

# Contract No.: EP-W-13-015 Task Order No.: 68HE0S18F0209: OSRTI – Multi Regions & Headquarters Support Technical Directive No.: R8 1.4.3 Colorado Smelter

# Summary and Review of the TSP and Metals Air Concentration Summary for March 9, 2018, to March 8, 2019, at the Dance Studio Monitoring Station for the Colorado Smelter Operable Unit 2 (OU2) Site, September 2019

The Colorado Smelter Community Advisory Group (CAG) requested assistance from EPA's Technical Assistance Services for Communities (TASC) program to help the community understand the technical aspects of the September 2019 TSP (Total Suspended Particulate) and Metals Air Concentration Summary for March 9, 2018, to March 8, 2019, at the Dance Studio Monitoring Station (Report). The air sampling was part of a remedial investigation by EPA for operable unit 2 (OU2) at the Colorado Smelter Superfund site. EPA divided the site into two OUs for cleanup planning. OU2 is the former Colorado Smelting Company facility. OU1 consists of community properties surrounding the former Colorado Smelter.

The Colorado Smelting Company was active from 1883 to 1908 and operated eight blast furnaces, two calcining furnaces, one fusing furnace and 20 kilns. This past smelting activity led to high levels of lead and arsenic on site and in nearby residential soils. Approximately 700,000square-feet of slag piles remain in OU2. The report states that air sampling was designed to document air quality impacts expected to occur during the OU2 remedial investigation. However, EPA has further explained that the main purpose of the investigation was to determine whether windblown contaminants were currently posing a possible health risk to nearby residents or to the clean soils of remediated OU1 properties. EPA has also explained that air will be monitored during any excavation and construction activities at OU2.

TASC's review provides a brief summary of the Report, along with TASC's comments for the community. The review is divided into the following sections:

- Acronyms and Definitions
- Introduction (Report Section 1)
- Sampling Description (Report Section 2)
- TSP and Metals Sampling Results (Report Section 3)

- Maximum TSP Concentration Sampling Day Analysis (Report Section 4)
- Summary (Report Section 5)

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# Summary of TSP and Metals Air Concentration Summary

- EPA collected 59 24-hour air samples from a sampler on the roof of Jeannie's Academy of Dance at 1143 S Santa Fe Avenue, Pueblo, Colorado, from March 9, 2018, to March 8, 2019.
- The air samples were tested for TSP and 22 metals, including arsenic and lead.
- The mass of the 22 metals made up only about 15% of the total mass of suspended particles in the samples collected.
- Arsenic was never detected, and lead was detected at low concentrations.
- The field-blank checks and other laboratory quality control checks did not indicate any problems for the sampling program. A field blank is an unused filter that is sent with the batch of samples to detect whether samples are possibly being contaminated during the handling process.
- Results for three of the five days with the highest TSP concentrations (March 15, June 7 and October 5, 2018) indicated that OU2 may have contributed to the higher TSP results. Likewise, for three of the five days with the highest TSP concentrations (March 15, April 20, and June 13, 2018), results indicated that excavations in OU1 (community properties) may have contributed to the higher TSP results. However, EPA has explained that air monitoring and dust suppression were conducted for all OU1 excavations during those time periods, and there were no exceedances for dust on the properties. All five days had higher-than-normal wind speeds.
- The Report concludes that the relatively low TSP and metal concentrations measured indicate that wind erosion from OU2 is not generating large impacts in the surrounding region.

# TASC Overarching Comments on the TSP and Metals Air Concentration Summary

TASC found the air sampling followed EPA's regulations for sampling particulate matter in air. TASC agrees with the report's finding that OU2 likely does not have a significant impact on the surrounding region as a source of windblown site-related contaminants. However, community members may want to ask for additional information from EPA, as noted in the TASC comments below.

