

Letter Health Consultation

BIG RUN LANDFILL
ASHLAND, KENTUCKY

FEBRUARY 1, 2018

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Agency for Toxic Substances and Disease Registry
Division of Community Health Investigations
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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LETTER HEALTH CONSULTATION

BIG RUN LANDFILL

ASHLAND, KENTUCKY

Prepared By:

U.S. Department of Health and Human Services
Agency for Toxic Substances and Disease Registry
Division of Community Health Investigations
Science Support Branch



01/31/2018

Dr. Sean Borst
Petitioner
Regional Endocrine Diabetes Associates
613 23Rd Street Suite 340
Ashland, KY 41101

Dear Dr. Borst:

Thank you for petitioning the Agency for Toxic Substances and Disease Registry (ATSDR) regarding your concerns about hydrogen sulfide (H₂S) emissions from Big Run Landfill in Boyd County, Kentucky operated by EnviroSolutions Inc. ATSDR reviewed the following to arrive at our conclusions:

- H₂S air sampling results collected by the Kentucky Division of Air Quality (Kentucky DAQ) during 23 sampling events between May and October 2015;
- more than 3,500 odor complaints made by community members collected by Kentucky DAQ from January 2015 through March 2017; and
- monthly H₂S monitoring reports collected by Big Run Landfill from October 2016 to January 2017 following an Agreed Order of Judgment in 2015.

H₂S air sampling data collected by the Kentucky DAQ was limited and may not represent the typical or worst case conditions for H₂S in the area of Big Run Landfill. H₂S levels that were reported in this community were below those of health concern. However, odors may still be noticeable to nearby residents. ATSDR's review of the odor complaint log indicates a significant decrease in community complaints following the implementation of site modifications outlined in the Agreed Order of Judgment. ATSDR was unable to obtain raw data from Kentucky DAQ to evaluate trends and quality control and assurance (QA/QC) independently. Further, it was not possible to conduct temporal and spatial analysis because sampling locations changed day to day. The remainder of this letter provides supporting information for these conclusions and identifies data limitations.

Background

Big Run Landfill is a permitted solid waste facility located on approximately 1,600 acres in Ashland, KY (see Appendix A, Figure 1). The landfill was built in 2001 and started receiving waste in 2004. By 2014, an estimated 90% of the waste collected at Big Run Landfill was from outside Kentucky. There are a number of residential properties, businesses and a high school that are close in proximity to Big Run Landfill. Boyd City High School and Cannonsburg Elementary School are two miles to the east, across the street from one another. There are 1,300 people within a one-mile radius of the landfill (Appendix A, Figure 2) and the closest nearby residential property is less than 2,600 feet from its southern perimeter.

In 2006, residents of Boyd County signed a petition against the landfill accepting out of state waste, citing a number of odor-related complaints. Between 2011 and 2015, Big Run Landfill received 60 notices of violation (NOV) from Kentucky DAQ. Of these, 54 were for a detectable odor in violation of the state statute odor standard.¹ In 2015, there were over 3,000 odor-related complaints made by the citizens of Boyd County. The landfill responded to the odor complaints by implementing odor control systems on the property. Kentucky DAQ also conducted air monitoring for H₂S around the landfill.

Discussion

Kentucky DAQ H₂S data (May 2015-Oct 2015)

ATSDR reviewed air data from the Kentucky DAQ that consisted of a very limited number of H₂S readings collected at Big Run Landfill on 23 dates between May and October, 2015. The purpose of the air monitoring was to evaluate the levels of H₂S in the air around Big Run Landfill. However, the data may not represent typical or worst case conditions because of the investigation's sampling of only daylight hours (late morning to early afternoon). Generally, the highest concentrations of H₂S are expected in the evenings/early morning around landfills due to calm winds typical of nighttime weather patterns. H₂S is a heavy gas and tends to accumulate in low lying areas during periods of calm winds. In daylight hours, winds pick up, diluting heavy gases.

