Message

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Sent: 10/27/2017 3:11:13 PM
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Subject: RE: Ames Warehouse Fire - background technical info on initial realtime air data from ATSDR emergency response if helpful
Attachments: Parkersburg PM2-5.pptx; Air Quality Index Table (003).tiff

I am resending this document to include the attachments that explain the spikes that have been recorded along with an AQI table for PM.

Charles Edge
ATSDR ERP

On 10/21/17 Saturday morning at 1230 AM, Parkersburg fire crews responded to a fire at the Intercontinental Export and Import Company - Plant #1 on Camden Avenue in Parkersburg WV. The facility is a warehouse housing many plastics-related and other unknown materials. The fire is still ongoing. The county has the lead in the incident command, and hired an environmental contractor (CTEH) to conduct air monitoring and sampling. CTEH is conducting roving realtime air monitoring for particulate matter, and is also collecting field air monitoring data for other constituents including carbon monoxide, chlorine, and sulfur dioxide. At the request of WV DEP, in addition EPA deployed four particulate air monitors around the perimeter of the fire, and began collecting data on 10/22/17 (Sunday) ATSDR R3, ATSDR R5, and DTHHS ERS are coordinating with EPA, WV state and local health, and OH state and local health. Air quality continues to be impacted in both WV and across the river in OH.

Based on the CTEH collected air monitoring data, overall, levels of fine particulate matter (PM2.5) and course dust particles (PM10) are decreasing since the first recorded readings (10/23/17) to date. No air sampling analytical data have been made available as of 10/26/17. However, volatile organic and targeted analyte air sampling is planned. Below are the trends in the realtime air monitoring collected by various mobile monitoring devices. EPA has also collected additional air monitoring data and will share it after completing QA/QC procedures.

10/22-23/17 (EPA PM10 time weighted average monitoring)
Levels of PM10 ranged from 7.6-77.6 ug/m^{3}and 30.7-764.3 ug/m^3.

10/23/17 (CTEH instantaneous PM monitoring)
Levels of PM2.5 were highest 0.32 miles from the site at 2,810 ug/m^3. Levels of PM10 were highest 1.15 miles from the site at 384 ug/m^3. The average of the PM2.5 and PM10 readings for all the locations monitored were 241 ug/m^3 and 110 ug/m^3, respectively. The highest concentration of SO_2 was recoded at 0.5ppm.

10/24/17 (CTEH instantaneous PM monitoring)
Levels of PM2.5 were highest 0.4 miles from the site at 2,210 ug/m^3. Levels of PM10 were highest 0.21 miles from the site at 858 ug/m^3. The average of the PM2.5 and PM10 readings for all the locations monitored were 77 ug/m^{3}and 96 ug/m^3, respectively. The highest concentration of SO_2 was recoded at 0.1ppm.

10/25/17 (CTEH instantaneous PM monitoring)
Levels of PM2.5 were highest 0.25 miles from the site at 531 ug/m^3. Levels of PM10 were highest 0.25 miles from the site at 425 ug/m^3. The average of the PM2.5 and PM10 readings for all the locations monitored were 49 ug/m^3 and 41 ug/m^3, respectively. No SO_2 readings were recorded.

10/26/17 (CTEH instantaneous PM monitoring)
Levels of PM2.5 were highest 3.21 miles from the site at 442 ug/m^3. Levels of PM10 were highest 1.47 miles from the site at 24 ug/m^3. The average of the PM2.5 and PM10 readings for all the locations monitored were 85 ug/m^3 and 24 ug/m^3, respectively. No SO_2 readings were recorded. The exceedance that was recorded 3.21 miles away was from a residential area. More investigation should be done in these areas. The maximum value could be attributed to the temperature inversion or to the presence of other local sources of PM2.5 (e.g., wood-burning fireplaces).

According to the Air Quality Index (AQI) for Particulate Matter, 250.5 to 500 ug/m^{3}PM2.5 on a 24-hour average is considered hazardous. Based on the maximum concentrations only, these areas would be considered hazardous to health. 24-hour averages were not available for the CTEH readings. These are realtime instantaneous readings. The average concentrations above for the CTEH readings are the averages of the total detected instantaneous readings for the day in all monitoring locations. Time weighted averages were not available for the CTEH monitoring locations. Assuming EPA's PM10 24-hour average results were principally fine particulate matter, these results ranged from the good through the hazardous AQI categories. Aggravation of heart and lung disease are possible under these conditions. People with heart or lung disease should pay attention to symptoms and contact their health care provider if they experience symptoms and reduce their exposure to the impacted air per the incident command's shelter in place recommendations. Sensitive groups should limit prolonged or heavy exertion outdoors, and people with asthma should follow their asthma management plan.

The maximum concentrations that have been seen to date in the CTEH monitoring generally last from 20-30 minutes and then drop below the EPA 24 hour average National Ambient Air Quality Standards for PM2.5 of 35 ug/m^3 and PM10 of 150 ug/m^3. Spikes above these levels have occurred on each of the monitoring days. On 10/23/17, there were 3 spikes above 35 ug/m^3. On 10/26/17, there were 7 spikes that occurred over a few hours. This could have been due to a temperature inversion that may have occurred over night. With the absence of meteorological data and changing wind directions, it is difficult to predict these spikes. Terrain steering may also play a role in impacting the direction of the plume. Attached is PowerPoint presentation that denotes these spikes for PM2.5.

Over the past couple of days, the combustion is becoming less efficient and less energetic. The smoke is hugging the ground and there may be more particulate matter in the air around the fire site. Spikes of higher levels of particulate matter last longer and are more frequent. The air quality hazard going forward may be greater until the fire is extinguished. Additional environmental data are needed to evaluate areas closer to the fire until it is extinguished, including data collection at the closest school(s).

ATSDR has yet to receive safety data sheets (SDSs) or comprehensive information about chemicals at this warehouse, beyond a handwritten list shared by US EPA on 10/21/17 and a concern that significant amounts of DuPont's Rynite thermoplastic polyester resin product may have been present. According to the SDS for Rynite, hazardous gases/vapors produced in fire are carbon monoxide and hydrogen bromide. No chemical laboratory analytical data from the response has been available to ATSDR as of 10/26/17; therefore, there is uncertainty about the overall mixture that was potentially (or might still be) in the air. There have been strong plastics odors as well as typical combustion odors in residential areas and ATSDR does not have information on what would be causing these odors or the public health implications. Strong odors in air can cause symptoms in people. Some people are more sensitive to environmental odors than others. In general, as concentration levels increase, more people will have symptoms. Symptoms vary based on your sensitivity to the odor. Young children, the elderly, and pregnant women may be more sensitive to odors. In general, the most common symptoms from odors are headaches, nasal congestion, eye, nose, and throat irritation, hoarseness, sore throat, cough, chest tightness, shortness of breath, wheezing, heart palpitations, nausea, drowsiness, and mental depression. These symptoms generally occur at the time of exposure. Their intensity will depend on the concentration of the odor in air, how often you smell it, and how long exposure lasts.