• Jeannie's Academy of Dance location for the sampler is acceptable for screening for possible air quality issues caused by OU2. Predominant winds often blow from the direction of OU2 toward the sampler. Higher levels of arsenic and lead have been found in the soils southeast of the former smelter, possibly indicating more windblown deposition from OU2 toward the sampler location. This site is secure and has been used for previous air monitoring. The rooftop location is above street-level dust that could

skew results. On the other hand, the rooftop location may not capture the same contaminant levels that are in the breathing zone of nearby residents. This location was previously used to monitor for emissions from EVRAZ Rocky Mountain Steel (EVRAZ), and contaminants at this location may be from other sources besides OU2. Monitoring air at only one location may limit EPA's ability to determine if windblown dust from OU2 is an important source of ongoing off-site contamination.

- Average concentrations of cobalt and manganese were above their respective Residential Air Regional Screening Level in each quarterly report. The average concentration of aluminum was above its Residential Air Regional Screening Level in three of four quarters. Additionally, maximum detections of cobalt were above its Residential Air Regional Screening Level in each quarterly report. Maximum detections of nickel were above its Residential Air Regional Screening Level in each quarterly report. Maximum detections of nickel were above its Residential Air Regional Screening Level in the first two quarterly reports. The detection limits for arsenic were too high to determine if any arsenic concentrations were above its Residential Air Regional Screening Level in any quarter. EPA has explained that no commercial laboratory in the U.S. was able to analyze for arsenic at or below its Residential Air Regional Screening Level in each quarterly report. Exceeding a screening level means that more evaluation may be needed. It is not an indication of a health risk. EPA action levels for protecting human health are often 10 to 100 times higher than screening levels. **The CAG may want to ask EPA if additional evaluation of air quality is planned.**
- Predominant wind directions reported by Pueblo Memorial Airport and EVRAZ were generally either from the southeast or northwest. Pueblo Memorial Airport reported average wind speeds between 7.9 miles per hour and 10.8 miles per hour. In its 2017 Air Quality Data Report (December 26, 2018), the Colorado Air Pollution Control Division's Department of Public Health and Environment Technical Services Program reports that wind generally blows up valley from the southeast during the day and down valley from the west at night. It also reports that Pueblo experiences average wind speed ranges from 7 miles per hour in the fall and early winter to 11 miles per hour in the spring. The wind roses presented in the four monitoring quarters confirm these generalizations.
- For three of the five days with the highest TSP concentrations, winds measured at EVRAZ were from the direction of OU2 or portions of OU2 toward the air sampler. These days were March 15, June 7 and October 5, 2018. As the wind roses from EVRAZ and Pueblo Memorial Airport show, winds in Pueblo blew from every direction at different times during each quarterly reporting period. It is unclear from which direction the wind was blowing on sampling dates other than the highest five presented in the report. The CAG may want to ask EPA to summarize wind data for the dates when sampling occurred.

## **Acronyms and Definitions**

*Cubic meter*  $(m^3)$  – A measure of volume.

Meters per second (m/s) – A measure of speed.

Micrograms  $(\mu g)$  – A measure of mass.

*Micron or micrometer*  $(\mu m)$  – A measure of length.

*Miles per hour (mph)* – A measure of speed.

*Total Suspended Particulates (TSP)* – Small particles suspended in ambient air. TSP samplers typically collect particles up to 25 to 50 microns in diameter. For comparison, the diameter of a human hair is 80 to 100 microns in size.

TSP high volume air sampler – A piece of equipment that draws a large known volume of air through a pre-weighed filter for 24 hours. The filter traps the particles suspended in ambient air as the air passes through the instrument. The filter is removed and sent to a laboratory where the trapped particles are weighed and analyzed. Dividing the mass of particles by the volume of air sampled gives the concentration of TSP.

Wind rose - A graphical way to depict wind direction and speed over time.

Figure 1. EVRAZ Daily Wind Rose for March 15, 2018



#### Figure 2. Pueblo Memorial Airport Wind Rose for Three-Month Period



#### **Introduction (Report Section 1)**

EPA's contractor conducted a TSP and metals air quality sampling program as part of the remedial investigation for OU2 at the site. The report states that the sampling was designed to document air quality impacts expected to occur during the investigation. However, EPA has further explained that the main purpose of the investigation was to determine whether windblown contaminants were currently posing a possible health risk to nearby residents or to the clean soils of remediated OU1 properties. EPA has also explained that air will be monitored during any excavation and construction activities at OU2.