Morning to mid-afternoon grab samples were collected at three different locations near Big Run Landfill using a Jerome J605 monitor, reporting an air reading roughly every 30 seconds to 1 minute (Kentucky DAQb, 2015). Sampling locations were within the community surrounding the landfill, around the landfill and between the community and landfill, in all directions. The locations and time of sampling varied day to day. Of the 10,000 air readings recorded, only 239 readings were reported above the instrument detection limit of 3 parts per billion (ppb), with a maximum reported value of 9.32 ppb. All other readings were reported as not detected. The detected concentrations were all below ATSDR's inhalation health guideline (intermediate Minimal Risk Level) for H₂S of 20 ppb and the acute Minimal Risk Level of 70 ppb. Most of these detected concentrations were below the odor threshold for H₂S, which is typically between 0.5 and 8 ppb (Collins & Lewis, 2000). For some people, smelling a noxious smell like the rotten egg odor of hydrogen sulfide may lead to odor-related health symptoms, such as headaches and nausea. Odor-related symptoms usually go away when odors dissipate. Between 2015 and 2016, over 3,500 odor complaints were lodged by residents (Kentucky DAQc, 2017).

2015 Agreed Order of Judgment and Changes in Site Activities

As a result of multiple NOVs and a substantial number of odor complaints from the citizens of Boyd County, Kentucky DAQ reached an Agreed Order of Judgment with EnviroSolutions Inc. in November of 2015 (Kentucky Circuit Court a, 2015). A few of the major stipulations of the agreement included:

- Big Run Landfill would end receipt of all waste by railcar;

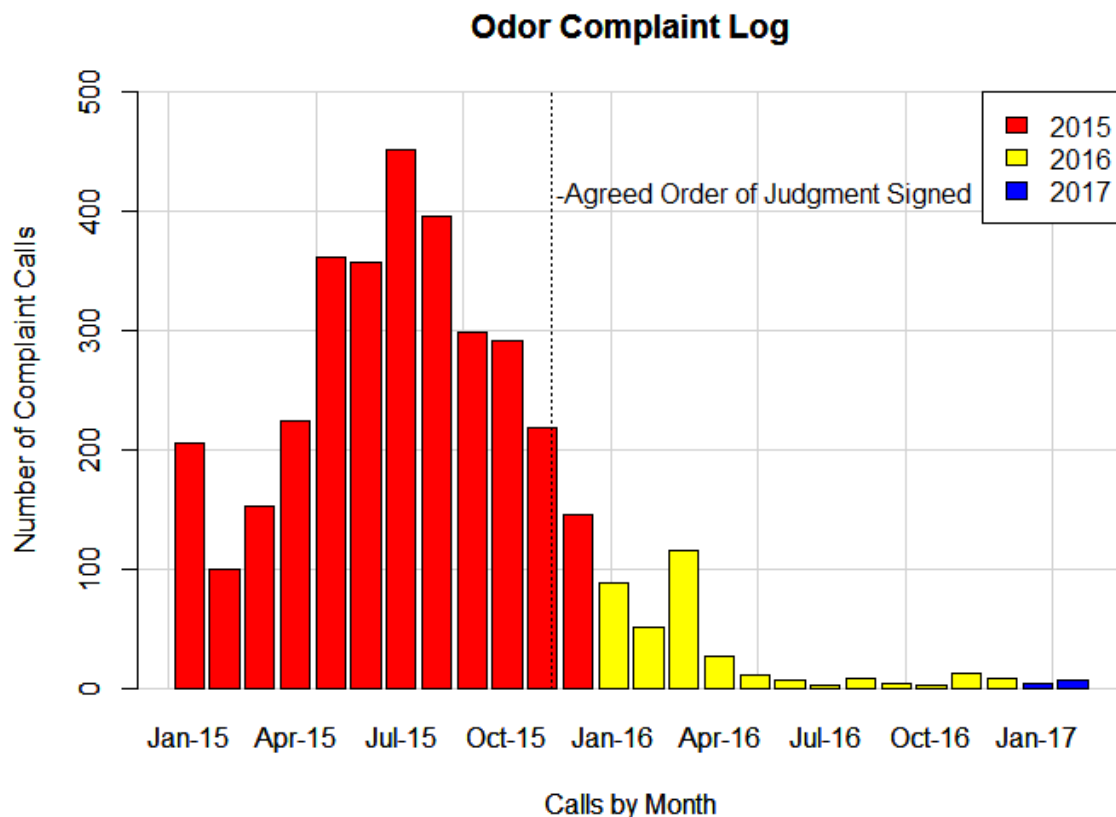
¹ 401 Ky. Admin. Reg. 53:010

- Construction of final capping of Big Run Landfill would begin in March of 2016 and be completed by September 2016;
- Big Run Landfill would maintain an active gas management system in the preventing of odors, as well as implement a fence line air monitoring system that will monitor for H₂S and methane;
- The hours of operation of the landfill would be limited; and
- The landfill would only accept waste from a list of approved counties which include Boyd County and select counties in Kentucky, West Virginia, and Ohio.

