Letter Health Consultation

Evaluation of Particulate Matter

BENNETT LANDFILL FIRE

CHESTER, SOUTH CAROLINA

JULY 7, 2015

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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CHESTER, SOUTH CAROLINA

Prepared By

Agency for Toxic Substances and Disease Registry
Division of Community Health Investigations
Central Branch

Final Release

DEPARTMENT OF HEALTH & HUMAN SERVICES
Agency for Toxic Substances and Disease Registry

Public Health Service
Division of Community Health Investigations,
Atlanta GA 30333

July 6, 2015

Perry Gaughan
U.S. Environmental Protection Agency
61 Forsyth Street, SW
Atlanta, GA 30303

Dear Mr. Gaughan:

On April 29 and 30, 2015, staff from the Agency for Toxic Substances and Disease Registry (ATSDR) and the United States Environmental Protection Agency (U.S. EPA) Region 4 discussed the air data available for the Bennett Landfill fire. The U.S. EPA requested ATSDR evaluate the results of air monitoring and sampling for particulate matter to determine if community member exposures may be occurring at levels of health concern. This air monitoring and sampling data was collected by the U.S. EPA.

ATSDR concludes levels of $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5 microns or less) measured at the water plant, school, downtown, power plant, South Main Street, and farm monitoring stations are not likely to harm people's health. Levels of $PM_{2.5}$ at the commercial facility monitoring location could cause harm in sensitive individuals but not the general public. Population subgroups that may be more sensitive to the effects of PM exposure include children (under 18 years of age), older adults (over 65 years old), individuals with asthma, chronic obstructive pulmonary disease (COPD), or cardiovascular disease, diabetics, lower socioeconomic status, and those with certain genetic polymorphisms (U.S. EPA, 2009). A key limitation regarding particulate matter data for the Bennett Landfill fire is that Federal Reference Methods (FRM) or Federal Equivalent Methods (FEM) were not used. Additionally, limited particulate matter data was collected during the fire in November 2014.

A separate ATSDR letter health consultation evaluating volatile organic compounds (VOCs), asbestos, hydrogen cyanide, and mercury in air was issued on June 22, 2015 (ATSDR, 2015).

Background

The Bennett Landfill is a construction and debris landfill located in Chester, South Carolina. On November 2, 2014, local and state authorities responded to a fire that had been discovered at this

landfill (Tetra Tech, 2014). On November 7, 2014, the fire was reported to be "pretty much out" (Manzoni, 2014). However, additional burning debris and smoke were discovered at the landfill just prior to December 17, 2014 (Tetra Tech, 2015). As of April 2015, the landfill was still smoldering (Aiken Standard, 2015). The nearest community is approximately 0.4 miles west of the landfill in Lockhart, South Carolina. The nearest business is located approximately 0.2 miles northwest from the landfill (Tetra Tech, 2014; Personal Communication, U.S. EPA Region 4, April 30, 2015). The prevailing wind direction is from the west, but smoke has occasionally blown into Lockhart (Personal Communication, U.S. EPA Region 4, May 4, 2015; Aiken Standard, 2015). As of June 16, 2015, there was no observable smoke at the Bennett Landfill (Personal Communication, U.S. EPA Region 4, June 16, 2015).

