



# Emission Inventories, Your Questions Answered

October 13, 2020

**Tribal Air Monitoring**



**Support Center**



**NORTHERN  
ARIZONA  
UNIVERSITY**

# Webinar Logistics



- Webinar is being recorded – URL for the recording will be in post-webinar email and posted at <https://bit.ly/AIAQTPwebinars>
- Please complete the webinar feedback survey – Link for the feedback survey will be in post-webinar email
- Certificates will be emailed to participants
- Reviewing Air Quality Permits <https://forms.gle/w3ccizCHo68ugjHs7>

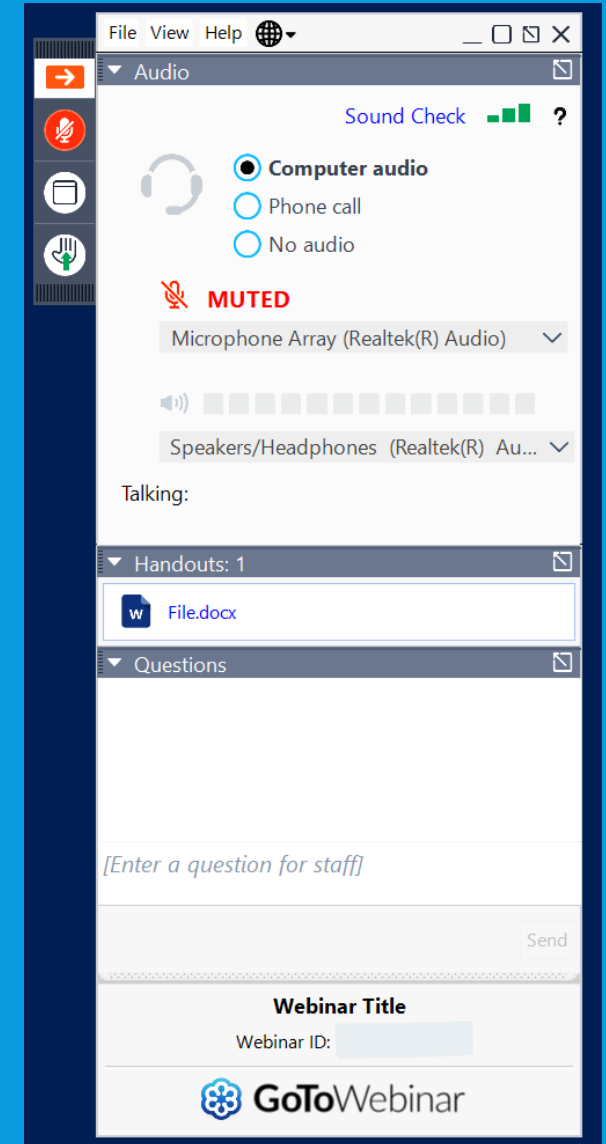
Thank you for joining! We will begin the webinar shortly.  
Tuesday, October 13, 2020; 10:00am-11:30am Pacific Time

 Submit questions in the "Questions" pane

 Raise your hand if you would like to be unmuted

 Download files from the "Handouts" pane

Presented by the Institute for Tribal Environmental Professionals  
American Indian Air Quality Training Program  
Questions? Contact [Christal.Black@nau.edu](mailto:Christal.Black@nau.edu)



# Poll Question 1



- Which of the following best describes your role?
  - Environmental Staff
  - Community or Tribal Leader
  - Federal or State Partner
  - Other

# Poll Question 2

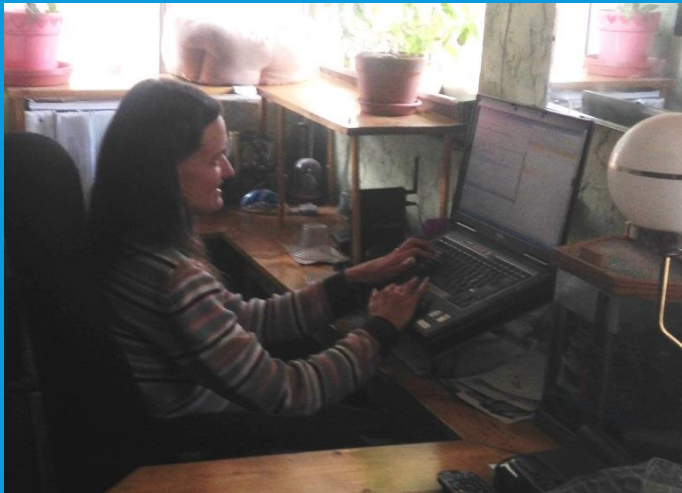


- How many years have you worked in Air Quality?
  - Less than a year
  - 1-3 years
  - 3-5 years
  - 5-10 years
  - Over 10 years

