

January 3, 2020

Mr. Jeff Sorensen
Cooper Township Supervisor
1590 West D Avenue
Kalamazoo, MI 49009

Subject: Coggin Farms — Spent Plant Residual Compost Operation
Summary of Soil Sampling Results

Dear Mr. Sorenson:

This letter presents a summary of analytical results of soil samples collected from the Coggin Farms spent plant residual (SPR) compost operation. The compost facility is maintained and operated by Kalsec.

PURPOSE

The purpose of the investigation was to provide Cooper Township with an independent evaluation and opinion of existing and new site data to corroborate or refute the findings of the Michigan Department of Environment, Great Lakes, and Energy (MDEGLE, formerly MDEQ), Michigan Department of Agriculture and Rural Development (MDARD), and Kalsec.

RESULTS/CONCLUSIONS

No volatile organic compounds (VOCs) were detected in 13 of the 15 samples submitted for analyses (Table 2). Laboratory analyses of two samples—SB-18 @ 0.4–0.6 feet below ground surface (bgs) and SB-19 @ 2.0–3.0 feet bgs—revealed the presence of one compound (acetone) at a concentration of 5,900 and 200 ug/kg (parts per billion), respectively.

The acetone concentrations of 5,900 ug/kg and 200 ug/kg are below all State of Michigan exposure screening levels established by the Michigan Natural Resources and Environmental Protection Act (NREPA) PA 451, Part 201. No VOCs were detected in soil samples collected from greater depths beneath these two samples: 2–3 feet bgs and 11–12 feet bgs in SB-22 (corresponding to SB-18) and at 22–24 feet bgs from SB-23 (corresponding to SB-19). These results confirm that the acetone is being degraded within the shallow soil immediately beneath the SPR within the active compost horizon. No other VOCs were detected in any of the 15 soil samples.

These results corroborate MDEGLE and MDARD's opinion that the compost operation is being operated properly. No VOCs were detected above their respective State of Michigan cleanup criteria and exposure screening levels.

DISCUSSION

A soil sampling plan was developed to collect samples from areas that are representative of SPR compost. On October 28, 2019, 13 soil borings were advanced at the Coggin Farms SPR compost facility (D Avenue, Cooper Township, Michigan). Fifteen soil samples were collected in accordance with United States Environmental Protection Agency (USEPA) and MDEGLE's accepted sampling protocols, including sample preservation requirements (EPA Method 5035).

Soil samples, once preserved, were placed in a cooler on ice for additional preservation until delivery to ALS Environmental, Inc. (Holland, Michigan) on October 30, 2019, under Chain of Custody procedures.

The soil samples were analyzed for 61 VOCs by EPA Method 8260 (Table 1). The analytical parameters were selected based on review of available Kalsec, MDEGLE, and MDARD records.

Table 1: Analytical Parameter List

1,1,2,2,-Tetrachloroethane	2-Methynaphthalene	Ethylbenzene
1,1,2-Trichloroethane	4-Methyl-2-Pentanone	Hexane
1,1,1,2-Tetrachloroethane	Acetone	Hexachloroethane
1,1,2-Trichlorofluorethane	Acrylonitrile	Isopropyl benzene
1,1,-Dichloroethane	Benzene	Methylene Chloride
1,1,-Dichloroethene	Bromochloromethane	Methyl Iodide
1,1,1,-Trichloroethane	Bromodichloromethane	MTBE
1,2,3-Trichloropropane	Bromoform	Naphthalene
1,2,4-Trichlorobenzene	Bromomethane	N-Propylbenzene
1,2,4-Trimethylbenzene	Carbon Disulfide	Styrene
1,2-Dibromo-3-Chloropropane	Carbon Tetrachloride	Tetrachloroethene
1,2-Dichlorobenzene	Chlorobenzene	Toluene
1,2,-Dichloroethane	Chloroethane	Total Xylenes
1,2,-Dichloropropane	Chloroform	Trans-1,2-Dichloroethene
1,3,5-Trimethylbenzene	Chloromethane	Trans-1,3-Dichloropropene
1,3-Dichlorobenzene	Cis-1,2-Dichloroethene	Trans-1,4-Dichloro-2-Butene
1,2-Dibromoethane	Cis-1,3-Dichloropropene	Trichloroethene
1,4-Dichlorobenzene	Dibromochloromethane	Trichlorofluoromethane
2-Butanone	Dibromomethane	Vinyl Acetate
2-Hexanone	Dichlorodifluoromethane	Vinyl Chloride
	Diethyl Ether	

