# 4<sup>th</sup> of July, 2019 Air Quality Results for Maywood, CA

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Notes:

- Slides 2-6 in this presentation are from Sonoma Technology, Inc.'s (STI) October 17, 2019 Update, "Air Toxics and Heavy Metals: Evaluating Air Quality at a Maywood, California Elementary School" (Slides 7-9, 15)
- Slides 6 & 7 were created using data downloaded from PurpleAir's website and have not had their values corrected using STI's correction algorithm (which is why they are hidden)
- Slides 8-28 are based on data provided by STI of PM2.5 values corrected using STI's algorithum based on when the sensors had been co-located with a SCAQMD BAM reference
- Slide 10 is an animation of slides 11-28

### **Toxic Metals**

- Arsenic, As used in semiconductor production
- Chromium, Cr ingredient in stainless steel, chrome-plating
- Hexavalent chromium, Cr-6 can be emitted during "hot-work"
- Manganese, Mn ingredient in stainless steel, some batteries
- Nickel, Ni ingredient in stainless steel, chrome-plating
- Lead, Pb used in a wide range of applications, but largely banned in the US

### Case Study: Metals in Fireworks

- Metal salts (some with chloride, Cl) are used to provide the colors in fireworks
  - Strontium = red
  - Calcium = orange
  - Sodium = yellow
  - Barium = green
  - Copper = blue
  - Magnesium, Aluminum = white

- Other metals have been added in the past or are present in illegal fireworks
  - Lead = crackle effect
  - Manganese = bright light
  - Nickel, chromium, others = igniter, propellant

### Case Study: July 4th

- Fourth of July evident in concentrations of As, Ba, (Bi), Cl, Cu, K, Mn, (Pb), S, Ti, (V), Zn
- Effects seen starting around 8 p.m.
- Data used as a standalone case study

Species	# times above
Species	mean
As	14
Ва	233
Cl	23
Cu	165
Κ	280
Mn	45
(Pb)	242
S	26
Ті	17
(V)	35
Zn	10

- () = species below MDL > 50% of the time
- July 4 is excluded from mean

STI Preliminary Results – Not for Distribution



Time series' showing July 4<sup>th</sup> peak

## **Preliminary Results**

- Concentrations of toxic metals were mostly below levels of concern
- July 4 highest concentrations observed due to fireworks
- Total Cr exhibited weekday, morning peaks likely anthropogenic
- Correlation between Ni and Cr indicate potential chrome plating source(s)



July 4<sup>th</sup> - July 5<sup>th</sup>, 2019 Air Quality Index (AQI) for Corrected Particulate Matter < 2.5 micrometers (Corrected PM<sub>2.5</sub>)

for PurpleAir PA-II Monitors in Maywood, CA



\*Sonoma Technology, Inc. developed a correction algorithm by collocating the PA-II monitors with a reference-grade instrument (a BAM) at a South Coast AQMD site in Feb, 2019, which was a pplied to the raw PM<sub>2.5</sub>ATM data

4 de julio – 5 de julio de Índice de calidad del aire (AQI) para materia particulada corregida <2.5 micrómetros (PM<sub>2.5</sub> corregido)

para Monitores PurpleAir PA-II en Maywood, CA



\*Sonoma Technology, Inc. desarrolló un algoritmo de corrección al colocar los monitores PA-II con un instrumento de grado de referencia (un BAM) en un sitio de South Coast AQMD en febrero de 2019, que se a plicó al PM2-5ATM sin procesar datos

















10 pm





Moderate (51-100) Unhealthy for **Sensitive Groups** (101 - 150)Unhealthy (151 - 200)Very Unhealthy (201 - 300)Hazardous (301 - 500)POWERED BY esri

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### Air Quality in Maywood, CA on the 4<sup>th</sup> of July (2019)