Description of Monitoring or Sampling and Results

Particulate matter (PM), which refers to airborne droplets and particles, comes from many sources, both natural and manmade. $PM_{2.5}$ refers to particulate matter with an aerodynamic diameter 2.5 microns or less, and PM_{10} refers to particulate matter with an aerodynamic diameter 10 microns or less. ATSDR has not developed a comparison value[1] for particulate matter, but the U.S. EPA has developed National Ambient Air Quality Standards (NAAQS) for PM_{10} and $PM_{2.5}$. The U.S. EPA's National Ambient Air Quality Standards (NAAQS) state that the 24 hour average PM_{10} concentrations are not to exceed 150 micrograms per cubic meter ($\mu g/m^3$) more than once per year (on average) over a 3-year period. Previously, the U.S. EPA had an annual PM_{10} NAAQS of 50 $\mu g/m^3$; however, this standard was revoked in 2006 "because available evidence generally did not support a link between long-term exposure to current ambient levels of course particles [PM_{10}] and health or welfare effects" (U.S. EPA, 2009). The U.S. EPA's National Ambient Air Quality Standards do require the annual average concentrations of $PM_{2.5}$, averaged over three consecutive calendar years, must not exceed 12.0 $\mu g/m^3$. Additionally, the 98^{th} percentile of 24 hour average $PM_{2.5}$ concentrations, averaged over three consecutive calendar years, must not exceed 35 $\mu g/m^3$. The U.S. EPA considered a $PM_{2.5}$ NAAQS for a period less than 24 hours during its recent reevaluation of the particulate matter NAAQS but concluded the available information "when viewed as a whole, is too unclear, with respect to the indicator, averaging time and health outcome, to serve as a basis for consideration of establishing a primary $PM_{2.5}$ standard with an averaging time shorter than 24-hours at this time" (Federal Register, 2011; U.S. EPA, 2011). The U.S. EPA has also specified the methods that can be used to show compliance with the NAAQS for particulate matter in 40 CFR 50, Appendix L. These methods are referred to as Federal Reference Methods (FRM) or Federal Equivalent Methods (FEM). It is important to note that the methods used to measure PM_{10} and $PM_{2.5}$ near the Bennett Landfill fire were not FRM or FEM. Instead, the methods and equipment typically used during fires and other emergency response situations were used (Met One Instruments, Inc., 2008;

[1] Comparison values are chemical and media-specific concentrations in air, soil, and drinking water that are used by ATSDR health assessors and others to identify environmental contaminants at hazardous waste sites that require further evaluation.

Personal Communication, U.S. EPA Region 4, May 14, 2015; USDA, 2003; USDA, 2006). These methods often overestimate the amount of particulate matter present (USDA, 2003; USDA, 2006; Martinez-Morret et. al., 2009; New Mexico Smoke Management MOU Workgroup, 2003; Personal Communication, U.S. EPA Region 4, May 14, 2015).

ATSDR also notes the World Health Organization (WHO) has developed air quality guidelines (AQGs) for PM_{10} and $PM_{2.5}$ which are more conservative than the U.S. EPA's NAAQS (WHO, 2006):

- PM_{10}: The WHO annual average AQG is 20 $\mu g/m^3$ and the 24 hour AQG is 50 $\mu g/m^3$.
- $PM_{2.5}$: The WHO annual average AQG is 10 $\mu g/m^3$ and the 24 hour AQG is 25 $\mu g/m^3$.

Similar to the U.S. EPA, the WHO has not proposed a particulate matter AQG for a period shorter than 24 hours. It is also worth noting the PM_{10} AQGs were actually based on studies using $PM_{2.5}$ as an indicator (WHO, 2006).

PM_{10} monitoring only occurred in November 2014 shortly after the fire was discovered. $PM_{2.5}$ monitoring occurred between January and April 2015. $PM_{2.5}$ samples were also collected on April 8, 2015. The monitoring and sampling that took place during these times and the results are discussed further below. The U.S. EPA also sampled the smoke plume for $PM_{2.5}$ in February 2015. However, these sample results would not be representative of the exposures residents of Lockhart, SC would experience since these samples were collected on the landfill in the smoke plume. These samples were also only collected over a one hour period and consequently are not comparable to the NAAQS or AQGs. Therefore, the February 2015 $PM_{2.5}$ results are not discussed further in this consultation.

November 2014. Real time monitoring for PM_{10}, took place at three locations[2]. The three locations are shown in Figure 1. One monitoring site was located near the landfill. The other two locations were in the nearby city of Lockhart. The water tower site was located both upwind and uphill of the landfill, and the last site was located in a residential area downwind of the fire (Tetra Tech, 2014). Table 1 shows the results of the PM_{10} monitoring that took place in November 2014.

[2] PM_{10} results were collected using the DataRAM4 (Tetra Tech, 2014).