The boring locations were chosen based on proximity to active SPR piles, as well as topographically low areas where surface water runoff from the SPR had collected (Figure 1). Soil borings were advanced by TerraProbe using a direct push (Geoprobe) sampling device. Soil samples were collected in 5-foot increments to their total depth. Boring depths ranged from 5 feet to 29 feet. Ten borings were advanced to 5 feet bgs, and the remaining three were advanced to 28 feet and 29 feet bgs. Soil samples were collected continuously. Each 1-foot soil interval was scanned with a photo ionization detector (PID) for the presence of VOC vapor. Samples for analyses were selected based on PID responses (if any). If a response was not detected, then the sample was collected from 0.5- to 1-foot intervals between 3–5 feet bgs and a depth just above groundwater saturation. Refer to Table 2 for a summary of soil boring data and analytical results.

Table 2: Summary of Soil Boring Data

Soil Boring ID	Boring Depth (feet)	Sample Depth (feet bgs)	PID Max Response (PPM vapor)	Laboratory Results (ug/kg)	MDEGLE Part 201 Cleanup Criteria
SB-12	5	4–4.6	ND	ND	Varies
SB-13	5	3–3.7	ND	ND	Varies
SB-14	5	3–4	ND	ND	Varies
SB-15	5	3–3.6	ND	ND	Varies
SB-16	5	3–3.4	ND	ND	Varies
SB-17	5	3–3.5	ND	ND	Varies
SB-18	5	0.4–0.6	4.0	5900 (Acetone)	15000*
SB-19	5	2–3	3.9	220 (Acetone)	15000*
SB-20	5	2.5–3	ND	ND	Varies
SB-21	5	2.4–2.7	ND	ND	Varies
SB-22	29	2–3 11–12	0.4 5.4	ND ND	Varies
SB-23	29	22–24	ND	ND	Varies
SB-24	28	0–1 22–24	0.3 ND	ND ND	Varies

*Residential Drinking Water Protection Criteria

Soil encountered at the site consisted of a mixture of organic material (composted SPR), sand and gravel, and silt. Groundwater saturation was encountered at approximately 24 feet bgs.

Envirologic appreciates the opportunity to provide services to Cooper Township. If you have any questions or would like to discuss these results in more detail, please do not hesitate to contact us.

Sincerely,

ENVIROLOGIC TECHNOLOGIES, INC.

David B. Warwick
 President – Hydrogeologist

Enclosure



FIGURE 1





LEGEND

 GEOPROBE BORING LOCATION



NOTE:
THIS IS NOT A PROPERTY BOUNDARY SURVEY. PROPERTY BOUNDARIES SHOWN ON THIS MAP ARE BASED ON AVAILABLE FURNISHED INFORMATION AND ARE APPROXIMATE ONLY AND SHOULD NOT BE USED TO ESTABLISH PROPERTY BOUNDARY LOCATION IN THE FIELD.

COGGIN FARMS KALSEC COMPOSTING SITE COOPER TOWNSHIP

KALAMAZOO, MI 49009

SOIL BORING LOCATIONS



envirollogic
environmental consulting + services

2960 INTERSTATE PARKWAY
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PROJECT NO.

190006

FIGURE No.

