

The GEI

# MGP Reporter

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## Active Risk-Management Systems for MGP Sites

Benjamin Cote, Sean DiBartolo, Mike Quinlan, and Tess Landgraff, GEI Consultants, Inc.

MGP remediation frequently takes place near garages, office buildings, homes, subsurface infrastructure, and people. Sheet pile installation and soil excavation may affect these structures and the people using them. When intrusive work is underway, it makes sense to monitor and control potential risks.

Risk management systems have evolved to do so, and they may be included as part of the construction specifications in the form of instrumentation and monitoring. These systems can monitor groundwater disturbance, vibration, noise, settlement or movement of structures and excavations, and air quality.

A variety of metrics are used to quantify the physical effects of remediation on the surrounding environments. Some of the typical instruments used to measure changes follow.

- Deformation - optical surveying instruments (measuring vertical and horizontal movements of structures/ground by changes recorded with a land surveyor).

- Deformation - tiltmeters and inclinometers (measuring rotational movements of points in the ground or on structures).
- Deformation - extensometers (measuring the change in distance between two fixed points).
- Ground Vibration - accelerometers and seismographs (measuring vibrations at potentially sensitive nearby receptors).
- Groundwater Level and Porewater Pressure - observation wells and piezometers (providing an index of soil and rock strength as well as the external water pressures imposed on an excavation support system).
- Noise Pollution - noise monitoring stations.
- Air Quality - air monitoring stations that quantify dust and organic vapor concentrations.

These instruments are usually tended and read by one or more field technicians whose main responsibilities are equipment set-up, maintenance, data acquisition, and data delivery to a supervising engineer. Following the review, the data are provided to the client and/or property owner.

### What's News

Page 2

[Risk-Management Systems for MGP Sites \(continued\)](#)

Page 3

[Editorial: Just the Facts](#)

[Gas Lights Don't Go Out](#)

Page 4

[MGPs in the Movies](#)

[Announcing MGP 2012](#)

Page 4

[Recent MGP Publication](#)

[The Latest on Coal Tar & Pavement Sealers](#)

## Risk-Management Systems for MGP Sites (continued from I)

This is a passive, time-consuming process. The data are not delivered fast enough to the supervising engineer for interpretation. If construction activities are causing real-time concerns, the delivery chain slows or prevents the most efficient response. Active risk management systems improve the chances for an optimal response.

Monitoring instruments such as those listed above are connected to data loggers. The dataloggers are hard-wired to telephone lines, cable lines, radio, or cellular modems to transmit the data. The entire system is stored in a weatherproof enclosure. Power is supplied by battery, solar panels, or alternating current from a nearby building.

The data are transmitted at set intervals to a dedicated server that simultaneously receives, stores, and backs up the data. The data are then filtered and posted to a web-service that is accessible at all times by the engineer, owner, or general contractor. Built-in software presents current data and will generate reports as directed by the user.



GEI with Automated Theodolite and Weather-proof Data Logger at World Trade Center Site

Automated risk management is also supported by newer instrument technologies. One technology is an Automated Motorized Total Station (AMTS) unit. AMTS units are survey theodolites with internal motors and programs that perform robotic surveying, eliminating the need for daily visits by a survey crew. A typical installation consists of an AMTS unit at a location outside of the construction area and fixed reflective survey prisms mounted on excavation support walls or surrounding structures. The AMTS unit reads the survey prisms to measure change in three directions. The survey data are then automatically transmitted to the server, processed, and posted within seconds of reading.

These systems are not perfect, or totally maintenance-free. Both the system and the internet must be up and working as intended. A technician in the office will know if there is a problem as soon as he tries to log in. When this is the case, simple fixes are usually accomplished with a couple of phone calls to the right people – those who run the server or to on-site personnel. In the worst-case scenario, the technician may need to travel to the site.



AirLogics SolarLite automated perimeter air monitoring system. Photo courtesy of AirLogics, LLC

This is true today for many crucial services all of us used to manage: i.e., going physically to the bank or dropping a check in the mail. These days most of these activities are completed via the internet. While service is dropped from time to time, it's difficult to say that automation and the internet have not added value to our lives.

