



Manufactured Gas Plants' (MGPs) Contaminants of Concern (COCs)

Office of Land Quality

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MGPs produced gas for lighting, heating, and cooking from the 1850's to the 1940's. In addition to producing the desired product, gas, numerous toxic by-products (such as tars and purifier wastes) were often stored in subsurface structures or disposed of in the dump areas at the site. Significant amounts of contamination usually occurred at these sites due to the nature of gas production and poor housekeeping. MGPs productions decreased and were phased out in the 1940's due to the increase network of natural gas pipelines across the country. These plants were decommissioned by razing the building but leaving subsurface structures and wastes in place. There are at least 74 known former MGPs in Indiana.

Due to the complexity of the activities conducted at MGPs, many COCs might be of concern. As an example, testing for lead around locations of former steel gas holders (where lead based paint may have flaked off) near the surface or subsurface (due to fill and grading at the site) is important. In addition, cyanide analysis is important for purifier box waste residual and plant dump areas. Mercury should be analyzed around gas meter stitches and PCBs should be analyzed where electrical generation occurred or if there are transformers present.

The following table summarizes the most common COCs for MGPs and the analytical methods that should be utilized at each sampling location (for both soil and groundwater).

Table 1: Chemicals of Concern for MGPs

Contaminants of Concern	Analytical Methods (SW-846 methods unless otherwise noted)
Metals (arsenic, copper, zinc, selenium, silver, cadmium, tin, antimony, mercury, thallium, lead, iron, copper, manganese, vanadium, and strontium)	6010, 6020, 7000 methods
Cyanide (Total, Free ¹ , Amenable)	9012, 9010, (or 9013), 9014 or 9213
pH	9040, 9045
Volatile Organic Compounds (VOCs)	8260
Polynuclear aromatic hydrocarbons (PAHs)	8270 ² , 8270SIM, 8310
Polychlorinated Biphenyls (PCBs) ⁵	8082
Ammonia	350.1 ³ , 350.2 ³ , 350.3 ³ , 1689 ⁴ , 1690 ⁴
Phenols	9065, 9066, 9067, 420.1 – 420.4 ³
Cresols (o-cresol, m-cresol, p-cresol)	8270

¹ Free Cyanide must be analyzed using 9014 or 9213.

² The 8270 soil and groundwater detection limits may not meet Screening Levels

³ EPA Drinking Water Methods, Methods for determining general chemistry in drinking water

⁴ USEPA Office of Water "stand alone methods"

⁵ PCBs should be analyzed for Totals and Arochlors

Notes:

- The IDEM's Remediation Closure Guide (RCG) should be followed to develop a site specific list of COCs.
- The IDEM reserves the right to modify these requirements dependent upon historical site conditions and the type and nature of the release.
- The IDEM also recommends using the most updated analytical method.
- The IDEM reserves the right to request additional chemicals of concern based on analytical data provided.

References:

The IDEM's Remediation Closure Guide (RCG)

http://www.in.gov/idem/cleanups/files/remediation_closure_guide.pdf

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846)

<https://www.epa.gov/hw-sw846>

Heritage Research Center, LTD.

<http://www.heritageresearch.com/documents/More%20About%20Manufactured%20Gas.pdf>

http://www.heritageresearch.com/ourlibrary/histories/manufactured_gas.html

Environmental Protection Agency (EPA) Resources for MGPs

https://www.epa.gov/sites/production/files/2015-08/documents/mgp_chap1-4a.pdf

https://www.epa.gov/sites/production/files/2015-08/documents/mgp_chap4b.pdf

https://www.epa.gov/sites/production/files/2015-08/documents/mgp_chap5-7.pdf