The Report describes the operations conducted during the monitoring year from March 9, 2018, to March 8, 2019, as well as the sampling results.

#### **Sampling Description (Report Section 2)**

Section 2 describes the sampling location, monitoring method, equipment calibration and audits, data processing and meteorological data.

*Location*. The TSP high-volume air sampler is located on the roof of Jeannie's Academy of Dance at 1143 S Santa Fe Avenue, Pueblo, Colorado. This is roughly downwind of the Colorado Smelter. Figure 3 is an aerial photo showing the locations of the dance studio station, the former Colorado Smelter and the EVRAZ meteorological monitoring station. There is a slag pile on the western side of the Colorado Smelter property.

*TASC Comment*: This location for the sampler is acceptable for screening for possible air quality issues caused by OU2. Predominant winds often blow from the direction of OU2 toward the sampler. Higher levels of arsenic and lead have been found in the soils southeast of the former smelter, possibly indicating more windblown deposition from OU2 toward the sampler location. This site is secure and has been used for previous air monitoring. The rooftop location is above street-level dust that could skew results. On the other hand, the rooftop location may not capture the same contaminant levels that are in the breathing zone of nearby residents. This location was previously used to monitor for emissions from EVRAZ, and contaminants at this location may be from other sources besides OU2. Monitoring air at only one location may limit EPA's ability to determine if windblown dust from OU2 is an important source of ongoing off-site contamination.





*Monitoring Method.* EPA's contractor used a TE-2670DV TSP high-volume air sampler to collect one 24-hour sample every six days. Fifty-nine (59) samples out of a possible 61 samples were successfully collected from March 9, 2018, to March 8, 2019. On every sampling day, EPA's contractor collected filters from the sampler. These filters were sent in batches to a laboratory for analysis. The laboratory analyzed the filters for 22 metals – aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium,

manganese, nickel, potassium, selenium, silver, sodium, thallium, vanadium and zinc. For quality control, six field blanks were collected, shipped in the same box as the samples and analyzed in the same batch. A field blank is an unused filter that is sent with the batch of samples to detect whether samples are possibly being contaminated during the handling process.

*Equipment Calibrations and Audits*. Equipment calibrations and audits were performed quarterly during the sampling period. The technicians conducting the calibrations and audits found no issues. Appendix A of the Report provides calibration and audit sheets.

*Data Processing*. The TSP and metal mass weights from the laboratory were divided by the respective sample air volumes to obtain concentrations in ambient air. Actual sampler air volumes were calculated using measured atmospheric pressure, sampler pressure differential, measured ambient temperature and most recent equipment calibration values. Standard air volumes were calculated for a standard atmospheric pressure (760 millimeters mercury) and standard temperature (298.15 Kelvin [25° Celsius]). TSP is reported in standard and actual concentrations and metals are reported in actual concentrations. Results are presented in Section 3.0 of the Report.

*Meteorological Data*. The meteorological data included data from Pueblo Memorial Airport for the period January 1, 2018, to March 31, 2019, and quarterly reports from EVRAZ's air monitoring station for the 2018 calendar year as well as five years of hourly data from 2013 to 2017.

# TSP and Metals Sampling Results (Report Section 3)

This section presents the TSP and metals sampling results for the monitoring year on a quarterly basis along with corresponding meteorological data from both EVRAZ and the Pueblo Memorial Airport. Wind speeds and directions during the monitoring periods are presented in the form of wind roses. The Acronyms and Definitions Section of the Report provides a wind rose definition and diagrams.