Figure 1. PM_{10} Monitoring Locations for the Bennett Landfill Fire (November 3-7, 2014)

Source: Tetra Tech, 2014

Table 1. PM_{10} Real Time Monitoring Results ($\mu g/m^3$) for the Bennett Landfill Fire.

Date (Time)	Average Concentration at Water Tower Location (Range)	Average Concentration at S. Main and River Street Location (Range)	Average Concentration at Landfill Location (Range)	PM_{10} Comparison Values
November 3-4 (18:00-06:00)	8.1 (5.7-37.8)	71.5 (5.5-430.1)	5,165.3 (11.5-28,722.6)	150 (24 Hour NAAQS) 50 (24 Hour AQG) 20 (Annual AQG)
November 4 (06:00-13:00)	11.7 (7-24.4)	8.1* (3.5-117.1)	4,820.3 (13,7-42,482)	
November 4-5 (18:00-06:00)	12.2 (4.7-111.1)	7.7* (3.5-24.6)	2,930.8 (9.7-580.7)	
November 5 (06:00-18:00)	14 (7.6-146.8)	10.4* (4.4-77.1)	2,303.5 (12.7-1,281.2)	
November 5-6 (18:00-06:00)	14.3 (7.5-35.3)	13.1* (5.3-83.5)	2,017.4 (15.7-4,686.4)	
November 6 (06:00-18:00)	13.8 (3.9-54.4)	12* (1.5-16.8)	1,654.8 (8.7-1,008)	
November 6-7 (18:00-06:00)	12.5 (0.8-12.7)	10.4* (0.8-9.5)	4.8§ (2-13.5)	
November 7 (06:00-11:00)	11.9 (0.3-10)	9.8* (<0.1-7.9)	3.9§ (0.4-13.1)	

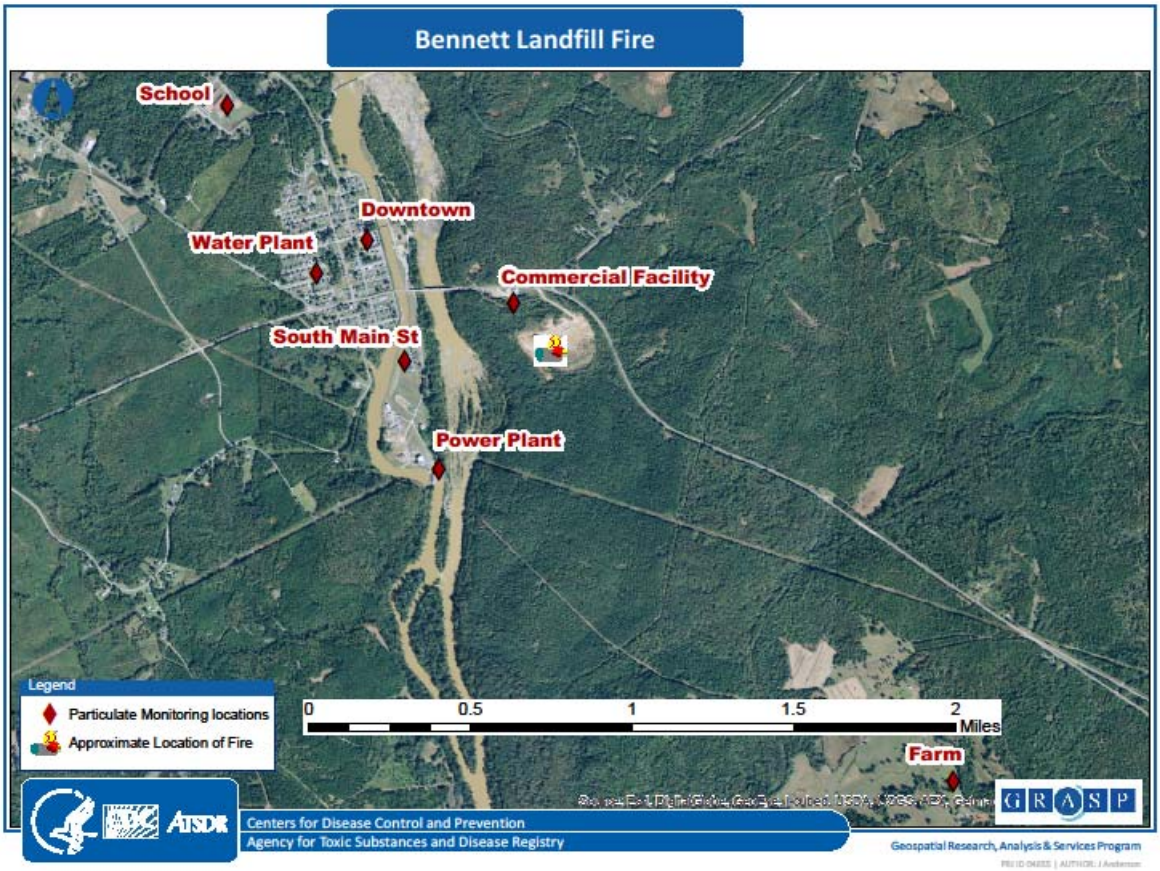
Source: Tetra Tech 2014.
$\mu g/m^3$ = Micrograms per cubic meter
NAAQS = National Ambient Air Quality Standard. The U.S. EPA's National Ambient Air Quality Standards (NAAQS) state that the 24 hour average PM_{10} concentrations are not to exceed 150 micrograms per cubic meter more than once per year (on average) over a 3-year period.
AQGs = World Health Organization's Air Quality Guidelines.
Averages include data from previous reporting periods depending upon when the last run on the sampling equipment was cleared and restarted. Averages for the Water Tower location include data from the beginning of the run (11/3/2014 at 16:48) (Tetra Tech 2014).
*Average includes data from 11/4/2014 at 9:38 through current reporting period.
§Average includes data from 11/6/2014 at 23:36 through the current reporting period.
Monitoring locations shown in Figure 1.
The DataRam4 monitor was used to collect PM_{10} samples.