1

January 23, 2020

Mr. Jeff Sorensen
Cooper Township Supervisor
1590 West D Avenue
Kalamazoo, MI 49009

Subject: Coggin Farms — Spent Plant Residual Compost Operation

Dear Mr. Sorensen:

You have requested additional information regarding the results of the October 2019 soil investigation at the above referenced site. Specifically, you have requested information pertaining to the presence and persistence of acetone, which was detected in the shallow compost/soil zone of Kalsec's spent plant residual (SPR) compost operation. This letter presents information about acetone, how its presence is regulated by the State of Michigan, and its environmental fate.

Acetone is a very commonly used chemical, most notably used in nail polish, nail polish remover, and other cosmetics. It is also used in a variety of industries as a cleaning agent, extraction solvent, additive to adhesive, wood stains, and varnishes. Acetone is also produced naturally by the decay of plants and animals and is produced in the human body by the natural breakdown of body fat (ATSDR).

Humans are routinely exposed to acetone in the above products. Acetone enters the human body mostly by absorption through the skin or through breathing its vapors. It resides in the human body for only a very short period of time (less than 3 days) because it is metabolized by the liver into harmless compounds that make glucose and fats, is exhaled (due to its volatility), and/or is voided (urine).

Like its fate in the human body, acetone has limited life in the environment. Acetone is readily degraded in air, soil, and groundwater by volatilization and biological degradation. Laboratory studies have determined that acetone is biologically degraded in less than 30 days. In the environment, the combination of biological degradation by indigenous bacteria and volatilization reduce that time significantly. Acetone is rarely found as a contaminant in groundwater due to its highly degradable characteristic.

Exposure of humans to acetone is variable. Most of what humans are exposed to is from household materials (previously mentioned). However, workers in factories that use the material may be exposed to higher levels. The Agency for Toxic Substances and Disease Registry (division of the U.S. Center for Disease Control) reports that incidental exposure to acetone — i.e., what is produced in our bodies and what we are generally exposed to in our homes — does not cause health effects. Studies of exposure to high concentrations of acetone have shown some health effects. Accordingly, State and Federal regulatory agencies have developed and promulgated human exposure limits in air, soil, and water. These limits are the concentrations that are deemed safe to be exposed to for a typical lifetime.

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The State of Michigan has developed exposure criteria for acetone in soil, groundwater, and air. The concentrations of acetone detected in two of the fifteen soil samples (220 ug/kg and 5,600 ug/kg) do not exceed the most stringent soil exposure limit — the concentration in soil that is protective of groundwater (15,000 ug/kg). Additionally, acetone was found only in the near surface soil (<3 feet). The results confirm that the acetone has not migrated to greater depths and that it is being degraded in the near surface soil. It was not detected in deeper soil to a depth of 24 feet, which confirms that groundwater is not at risk. Consequently, the acetone does not pose an exposure risk; therefore, the site is not considered contaminated.

The operation of the compost facility is regulated by the State of Michigan via two different agencies: the Michigan Department of Environment, Great Lakes, and Energy (EGLE, formerly MDEQ and MDNR) and the Michigan Department of Agriculture and Rural Development (MDARD). The SPR compost is operated under specific conditions specified by an Agricultural Use Approval (AUA) granted by EGLE on August 11, 2010. Kalsec is prohibited from making any changes in operations or conditions that result in changes to chemical composition of the SPR that would render its compost unsuitable for land application. Additionally, the AUA states the following in Section 7:

In the event that materials placed on the land for beneficial reuse are determined by the department to pose unacceptable risks to public health, safety, welfare, or the environment, a person responsible for the placement or disposal of those materials shall remain liable for the performance of response activities and response activity costs as provided by Part 201.

These requirements, among others in the AUA, provide assurances that the compost operation is maintained to the standard required by the AUA, that the compost operation remains protective of the environment, and that Kalsec is responsible for any contamination that results from the operation of the compost.

If you have any questions or would like to discuss this letter in more detail, please do not hesitate to contact our office at (269) 342-1100.

Sincerely,

ENVIROLOGIC TECHNOLOGIES, INC.



David B. Warwick
President - Hydrogeologist