## First Monitoring Quarter – March to May 2018

The first monitoring quarter ran from March 9 to May 31, 2018. Fourteen out of a possible 14 samples were collected. One field blank was collected with the April 20 sample. Metals made up about 15% of the total suspended particles collected on the sample filters. Ninety-five percent of the total mass of metals comprised five metals. Calcium and iron represent the largest portions of the metals, followed by magnesium, aluminum and sodium. The metals arsenic, selenium and thallium were not detected. Silver was detected in only one sample. Lead was detected in all 14 samples, with concentrations ranging between 0.003 and 0.05 micrograms per cubic meter of air ( $\mu$ g/m<sup>3</sup>). The Residential Air Regional Screening Level for lead is 0.15  $\mu$ g/m<sup>3</sup>.

Two wind roses are presented – one for EVRAZ and one for Pueblo Memorial Airport. The EVRAZ wind rose (Figure 4 of the Report) is for the time period January to March 2018, while the Pueblo Memorial Airport rose (Figure 5 of the Report) is for March to May 2018. For EVRAZ, the predominant winds are from the west-northwest about 15% of the time. For the other 85% of the time during the three months of monitoring, winds were variable and from

other directions. For Pueblo Memorial Airport the predominant winds are from the east-southeast just over 12% of the time. The Pueblo Memorial Airport rose indicates that average wind speed during the monitoring quarter was 4.83 meters per second (10.8 miles per hour). The Pueblo Memorial Airport wind rose indicates that winds exceeded 11 meters per second (24.6 miles per hour) part of the time during March to May. The EVRAZ wind rose indicates that winds did not exceed 10 meters per second (22.3 miles per hour) during January to March.

#### Second Monitoring Quarter – June to August 2018

The second monitoring quarter ran from June 1 to August 31. Fourteen out of a possible 16 samples were collected. Two field blanks were collected during the June 13 and August 12 sampling events. Metals made up about 15% of the total suspended particles collected on the sample filters. More than 90% of the total mass of metals was comprised of five metals. Calcium and iron represent the largest portions of the metals, followed by aluminum, magnesium and sodium. The metals arsenic and thallium were not detected. Silver was detected in only one sample. Lead was detected in all 14 samples, with concentrations ranging between 0.003 and  $0.03 \ \mu g/m^3$ .

Two wind roses are presented – one for EVRAZ and one for the Pueblo Memorial Airport. The EVRAZ wind rose (Figure 7 of the Report) is for the time period April to June 2018, while the Pueblo Memorial Airport rose (Figure 8 of the Report) is for June to August 2018. For EVRAZ, the predominant winds are from the east-southeast and east at just over 10% of the time each. For Pueblo Memorial Airport, the predominant winds are from the east-southeast and east at 15% and 13% of the time, respectively. The Pueblo Memorial Airport rose indicates that average wind speed during the monitoring quarter was 4.40 meter per second (9.8 miles per hour). The Pueblo Memorial Airport wind rose indicates that winds rarely exceeded 11 meters per second (24.6 miles per hour) from June to August. The EVRAZ wind rose indicates that winds did not exceed 13 meters per second (29.1 miles per hour) from April to June.

#### Third Monitoring Quarter – September to November 2018

The third monitoring quarter ran from September 1 to November 30, 2018. Fifteen out of a possible 15 samples were collected. One field blank was collected with the October 17 sample. Metals made up about 15% of the total suspended particles collected on the sample filters. More than 90% of the total mass of metals comprised five metals. Calcium and iron represent the largest portions of the metals, followed by aluminum, magnesium and sodium. The metals arsenic, silver and thallium were not detected. Selenium was detected in only one sample. Lead was detected in all 14 samples, with concentrations ranging between 0.003  $\mu$ g/m<sup>3</sup> and 0.02  $\mu$ g/m<sup>3</sup>.

Two wind roses are presented – one for EVRAZ and one for Pueblo Memorial Airport. The EVRAZ wind rose (Figure 10 of the Report) is for the time period July to September 2018. The Pueblo Memorial Airport rose (Figure 11 of the Report) is for September to November 2018. For EVRAZ, the predominant winds are from the east-southeast and east at just over 12% of the time each. For Pueblo Memorial Airport, the predominant winds are from the west, east-southeast and east at about 12%, 11.5% and 11.5% of the time, respectively. The Pueblo Memorial Airport rose indicates that average wind speed during the monitoring quarter was 3.52 meters per second (7.9 miles per hour). The Pueblo Memorial Airport wind rose indicates that winds exceeded 11

meters per second (24.6 miles per hour) part of the time during September to November. The EVRAZ wind rose indicates that winds did not exceed 10 meters per second (22.3 miles per hour) from July to September.