Kentucky DAQ Odor Complaint Log (Jan 2015-Mar 2017)

The odor complaint log you provided contained over 3,500 complaint calls made by citizens of Boyd County from 01/01/15 to 3/24/17. Prior to the 2015 Agreed Order of Judgment there were 3,200 complaint calls where individuals reported an odor from Big Run Landfill. After the 2015 Agreed Order of Judgment, the number of complaints reported in all of 2016 and from January to February of 2017 dropped to 342. The month of July in 2015 had 597 odor complaint calls, which is more than the entire year of 2016 and January to February 2017 combined. Figure 1 shows the drastic decrease in odor-related complaints after the 2015 Agreed Order of Judgment.

Figure 1. Odor Complaint Log Provided by Petitioner



EnviroSolutions Inc. Monthly Fence Line Monitoring (Oct 2016-Jan 2017)

Per the 2015 Agreed Order of Judgement, the parent company (EnviroSolutions Inc.) of Big Run Landfill was required to establish a fence line air monitoring system at three locations surrounding the landfill. These monitors are pulsed fluorescence analyzers that continuously measure H₂S and ambient air. Methane was sampled via surface scan (methods, frequency, location and raw data not provided to ATSDR). EnviroSolutions Inc. is required to provide monthly reports of these data to the Kentucky Division for Environmental Protection (Kentucky DEP). ATSDR reviewed air sampling reports for the months of October, November, December 2016 and January 2017. In the four summary reports reviewed, there were no exceedances of the ATSDR health guidelines (Kentucky DAQa, 2017). Note that these monthly reports are summaries of the data collected at the air monitoring sites, and that ATSDR staff did not have access to the laboratory data to confirm the QA/QC of these data.

Follow Up Call with Petitioner

In a January 2017 call with ATSDR, you reported notable improvements in air quality in the area and a significant decrease in the number of odor complaints. You also stated that use of the gas management systems used to eliminate odors at the landfill has significantly reduced odors and improved air quality around the site. Further, you reported that community health concerns have been adequately addressed and that the state was providing oversight of landfill operations.

Conclusions

Based on site conditions reported by you and other residents via odor complaints and limited air monitoring, ATSDR concludes levels of H₂S in the air around Big Run Landfill are not expected to cause measureable health effects, assuming the data is valid. However, H₂S concentrations may intermittently be high enough for people to smell, which could result in short-term health effects, like headaches, for people that are sensitive to odors. Although ATSDR was unable to evaluate historic exposures to H₂S in the community, the complaint log indicates a significant decrease in community odor complaints following the implementation of the Agreed Order of Judgment. The number of complaints indicate widespread H₂S odors in the community prior to enforcement actions. It is possible that historical exposure could have been at levels of health concern, but there are no data available to confirm this. For additional information about environmental odor please visit <https://www.atsdr.cdc.gov/odors/index.html>.

Thank you for requesting ATSDR assistance to address your health concerns. If you have further questions or concerns, please feel free to contact me at (770) 488-7274 or by email at jtruhe@cdc.gov.

Sincerely,

John R. Truhe, MPH
Environmental Health Scientist
Central Branch
Division of Community Health Investigations

References Cited

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- [Kentucky Circuit Court a] Commonwealth of Kentucky Boyd Circuit Court. Agreed Order of Judgment Civil Action No. 15-CI-00618 Document, 2015.
- [Kentucky Circuit Court b] Commonwealth of Kentucky Boyd Circuit Court. (2015, November 24). Agreed Order Of Judgment Ends Suit Against Boyd County Landfill; Provides Better Control On Future Operations. Retrieved from Kentucky Resources Council:
<http://www.kyrc.org/webnewspro/144839629367027.shtml>
- [Kentucky DAQa] Kentucky Division of Air Quality. Ambient Air Monitoring Reports for Oct, Nov, Dec and Jan, 2016-2017.
- [Kentucky DAQb] Kentucky Division of Air Quality. Big Run Landfill H₂S Survey, air sampling results, 2015.
- [Kentucky DAQc] Kentucky Division of Air Quality. KY Big Run Landfill odor complaints call log, 2015-2017.