As shown in Table 1, the levels of PM_{10} were typically much greater at the landfill monitoring location. The average levels of PM_{10} at the landfill monitoring location were typically also much greater than the NAAQS and AQGs for PM_{10}. However, the average levels at the two other monitoring stations were below the NAAQS for PM_{10}. Most of the average levels at these two stations were also below the annual AQG with the only exception being the first monitoring period at the South Main and River Street location. Average levels at all monitoring locations were below the annual AQG during the last two monitoring periods. It is also interesting to note

the average concentrations at the upwind (water tower) monitoring location were typically higher than the downwind (South Main and River Street) location.

$PM_{2.5}$ Monitoring from January 2015 to April 2015. Starting in mid to late January 2015, the U.S. EPA began monitoring for $PM_{2.5}$ at seven locations using Environmental Beta Attenuation Monitors (EBAMs)[3]. These locations are shown in Figure 2. One location was a commercial facility outside the landfill fence line (the closest business). Two monitoring locations in Lockhart, SC, the water plant and the school were at a higher elevation than the landfill. Three monitoring locations in Lockhart, SC, one downtown, one at the power plant, and one at South Main Street, were at lower elevation than the landfill. Monitoring equipment was also set up at a local farm which had a midrange elevation. Figure 2 shows the seven monitoring locations. Table 2 shows the maximum and average $PM_{2.5}$ concentrations at these seven locations.

Figure 2 Locations of $PM_{2.5}$ Real Time Monitors, Bennett Landfill Fire



[3] Further information about EBAMs is available at: https://www.env.nm.gov/aqb/documents/E-BAM_Manual_RevL.pdf

It must be remembered that EBAMs are not a Federal Reference Method or Federal Equivalent Method. Consequently, EBAMs are not used to show compliance with the NAAQS. However, U.S. EPA Region 4 developed procedures to validate the data collected by the EBAMs. These procedures include rejecting data associated with power failures or other known equipment failures, flagging data less than the instrument's detection limit as estimated, replacing negative values with zeroes, and evaluating data using the Walsh's Outlier Test (Personal Communication U.S. EPA Region 4, May 14, 2015).