#### Fourth Monitoring Quarter – December 2018 to March 8, 2019

The third monitoring quarter ran from December 1 to March 8. Sixteen out of a possible 16 samples were collected. One field blank was collected with the October 17 sample. Metals made up about 15% of the total suspended particles collected on the sample filters. More than 90% of the total mass of metals comprised five metals. Calcium and iron represent the largest portions of the metals, followed by sodium, aluminum and magnesium. The metals arsenic, selenium and thallium were not detected. Silver was detected in only one sample. Lead was detected in all 14 samples, with concentrations ranging between 0.002  $\mu$ g/m<sup>3</sup> and 0.015  $\mu$ g/m<sup>3</sup>.

Two wind roses are presented – one for EVRAZ and one for Pueblo Memorial Airport. The EVRAZ wind rose (Figure 10 of the Report) is for the time period October to December 2018. The Pueblo Memorial Airport rose (Figure 11 of the Report) is for December 2018 to March 4, 2019. March 4 is the last sampling date. For EVRAZ, the predominant winds are from the west-northwest about 17% of the time and northwest about 11% of the time. For Pueblo Memorial Airport, the predominant winds are from the west at just above 12%, from the west-northwest at about 11% and from the east-southeast at about 11%. The Pueblo Memorial Airport rose indicates that average wind speed during the monitoring quarter was 3.95 meters per second (8.8 miles per hour). The Pueblo Memorial Airport wind rose indicates that winds exceeded 11 meters per second (24.6 miles per hour) part of the time from December 2018 to March 4, 2019. The EVRAZ wind rose indicates that winds did not exceed 10 meters per second (22.3 miles per hour) from October to December 2018.

*TASC Comment:* Average concentrations of cobalt and manganese were above their respective Residential Air Regional Screening Level in each quarterly report. The average concentration of aluminum was above its Residential Air Regional Screening Level for three of four quarters. Additionally, maximum detections of cobalt were above its Residential Air Regional Screening Level in each quarterly report. Maximum detections of nickel were above its Residential Air Regional Screening Level in each quarterly report. Maximum detections of nickel were above its Residential Air Regional Screening Level in the first two quarterly reports. The laboratory detection limits for arsenic were too high to determine if any arsenic concentrations were above its Residential Air Regional Screening Level in any quarter. Average lead concentrations were below its Residential Air Regional Screening Level in each quarterly report. Exceeding a screening level means that more evaluation may be needed. It is not an indication of a health risk. EPA action levels for protecting health are often much higher than screening levels. **The CAG may want to ask EPA if additional evaluation of air quality is planned.** 

*TASC Comment:* Predominant wind directions reported by Pueblo Memorial Airport and EVRAZ were generally either from the southeast or northwest. Pueblo Memorial Airport reported average wind speeds between 7.9 miles per hour and 10.8 miles per hour. In their 2017 Air Quality Data Report (December 26, 2018), the Colorado Air Pollution Control Division's Department of Public Health and Environment Technical Services Program reports that wind generally blows up valley from the southeast during the day and down valley from the west at night. It also reports that Pueblo experiences average wind speed ranges from 7 miles per hour in the fall and early winter to 11 miles per hour in the spring. The wind roses presented in the four monitoring quarters seem to confirm these generalizations.

## Maximum TSP Concentration Sampling Day Analysis (Report Section 4)

Section 4 of the Report provides a detailed analysis for the top five TSP concentration days over the monitoring year, looking at both the meteorology on the sampling day and any excavation activities. Over the monitoring year, five days measured TSP concentrations greater than 100 micrograms at standard temperature and pressure (std) per cubic meter of air ( $\mu$ g-std/m<sup>3</sup>). The dates are March 15, April 20, June 7, June 13 and October 5, 2018. One or two excavations were ongoing in the Eiler Heights neighborhood on March 15, April 20 and June 13. No excavation took place on June 7. No information is available for activities on October 5.