# Presenter



## Angelique Luedeker, Technology Specialist II, Tribal Air Monitoring Support Center



Angelique started working for ITEP in 2002, and since her first day, she has been working with emissions inventories. She has 18 years of experience of providing tribes assistance with emission inventories. Before working for ITEP, Angelique was part of the Los Alamos National Lab air quality team. She has a BS in Chemistry from Northern Arizona University.

Contact:

[Angelique.Luedeker@nau.edu](mailto:Angelique.Luedeker@nau.edu)

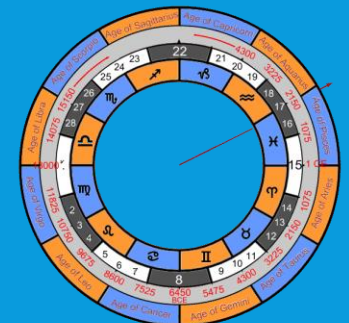
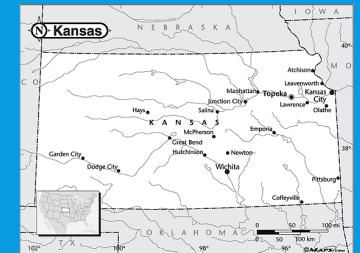
# Webinar Agenda



- Introduction to Emission Inventories
- Benefits of Completing an Emission Inventory
- Uses of Emission Inventory Data
- Sources Included in an Emission Inventory
- Overview of Available Online Emission Inventory Training Options Through ITEP

# What is an Emissions Inventory?

- Listing of sources and air pollutants in a geographic area during a specific time period





# Why Do An EI?

- EI = Fundamental Building Block In Developing Air Quality Control and Maintenance Strategy
  - Often used to start an air quality program
    - If a Tribe does not have a CAA grant, EI can be used to demonstrate the need for a grant
  - Often required as part of a grant
  - EIs are fun and educational



# Poll Question 3



- Has your Tribe completed an EI?
  - Yes
  - No
  - Not Sure

# How are EI Data Used?

- Provides baseline data for the year
  - Future updates can show how new developments affect air quality
- Air quality modeling and assessment
  - Predict pollutant concentrations through dispersion modeling
- Developing and implementing minor source and construction permits
- Human health risk assessment studies
- Determine the need for ambient air monitors and to site monitors

# What are Emissions?

- Criteria Pollutants

- Particulate Matter: PM<sub>10</sub> and PM<sub>2.5</sub>
- Sulfur Dioxide: SO<sub>2</sub>
- Carbon Monoxide: CO
- Lead: Pb
- Ammonia: NH<sub>3</sub>
- Nitrogen Oxides: NO<sub>x</sub>
- Volatile Organic Compounds: VOCs