Appendix A. Figures

Figure 1. Area map of Big Run Landfill

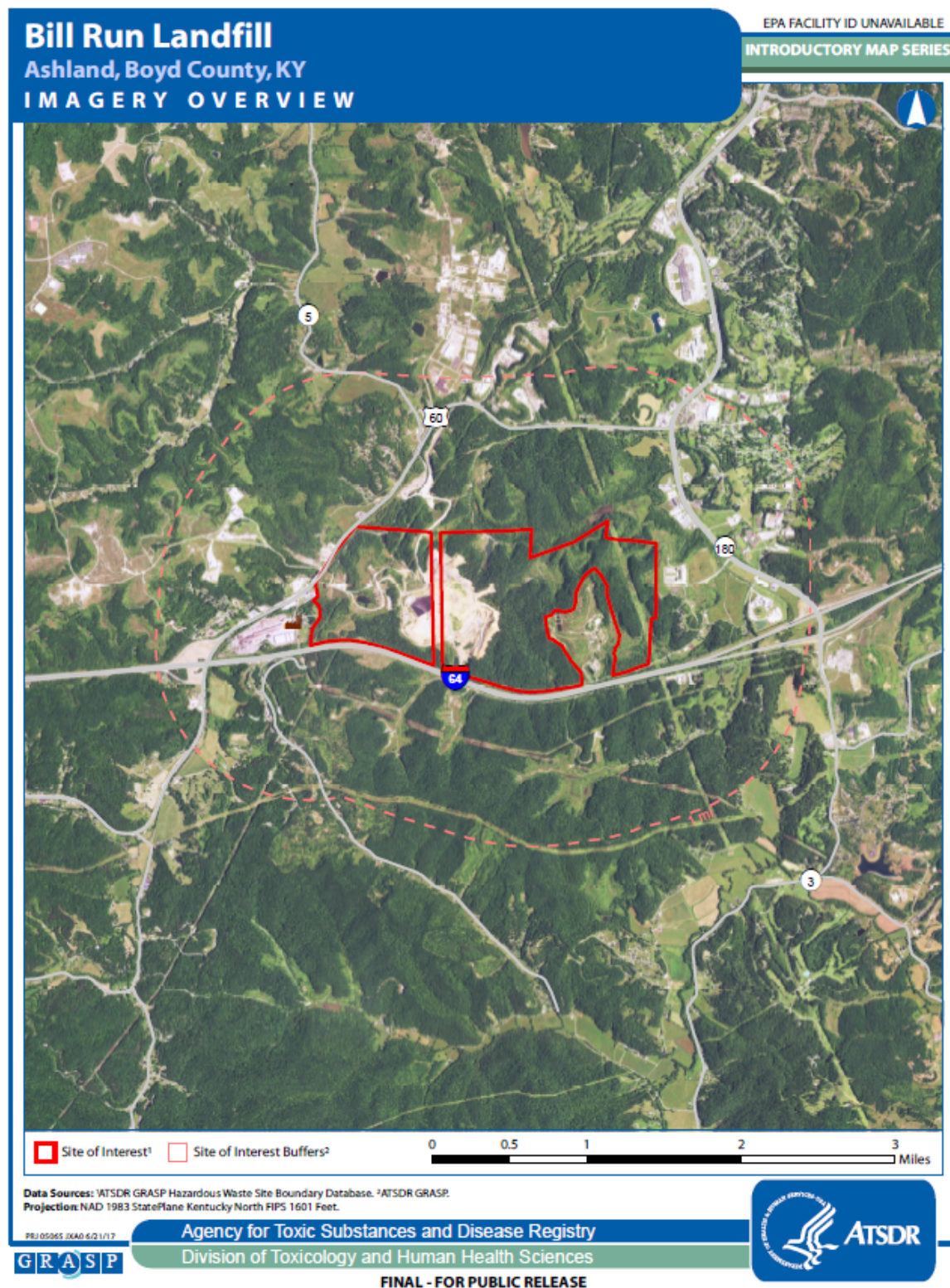


Figure 2. Population density of Big Run Landfill