#### March 15 Sampling Day

The TSP concentration measured on March 15, 2018, was 112  $\mu$ g-std/m<sup>3</sup>. This is the fifthhighest concentration measured for the monitoring year. Predominant winds on that day were from the northwest and west-northwest. The mean wind speed for the day was 3.8 meters per second (8.5 miles per hour), which is higher than the five-year mean wind speed of 2.7 meters per second (6.0 miles per hour) reported by EVRAZ. The maximum hourly wind speed was 9.5 meters per second (21.2 miles per hour) from the south-southwest, with several hours having mean wind speeds above 4.5 meters per second (10 miles per hour). No precipitation fell during the sampling day, and the day with the most recent precipitation was February 24. The site technician reported high winds had occurred during the week. Two excavation areas in Eiler Heights were active during the sampling day.

Most of the day, winds were blowing from the direction of the site toward the sampler. However, the winds were blowing from the direction of excavation activities toward the sampler for about six hours. The high TSP concentration for this sampling day is likely due to the higher-thannormal wind speeds. The excavation activities, the site and other sources in the area, including Interstate 25 and nearby manufacturing facilities such as EVRAZ, may have contributed to the high TSP concentration. The Acronyms and Definitions section of the Report provides the March 15, 2018 wind rose and diagram.

#### April 20 Sampling Day

The TSP concentration measured on April 20, 2018, was 161  $\mu$ g-std/m<sup>3</sup>. This is the secondhighest concentration measured for the monitoring year. Predominant winds on that day were from the east through south-southeast for most of the day. The mean wind speed was 7.5 meters per second (16.7 miles per hour), which is much higher than the five-year mean wind speed of 2.7 meters per second (6.0 miles per hour). The maximum hourly wind speed was 10.8 meters per second (24.1 miles per hour) from the south-southeast, and most of the hours experienced mean wind speeds above 4.5 meters per second (10 miles per hour). No precipitation fell during the sampling day. The day with the most recent precipitation was April 9. The site technician reported extremely high winds had occurred on April 17. Two excavation areas were active during the sampling day; one in Eiler Heights to the southeast of the sampler and one on East Evans Avenue, west of Interstate 25 to the west-northwest of the sampler.

For most of the day, the winds blew from the direction of EVRAZ and the excavation activity area in Eiler Heights toward the sampler. The sampler was never downwind of the excavation area to the west-northwest. The high TSP concentration for this sampling day is likely due to the higher-than-normal wind speeds. EVRAZ, the excavation area to the southeast and other sources in the area, including Interstate 25 and nearby manufacturing facilities such as EVRAZ, may have contributed to the high TSP concentration.

#### June 7 Sampling Day

The TSP concentration measured on June 7, 2018, was 132  $\mu$ g-std/m<sup>3</sup>. This is the third-highest concentration documented during the monitoring year. Predominant winds on that day were from the north and east-southeast. The mean wind speed was 3.7 meters per second (8.2 miles per hour), which is higher than the five-year mean wind speed of 2.8 meters per second (6.3 miles per hour). The maximum hourly wind speed was 7.4 meters per second (16.5 miles per hour) from the east-southeast, with several hours having a mean wind speed above 4.5 meters per second (10 miles per hour). No precipitation fell during the sampling day, and the day with the most recent precipitation was June 3. For part of the day, the winds blew from the direction of EVRAZ and portions of the Colorado Smelter toward the sampler. The high TSP concentration for this sampling day is likely due to the higher-than-normal wind speeds. The EVRAZ and portions of the Colorado Smelter as well as other sources in the area, including Interstate 25 and nearby manufacturing facilities, may have contributed to the high TSP concentration.