Ozone  
Precursors

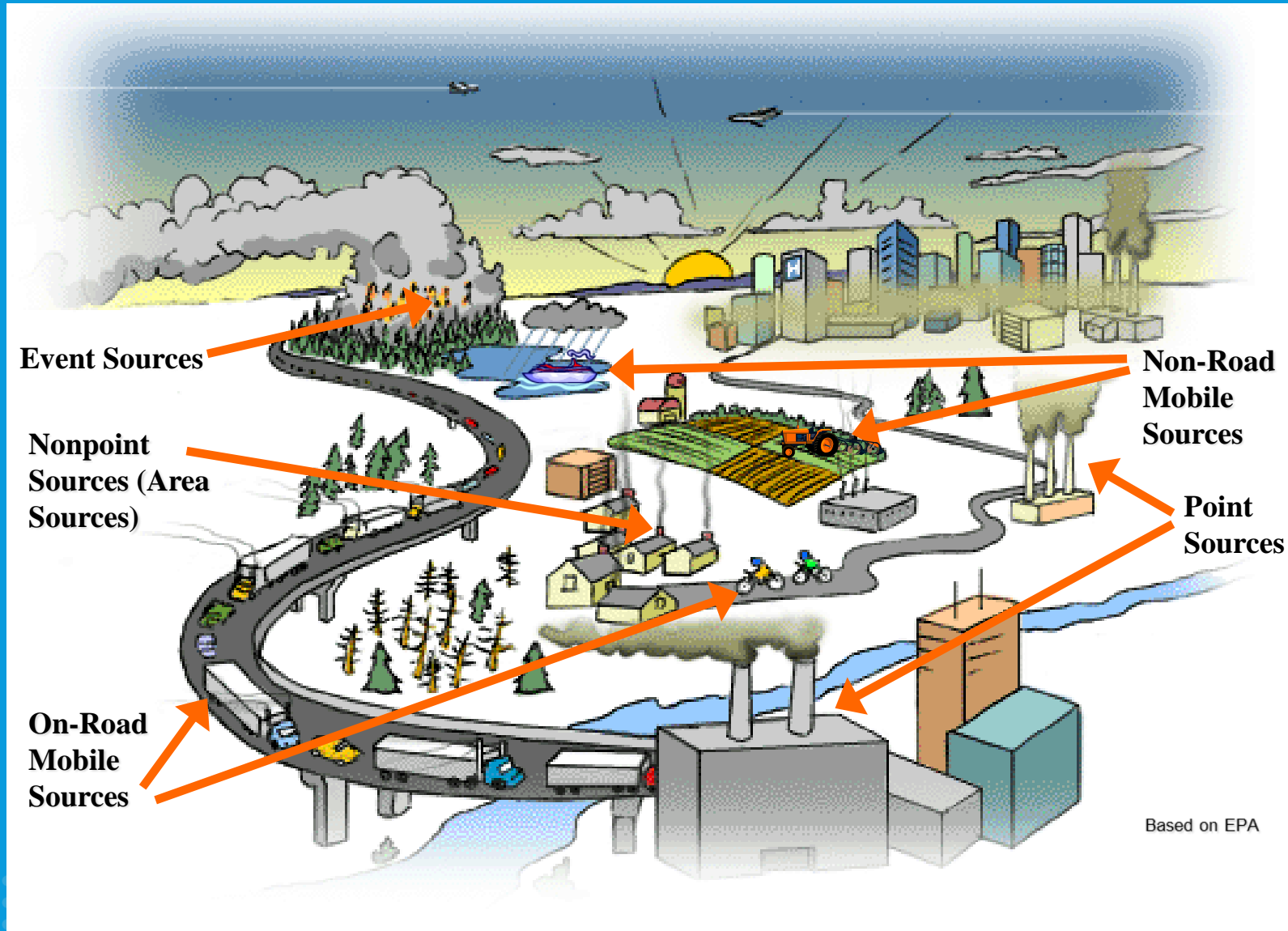
- HAPs (Air Toxics)

- 187 toxic, carcinogenic compounds without regulated standards

# HAPs (Air Toxics)

- 187 compounds listed in CAA including
  - **Mercury** (power plants, coal-fired)
  - **Perchloroethylene** (dry cleaning)
  - **Benzene** (gasoline)
  - **Chloroform** (chlorination plants, paper mills)
  - **Methyl Isocyanate** (pesticide manufacturing)
    - Release at Bhopal, India, killed 4,000 people
  - The list goes on...