Automated monitoring systems are efficient risk management tools at MGP sites. They may be more practical and effective than traditional manual systems. They provide near real-time data access, minimize time lag for processing, and lower costs by reducing the extent of field labor. In the end, both the owner and contractor benefit from an improved ability to manage risk and keep the remediation moving forward.

*Questions? Comments? Please contact Ben Cote at [bcote@geiconsultants.com](mailto:bcote@geiconsultants.com).*

# Editorial

## Just the Facts

Jerry Zak, GEI Consultants, Inc.

At a recent social event – consisting of people that can be reasonably described as liberal environmentalists - the conversation turned to my occupation. The listeners were surprised to learn they'd lived in places that were also home to one or more former gas plants. They initially doubted that most former gas plant sites are not acute hazards, but I watched common sense set in as they admitted they'd never heard of the plants or any harm caused by them.

I described how gas was made, stored, transmitted, and used. I explained how coal tar was generated in the process. I pointed out that some of the earliest, best dyes were derived from coal tar; and that numerous other beneficial products evolved from tar. One listener put two and two together and said, "They still make shampoo from tar".

We discussed how these plants were an integral part of the landscape and economic engine up to and beyond the industrial revolution. I clarified how current electric utilities (mostly) were saddled with these sites because the small producers were bought decades ago as utilities regionalized – before any rules or regulations existed, before anyone understood the effects of MGP wastes. I didn't pretend that all former MGP sites are completely innocuous and plainly admitted that some have posed acute hazards.

I mentioned that some best-intentioned policies may be out-dated and at cross purposes. For example, leaving coal tar in the subsurface (where risks can be managed) would minimize generation of greenhouse gases during remediation and thermal treatment. This possibility doesn't even hit the table because regulations and mandates are designed to compel removal – even if doing so is worse, on a carbon basis anyway, than leaving things alone.

A woman who'd been listening, a producer for one of the documentary/informational cable channels, said, "It would be good for more people to know these things. They are part of where we came from".

I'm willing to bet you'll get this recognition and response from thoughtful people, in the absence of drama, regardless of their political bent. Unfortunately, most of the information they get is poorly reported, full of drama, or overly sweetened. As a result, most of us are typically reacting to negative or incomplete information instead of pro-acting with facts that are more fascinating than threatening. We spend too much time with our heads down.

One pro-active solution would be a documentary that focuses on history and benefits, acknowledges impacts and real or potential risks, advertises excessive costs, explains conflicts, and demonstrates the social and economic challenges we wrestle with individually or together would help. If more people understood these facts, we'd get more done, at less cost, with the same amount of effort.

This issue's editorial addresses some not-so-scary aspects of the former gas making industry. Marcia Worth, Editor of the South Orange Patch, offers her take on gas-lights. You can find it here: <http://southorange.patch.com/articles/editors-notebook-gas-lights-dont-go-out>.



## MGP Reporter

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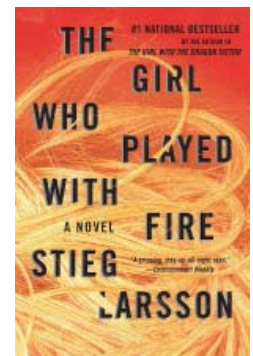
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# MGPs in the Movies

*The Girl Who Played with Fire* is the second in a trilogy of films adapted from Stieg Larsson's novels (the Millennium series). The books and the films have garnered attention and praise for the intelligence, endurance, and tenacity of

Lisbeth Salander, the female protagonist (and an outstanding performance by Noomi Rapace, as Lisbeth). Much of each film was shot in Sweden, and about halfway through *The Girl Who Played with Fire* there is shot of the horizon from an el-

evated city street. Dead center of the shot is a gas holder that seems to be about 200 feet tall. If you like gas holders, check this one out. Do so with discretion, however, as the film's themes are disturbing and some scenes are quite graphic.