#### June 13 Sampling Day

The TSP concentration measured on June 13, 2018, was 190  $\mu$ g-std/m<sup>3</sup>. This is the highest concentration measured for the monitoring year. Predominant winds on that day were from the south and south-southeast. The mean wind speed for the day was 4.5 meters per second (10.0 miles per hour), which is higher than the five-year mean wind speed of 2.7 meters per second (6.0 miles per hour). The maximum hourly wind speed was 11.2 meters per second (25.0 miles per hour) from the south, with several hours having mean wind speeds above 4.5 meters per second (10 miles per hour). No precipitation fell during the sampling day. The day with the most recent precipitation was June 3. The site technician did not note any unusual conditions. Three areas in Eiler Heights and within 0.1 mile of the dance studio were being excavated.

For most of the day, the winds blew from the direction of EVRAZ toward the sampler. For a small part of the day, the wind blew from the direction of the excavation areas toward the sampler. The high TSP concentration for this sampling day is likely due to the higher-than-normal wind speeds. EVRAZ and the excavation areas to the west-southwest of the sampler as

well as other sources in the area, including Interstate 25 and nearby manufacturing facilities, may have contributed to the high TSP concentration.

## October 5 Sampling Day

The TSP concentration measured on October 5, 2018, was 117  $\mu$ g-std/m<sup>3</sup>. This is the fourthhighest concentration measured for the monitoring year. Predominant winds on that day were from the northwest, north-northeast and northeast. The mean wind speed was 2.8 meters per second (6.3 miles per hour), which is close to the five-year mean. The maximum hourly wind speed was 9.1 meters per second (16.5 miles per hour) from the north-northeast. The winds during the day were mostly less than 2.5 meters per second (5.6 miles per hour), until after 4 p.m. when the wind speed increased to above 4.5 miles per second (10 miles per hour). These winds were from the north-northeast to east-southeast sectors. No precipitation fell during the sampling day. The day with the most recent precipitation was September 20. No data are available on excavation activities for this sampling day.

For part of the day, the winds blew from the direction of the Colorado Smelter toward the sampler. The high TSP concentration for this sampling day is likely due to the higher-thannormal wind speeds for parts of the day. The Colorado Smelter as well as other sources in the area, including Interstate 25 and nearby manufacturing facilities such as EVRAZ, may have contributed to the high TSP concentration.

*TASC Comment*: For three of the five days with the highest TSP concentrations, winds measured at EVRAZ were from the direction of OU2 or portions of OU2 toward the air sampler. These days were March 15, June 7 and October 5, 2018.



# **Summary (Report Section 5)**

EPA monitored for TSP and 22 metals (aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, potassium, selenium, silver, sodium, thallium, vanadium and zinc) from March 9, 2018, to March 8, 2019, on the roof of Jeannie's Academy of Dance in Pueblo, Colorado. The dance studio is downwind of the site. A total of 59 out of 61 possible samples were collected.

*TASC Comment*: As the wind roses from EVRAZ and Pueblo Memorial Airport show, winds in Pueblo blew from every direction at different times during each quarterly reporting period. It is unclear which direction the wind was blowing on sampling dates other than the highest five presented in the report. The CAG may want to ask EPA to summarize wind data for the dates when sampling occurred.

The measured TSP average concentrations were higher for the first and second monitoring quarters than for the third and fourth monitoring quarters. It was very windy (wind speeds greater than 10 miles per hour) for several hours on each of the five days with the highest measured TSP concentrations. Wind was blowing from the general direction of the Colorado Smelter toward the sampler on three of the five days. Excavations in residential areas took place on three of the five days.

The combined total concentration of the 22 analyzed metals represented a small portion (about 15%) of the total TSP concentration. Calcium, iron, sodium, aluminum and magnesium collectively made up over 90% of the total metals mass. Thallium and arsenic were never detected. The metals silver and selenium were detected less than 10 times each during the monitoring year. The field-blank checks and other laboratory quality control checks did not indicate any problems for the sampling program.

The Report concludes that the relatively low TSP and metal concentrations measured indicate that the remedial investigation is not generating large impacts on the surrounding region.

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