# What are Emission Sources?



# Summary of Types of Sources

- Point sources = Individual stationary sources
- Nonpoint sources = A group of stationary sources
- Event sources
- Mobile sources
  - On-Road (cars, motorcycles, trucks, buses)
  - Non-Road (off-road equipment)
- Biogenic sources

# What is a Point Source?

- Individual, stationary source
- Emitting quantities above the emission threshold
- Emission thresholds vary according to type of pollutant and that location's non-attainment area classification
- See EPA's Air Emissions Reporting Requirements (AERR) for federal thresholds





# What is a Point Source?

- AERR reporting thresholds are quite high
- Many states have lower thresholds
- Consider using state thresholds to define your reservation's point sources
  - Makes EI compatible with others in your area
  - Get a more detailed listing of point sources
    - Example: Busy gas station classified as point source under state thresholds, but not AERR thresholds
    - If not a point source, classify as a nonpoint source

# Point Source Characteristics

- Large, stationary sources
  - Manufacturing or production plants
  - Power plants, refineries
  - Large, industrial facilities
- A single point source facility can have emissions from
  - Smoke stacks
  - Units within directed to stacks
  - Fugitive sources within plant



# Poll Question 4



- Are you aware of any sources on your Tribal Land that you might classify as a point source in your EI?
  - Yes
  - No
  - Not Sure

# Nonpoint (Area) Sources

- Stationary sources that emit
  - Less than point source threshold
  - Smaller emitters, but numerous
  - Often have fugitive (uncontrollable)
- Tend to be sources like
  - ✓ Gasoline stations
  - ✓ Dry cleaners
  - ✓ Auto body/paint shops
  - ✓ Unpaved roads



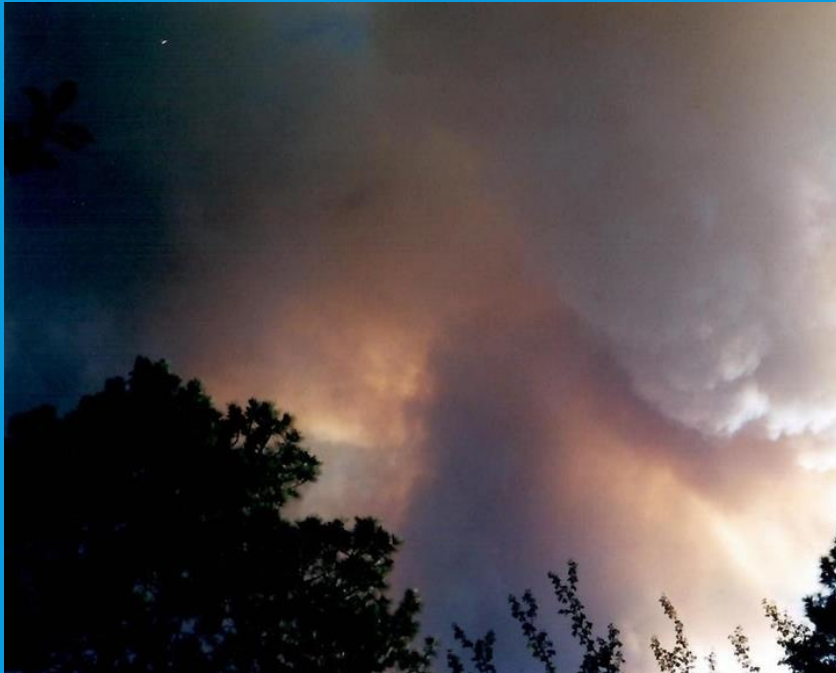
# Other Nonpoint Sources

- Other nonpoint source examples
  - Agricultural field burning
  - Residential wood combustion
  - Residential combustion of household waste (backyard burning)



# Event Sources

- Wildfires and prescribed burning
  - Now inventoried as EVENTS



# On-Road Mobile Sources

- Vehicles found on roads and highways (e.g., cars, trucks, buses, motorcycles)
  - 20 volatile organic compounds (VOCs) and metals quantified (Urban Air Toxics)
  - Diesel particulate matter and diesel exhaust organic gases also quantified