Table 2 Summary of PM2.5 Real Time Monitoring ($\mu g/m^3$), Bennett Landfill Fire

Location	Maximum 24 Hour Average	Average for Entire Monitoring Period (January to April 2015).	NAAQS	AQGs
Commercial Facility	36.9	13.8	35 (24 Hour Average) 12.0 (Annual Average)	25 (24 Hour Average) 10 (Annual Average)
Water Plant	23.8	11.6		
School	26.2	11.6		
Downtown	33.5	11.6		
Power Plant	20.6	10.4		
South Main Street	23.2	12.0		
Farm	14.8	7.8		

Notes:
$\mu g/m^3$= Micrograms per cubic meter.
NAAQS = U.S. EPA's National Ambient Air Quality Standards
AQGs = World Health Organization's Air Quality Guidelines.
Monitoring at the South Main Street location ceased on April 9, 2015.
Monitors recorded readings every 15 minutes. Hourly averages were used to calculate 24 hour averages.

As can be seen in Table 2, the 24 hour $PM_{2.5}$ NAAQS was not exceeded at most monitoring locations. The only location with a maximum 24 hour $PM_{2.5}$ concentration above the 24 hour NAAQS was the commercial facility monitoring location near the landfill, although the maximum 24 hour concentration at the downtown location approached the 24 hour NAAQS. The commercial facility, downtown, and school monitoring locations had a maximum 24 hour $PM_{2.5}$ concentration above the more conservative 24 hour AQG. None of the other monitoring locations had a maximum 24 hour $PM_{2.5}$ concentration above the 24 hour AQG for $PM_{2.5}$, although the maximum 24 hour $PM_{2.5}$ concentrations at the water plant and South Main street locations were close to the 24 hour AQG. None of the 24 hour $PM_{2.5}$ concentrations in the month of April exceeded either the 24 hour NAAQS or AQG. The highest 24 hour concentration of $PM_{2.5}$ in the month of April was 24.8 $\mu g/m^3$ at the commercial facility monitoring location, a level essentially the same as the 24 hour AQG (Personal Communication, EPA Region 4, June 5, 2015). The average $PM_{2.5}$ concentrations for the entire monitoring period for all monitoring locations except the commercial facility were also below or equal to the long term (annual average) NAAQS for $PM_{2.5.}$ However, the entire monitoring period only includes a few months of data; consequently, these results are not directly comparable to annual standards or guidelines.

$PM_{2.5}$ Sampling on April 8, 2015. On April 8, 2015, the U.S. EPA collected $PM_{2.5}$ samples over a 24 hour period using filter media and an AirCon 2 pump. Sampling equipment was set up at the landfill, the commercial facility outside the landfill (the closest business), and in downtown Lockhart, SC. It is important to understand the limitations regarding these sample results. The sampling unit utilized an undersized filter cartridge and inadequate pump system to capture these samples. The laboratory calculated their minimum detection limits based on the available data, but these detection limits were well above the typical detection limit of 2 $\mu g/m^3$ [4]. The method used was not a FRM or FEM (Personal Communication, U.S. EPA Region 4, May14, 2015). Because of these limitations, ATSDR cannot reach a conclusion on the potential health effects of $PM_{2.5}$ based on these data.

Discussion

A key limitation regarding particulate matter data for the Bennett Landfill fire is that FRM or FEM were not used. As noted previously, it is not unusual that methods other than FRM and FEM would be used in an emergency response situation. It should be understood that the methods used were not those methods that would typically be used to show compliance with the NAAQS and may overestimate the actual concentrations of particulate matter. Additionally, limited particulate matter data was collected during the fire in November 2014.

