

## Petroleum Release at the T-Mart Facility

3772 W. SR-10, Wheatfield, IN

### BACKGROUND

Gasoline service stations generally store their fuel in underground storage tanks (USTs). Before the late 1980s, there were few regulations in place governing tank operations, and subsurface releases were common as tanks rusted and leaked. State and federal regulations instituted in 1989 greatly reduced the number of releases. But, more recent releases have occurred, and historic releases from decades of unregulated operation are regularly discovered beneath gas station properties. There are approximately 4,000 facilities with underground storage tanks currently operating in Indiana. Since 1989, IDEM has overseen the cleanup of approximately 4,300 sites where USTs have leaked. IDEM is currently working to address about 3,500 more sites contaminated by leaking tanks.

### INVESTIGATIVE ACTIVITIES

Subsurface gasoline impacts at the T-Mart property were identified in on-site soils and groundwater in June 2012. A chemical release was reported to the Indiana Department of Environmental Management (IDEM) in accordance with state requirements. IDEM required further investigation to determine the extent of the release. Under IDEM oversight, Mundell & Associates, Inc. (MUNDELL) completed several phases of investigation between October 2012 and October 2013. These investigations identified gasoline-impacted soil on the T-Mart property and a plume of impacted groundwater extending northward. A monitoring well network is now in place over the area of the plume. An additional phase of investigation, concluding in October 2014, characterized a second area of groundwater impacted at levels below regulatory thresholds.

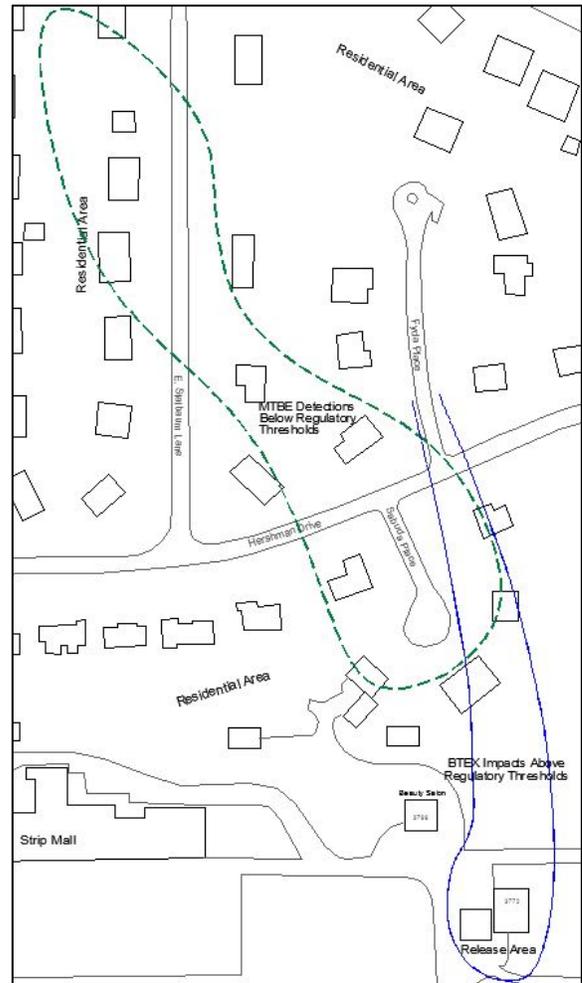


Figure 1: Groundwater impacted with petroleum hydrocarbons

Quarterly groundwater testing identified benzene as the primary chemical of concern in areas around and directly north of the T-Mart site. Gasoline is a mixture of about 150 chemicals refined from crude oil, with benzene comprising 1-2% of the typical formulation. Benzene is chief among the group of chemicals often detected around gasoline releases, collectively called "BTEX." Benzene can dissolve into groundwater and travel away from a gasoline release area over time.

A secondary chemical contaminant, methyl tertiary butyl ether (MTBE), was identified in groundwater northwest of the T-Mart property during the 2014 phase of investigation. Once in groundwater, MTBE generally travels at the same speed as groundwater, so it can travel farther from an area of release than BTEX. IDEM and MUNDELL can now confirm that low levels of MTBE in the ground water are not increasing in concentration, and therefore are not a threat to human health.

Public water utilities are unavailable in the area, meaning that all homes and businesses rely on private water wells. MUNDELL has conducted drinking water testing at over 40 residences, three businesses, and the high school to assess the quality of the drinking water near the dissolved plume. Petroleum impacts have been confirmed in seven drinking water wells, four of which involved low levels of MTBE that IDEM is confident do not pose a threat to human health. As a conservative measure, IDEM approved the installation

of a drinking water treatment system at each of these four locations. IDEM approved drinking water treatment systems for the three remaining impacted water wells to mitigate elevated benzene levels.

As gasoline impacted groundwater travels away from a release area, it is common for certain chemicals (such as benzene) to evaporate out of the water over time. In this way, chemical vapors can be transported under buildings near a release. MUNDELL performed vapor sampling and testing within and beneath four structures located over the benzene plume to determine whether petroleum vapors were present. Results indicated that vapor issues are not an issue within residences. Benzene vapors within the station were however elevated enough to require mitigation via two vapor mitigation systems installed in 2013. IDEM and MUNDELL are confident that vapor exposure is not a concern within structures above areas with low levels of dissolved MTBE.

T-Mart hired a certified contractor to examine their UST system. Based on tank tightness testing and video camera inspection results, the station UST system is in proper working order and is not releasing gasoline or diesel fuel to the environment.

MUNDELL submitted a Corrective Action Plan (CAP) to IDEM summarizing site conditions and proposed a cleanup strategy. IDEM approved the CAP with minor modifications and MUNDELL began installation of a remedial system at the T-Mart station in December 2014. Once operational, the system will strip contaminants from the soil and groundwater by constantly circulating clean air through the contaminated areas beneath the ground near the source zone. MUNDELL will also conduct a small scale test of injections of chemicals that accelerate the breakdown of contaminants in the soil directly north of the T-Mart station.

## NEXT STEPS

MUNDELL will continue to sample the drinking water of properties over and around the plume according to IDEM direction. The groundwater monitoring well network will be sampled on a quarterly basis. MUNDELL will continue the installation process of a remedial system at the T-Mart station and will begin remediation in early 2016. An additional phase of investigation of the northern end of the dissolved benzene plume will begin in early 2016.

## INFORMATION ONLINE

IDEM Virtual File Cabinet (for looking up state records on the T-Mart facility, search "T Mart")  
<http://vfc.idem.in.gov/>

IDEM Citizen's Guide to Underground Storage Tanks  
[http://www.in.gov/idem/files/factsheet\\_ust\\_citizens\\_guide.pdf](http://www.in.gov/idem/files/factsheet_ust_citizens_guide.pdf)

IDEM - Leaking Underground Storage Tanks  
<http://www.in.gov/idem/4997.htm>

U.S. Environmental Protection Agency (EPA) - Underground Storage Tanks  
<http://www.epa.gov/oust/>

## FOR MORE INFORMATION

For additional information and questions, please contact:

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