## GEI Announces the Location and Date for the Next MGP Conference

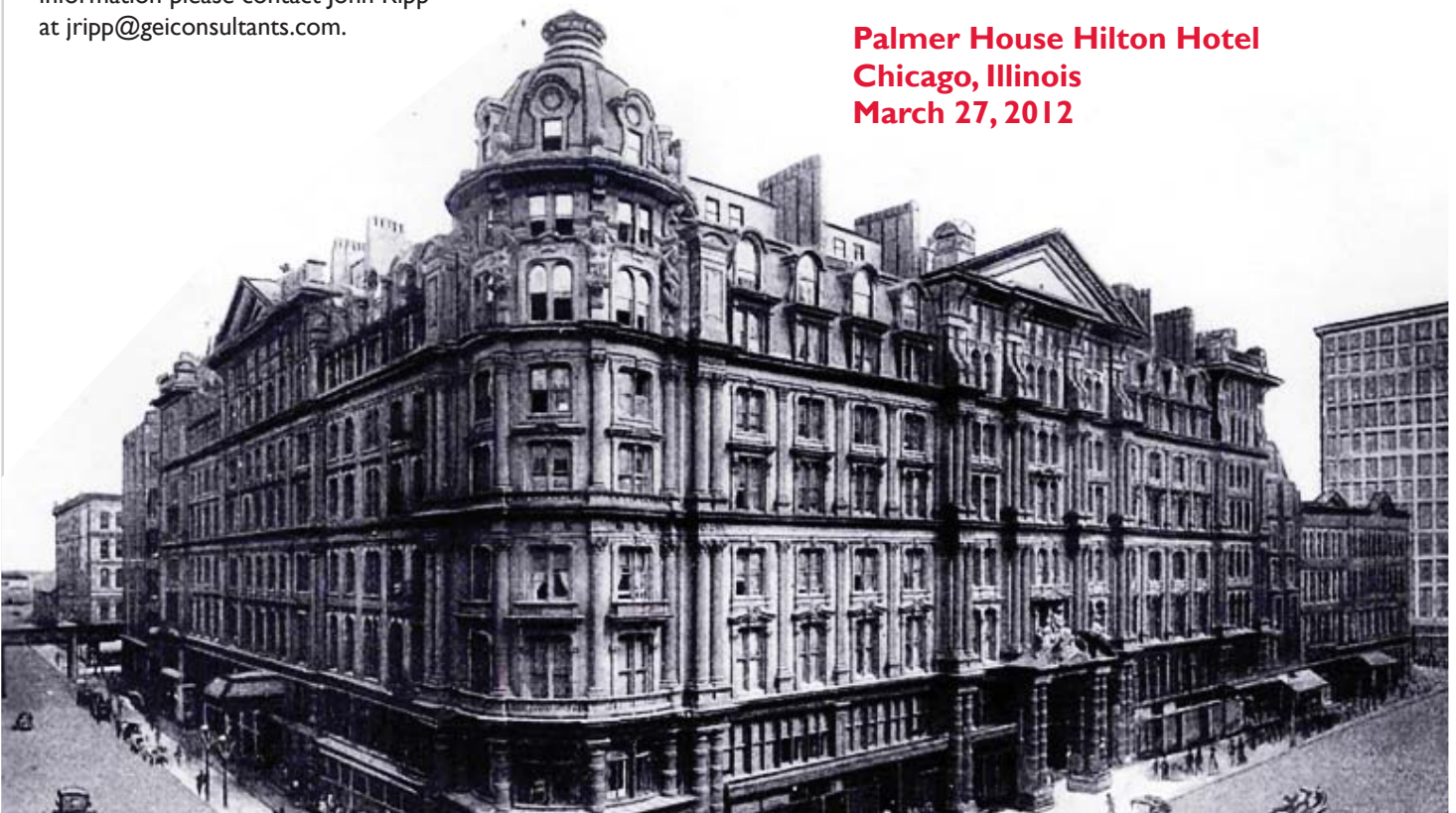
**GLASTONBURY, Conn. — February 11, 2011**

At a frigid, snow-packed parking lot outside of GEI's Atlantic regional office in front of a small but interested press corps and innocent bystanders, John Ripp announced the time and place for the next MGP conference. The Fourth International Symposium and Exhibition on the Redevelopment of Manufactured Gas Plant Sites (MGP 2012) will be held at Chicago's famous Palmer House Hilton hotel starting on Tuesday March 27, 2012.