Particulate matter has been associated with a range of respiratory and cardiovascular health problems. In U.S. EPA's recent review of the particulate matter NAAQS, they noted certain populations may be more susceptible to the effects of particulate matter than others. Population subgroups that may be more sensitive to the effects of PM exposure include children (under 18 years of age), older adults (over 65 years old), individuals with asthma, chronic obstructive pulmonary disease (COPD), or cardiovascular disease, diabetics, lower socioeconomic status, and those with certain genetic polymorphisms. Studies have also examined whether additional factors, such as gender, race, or ethnicity modify the association between PM and morbidity and mortality outcomes. Gender and race do not seem to modify the association between particulate matter and morbidity and mortality outcomes. However, some evidence, although only from two studies conducted in California, suggest that Hispanic ethnicity may modify the association between PM and mortality (U.S. EPA, 2009). Of course, smoke can be an irritant to even healthy individuals (http://www.bt.cdc.gov/disasters/wildfires/smoke.asp).

In addition to developing NAAQS, the U.S. EPA has also developed some tools to help people understand and interpret the NAAQS. One of those tools is the AQI Calculator on the U.S. EPA's website (http://www.airnow.gov/index.cfm?action=resources.conc_aqi_calc). The AQI Calculator can be used to estimate potential health effects from known 24 hour concentrations of $PM_{2.5}$ and PM_{10}.

[4] See 40 CFR 50 Appendix L. http://www.ecfr.gov/cgi-bin/text-idx?SID=be49c189dd0abba06513d0f3b037b9ae&mc=true&node=ap40.2.50_118.l&rgn=div9

PM_{10}

The only PM_{10} sampling that took place for the Bennett Landfill fire was in November 2014. If average concentrations measured at the landfill during the first several monitoring periods are used with the U.S. EPA's AQI Calculator, the results indicate the air quality-as defined by the U.S. EPA- was hazardous. However, the levels detected at the landfill would not be representative of the exposures people in Lockhart, SC would experience and high particulate levels are typically found in smoke

As stated previously, the average levels at the offsite monitoring locations were below the 24 hour NAAQS for PM_{10} and usually below the annual average AQG. In fact, the maximum levels of PM_{10} reported at the offsite monitoring locations were typically below the 24 hour NAAQS for PM_{10}. The only reported maximum level at an offsite monitoring location above the 24 hour NAAQS for PM_{10} was at the South Main and River Street location during the first monitoring period. This location and monitoring period was also the only instance where an offsite average PM_{10} level was above the AQGs.

The average level of PM_{10} reported at the South Main and River Street location during the first monitoring period was 71.5 µg/m^3. If the U.S. EPA's AQI Calculator is used with this level, the air quality would be classified as "moderate". The U.S. EPA uses this classification to describe air quality that is acceptable but may present a moderate health concern in a very small number of people (http://airnow.gov/index.cfm?action=aqibasics.index). U.S. EPA's cautionary statement for "moderate" particulate matter days is, "Unusually sensitive people should consider reducing prolonged or heavy exertion." All of the other reported PM_{10} averages at the offsite monitoring locations would be classified as good.

$PM_{2.5}$

Much more data exist for $PM_{2.5}$ than exists for PM_{10}. Monitoring equipment for $PM_{2.5}$ was set up at more locations than PM_{10}, and $PM_{2.5}$ monitoring took place over a longer period of time. $PM_{2.5}$ sampling results for one day in April also exist; but as discussed previously, the limitations of these sampling results make the data unhelpful for reaching a conclusion on the potential health effects of $PM_{2.5}$. As shown in Table 2, the WHO 24 hour guideline for $PM_{2.5}$ was exceeded at three locations (the commercial facility, downtown, and school monitoring locations). When evaluating the AQGs, WHO generally recommends the annual average should take precedence over the 24 hour average because at low levels there is less concern about episodic excursions. WHO does state that meeting 24 hour AQG will protect against peaks of pollution that would otherwise lead to substantial excess morbidity or mortality (WHO, 2006). WHO's annual AQG (10 µg/m^3) "represents the lower end of the range over which significant effects on survival were observed in the American Cancer Society's (ACS) study (Pope et. al., 2002)" (WHO, 2006). In the ACS study at concentrations of about 13 µg/m^3, statistical uncertainty in the risk estimates becomes apparent (WHO, 2006). The annual AQG also places weight on studies examining the relationships between exposure to $PM_{2.5}$ and acute adverse outcomes. In these studies, long-term

(three to four year) averages are reported to be in the range of 13 to 18 µg/m^3 (WHO, 2006). The only monitoring location with an average $PM_{2.5}$ concentration in this range is the commercial facility.

