palo Alto, CA 94304  
[john.buchanan@varian.com](mailto:john.buchanan@varian.com)  
650-424-6103

buildings as well as properties along Tozer Road will continue to be tested to ensure sustained elimination of risk to indoor air.

Site-wide testing activities will continue to be conducted in 2014 to evaluate and optimize treatment to ensure cleanup goals continue to be met. Details of the continuing treatment programs and additional test results will be detailed in upcoming status reports. The next Remedy Operation Status Report will be issued in April 2014.

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Karen Stromberg  
Massachusetts DEP  
205B Lowell Street  
Wilmington, MA 01887

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Shaw Environmental, Inc.  
150 Royall Street  
Canton, MA 02021