The conference will run three-and-a-half days and feature training workshops, technical sessions, group panel discussions and a large exhibit hall. GEI will be sending out formal announcements in separate emails including the link to the conference website shortly.

If you have questions or would like information please contact John Ripp at [jripp@geiconsultants.com](mailto:jripp@geiconsultants.com).

**Palmer House Hilton Hotel  
Chicago, Illinois  
March 27, 2012**





# MGP Publication

## Risk Characterization of Vapor Intrusion in Former Manufactured Gas Plant Sites

Journal title: Regulatory Toxicology and Pharmacology

First author: Dr. Robin B. DeHate

11-JAN-2011 DOI information: 10.1016/j.yrtph.2010.12.001

Soil vapor intrusion (SVI) has recently garnered much interest as a potential exposure route for occupants of properties overlying and surrounding former Manufactured Gas Plants (MGPs). This investigation evaluates SVI at 10 commercial buildings and 26 single family and multi-family residential properties overlying and/or adjacent to three former MGPs. Comparative risks were evaluated based on maximum and mean concentrations for benzene, toluene, ethylbenzene, and xylenes relative to background levels. All calculated Hazard Indices were less than 1 or were comparable to mean and maximum background levels. Cancer risks for exposure to benzene ranged from  $9.75 \times 10^{-6}$  to  $4.52 \times 10^{-4}$ . Comparative background cancer risk from benzene exposure not related to former MGP sites ranged from  $9.9 \times 10^{-6}$  to  $3.59 \times 10^{-3}$ . The results did not identify evidence of MGP-related soil vapor intrusion from any of the 36 sites. No increased public health risks were associated with occupied residential or commercial properties overlying or surrounding MGPs.

[http://www.sciencedirect.com/science?\\_ob=ArticleURL&\\_udi=B6WPT-51NNPJV-1&\\_user=10&coverDate=12%2F10%2F2010&\\_rdoc=1&\\_fmt=high&\\_orig=search&\\_origin=search&\\_sort=d&\\_docanchor=&view=c&acct=C000050221&\\_version=1&\\_urlVersion=0&\\_userid=10&md5=b71fbd56a139e33313c8839070597c33&searchtype=a](http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6WPT-51NNPJV-1&_user=10&coverDate=12%2F10%2F2010&_rdoc=1&_fmt=high&_orig=search&_origin=search&_sort=d&_docanchor=&view=c&acct=C000050221&_version=1&_urlVersion=0&_userid=10&md5=b71fbd56a139e33313c8839070597c33&searchtype=a)

Robin B. DeHate has a Ph.D. in Toxicology/Risk Assessment from the University of South Florida. She has over 28 years experience in the occupational and environmental health field. Dr. DeHate is the Corporate Health and Safety Officer and Senior Risk Manager at GEI.

### Coal Tar & Pavement Sealers (Part 4)

We've been reporting studies of coal tar based driveway sealers by the US Geological Survey (USGS) since the fall of 2006, with updates in the Winter and Spring 2007 Reporter issues.

The website USGS Newsroom ([http://www.usgs.gov/newsroom/article.asp?ID=2651&from=rss\\_home](http://www.usgs.gov/newsroom/article.asp?ID=2651&from=rss_home)), recently reported that coal tar based driveway sealers are responsible for about fifty percent of polycyclic aromatic hydrocarbons (PAHs) in forty urban lakes in the United States. The study abstract and full study (at a price) can be found here: <http://www.sciencedirect.com/science>. Search for "PAHs" and one of the authors, Peter Van Metre.