The average $PM_{2.5}$ concentrations for the entire monitoring period only exceeded the annual NAAQS for $PM_{2.5}$ (12.0 µg/m^3) at the commercial facility monitoring location. Almost all of the maximum 24 hour concentrations of $PM_{2.5}$ were below the 24 hour NAAQS for $PM_{2.5}$. Most of the one hour concentrations of $PM_{2.5}$ were also below the 24 hour NAAQS (Personal Communication, U.S. EPA Region 4, May 21, 2015). The 24 hour NAAQS for $PM_{2.5}$ was occasionally exceeded at the commercial facility monitoring location. If the U.S. EPA's AQI calculator is used to evaluate the maximum 24 hour concentration of $PM_{2.5}$ at this location, the results indicate that the maximum 24 hour $PM_{2.5}$ concentrations at this location could have resulted in an increased likelihood of respiratory symptoms in sensitive individuals and aggravation of heart or lung disease and premature mortality in individuals with cardiopulmonary disease and the elderly; but not for the general population[5]. The conclusion that levels of $PM_{2.5}$ at the commercial facility monitoring location could affect sensitive individuals is consistent with the U.S. EPA's recent review of the few multicity studies available. These studies reported consistent, although small, increases in cardiovascular and respiratory mortality in study locations with mean 24 hour $PM_{2.5}$ concentrations above 12.8 µg/m^3 (EPA, 2009). The commercial facility monitoring location is the only one with a mean 24 hour $PM_{2.5}$ concentration above 12.8 µg/m^3. However, it does not seem likely that most residents of Lockhart, SC would spend a full 24 hours at this location. Consequently, the 24 hour average concentrations of $PM_{2.5}$ at the commercial facility monitoring location may not be the best representation of the exposures residents of Lockhart experienced. Additionally, studies of the potential health effects of wildfires in California found that members of some sensitive populations were more likely to take preventative actions than other people during a fire (Künzli, Nino et. al., 2006; Mott et. al., 2002). Nevertheless, the levels of $PM_{2.5}$ could have affected members of sensitive populations if they spent a significant amount of time outdoors near this location, especially if a significant amount of time was spent near this location on more than one occasion.

Conclusions and Recommendations

Conclusions

ATSDR has reached the following conclusions concerning particulate matter from the Bennett Landfill fire:

[5] The EPA's AQI calculator defines any 24 hour average concentrations of $PM_{2.5}$ between 35.4 and 55.5 micrograms per cubic meter as "unhealthy for sensitive groups".

1. Levels of $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5 microns or less) measured at the water plant, school, downtown, power plant, South Main Street, and farm monitoring stations are not likely to harm people's health.
2. Levels of PM_{10} (particulate matter with an aerodynamic diameter of 10 microns or less) measured at the water tower and South Main and River Street monitoring locations in November 2014 were not likely to harm people's health.
3. Levels of $PM_{2.5}$ measured at the commercial facility monitoring location near the landfill could have caused harm in sensitive individuals but not the general public.

Recommendations

ATSDR recommends that

1. firefighting activities at the Bennett Landfill fire continue,
2. access to the landfill be restricted,
3. dust suppression methods be used during the removal activities at the Bennett Landfill,
4. the U.S. EPA monitor for $PM_{2.5}$ after firefighting activities are complete to determine if there is an increase or decrease in the concentration of this pollutant in air,
5. the U.S. EPA sample for $PM_{2.5}$ using a Federal Reference Method (FRM) or Federal Equivalent Method (FEM) as described in 40 CFR 50, Appendix L.

If you have additional questions or need additional information, you may contact me at 770-488-1334 or ikw4@cdc.gov.

Public Health Action Plan

ATSDR will continue to evaluate ambient air data from the Bennett Landfill fire if requested.

Sincerely,

[Signed]

Timothy R. Pettifor
Environmental Health Scientist
Central Branch
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