# Non-Road Mobile Sources

- Mobile sources not found on roads and highways

- ✓ Lawn mowers



- ✓ Construction vehicles



- ✓ Farm machinery

- Exceptions

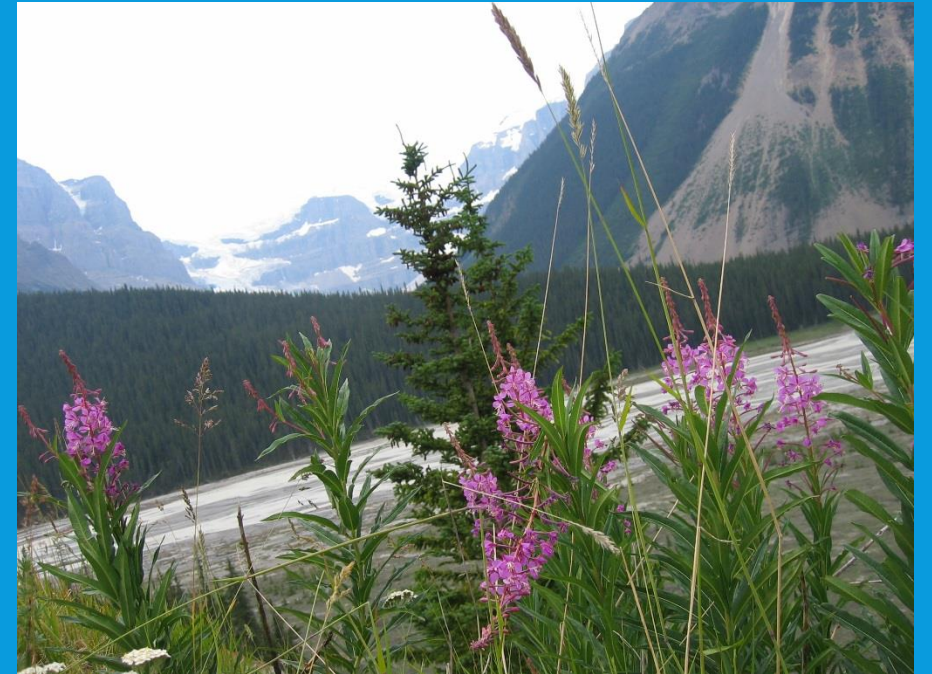
- Commercial marine vessels and locomotives usually reported as a nonpoint source

- Aircraft usually reported as point sources at an airport



# Biogenic Sources

- Naturally occurring emissions
  - Vegetation: Trees, shrubs, grasses
  - Microbial: Soil bacteria, termites



# Poll Question 5



- What source category are you most concerned about as a contributor of air pollution in your area?
  - Point
  - Nonpoint
  - Event
  - Mobile
  - Biogenic

# Where Do I Start?

- Decide what Level your EI is going to be
  - Make sure to discuss this with your project officer

Inventory Levels	Inventory Use	Requirements	Example
1	Inventories supportive of enforcement, compliance, or litigation activities.	Requires the highest degree of defensibility. Generally involves source sampling or mass balance based on site-specific data; performance audits of equipment, traditional QA plan for source sampling activities.	Monitoring for compliance
2	Inventories that provide supportive data for strategic decision-making or standard setting.	Site-specific (or region-specific) data are generally required, but not necessarily direct source sampling, performance audits of equipment.	State Implementation Plan (SIP) inventory
3	Inventories developed for general assessments or research that will not be used in direct support of decision-making.	May or may not include direct measurement of sources, but often involves site-specific data of some type. QA requirements must be flexible.	Evaluation of effectiveness of alternative controls or mitigation methods; bench-scale or pilot studies
4	Inventories compiled entirely from previously published data or other inventories; no original data gathering.	Flexible and variable.	Inventory developed for informational purposes; feasibility study; trends tracking

From EPA Emission Inventory Improvement Program (EIIP) vol. 6, pg. 2.1-5

# Level 1 EI

- Supports enforcement, compliance or litigation. This level requires the most effort. Data collected must be as accurate and precise as possible.

○ **Hypothetical Example:** A waste incinerator has been operating on the reservation since 1972, taking advantage of the fact that the state did not permit sources located on the reservation. The Tribe has now started an air program and plans to permit this source itself. The Tribe plans to require that the incinerator install pollution control devices.

# Level 2 EI

- Supports strategic decision making.

- **Hypothetical Example:** The Tribe has 20 natural gas wells located on their reservation. A gas company wants to drill another 50 wells on the reservation in the next two years. The Tribe wants to know how much pollution is being released from the existing wells. They also want to estimate how much additional pollution would be released if the 50 new wells are drilled and determine if they want to require that the new wells have pollution control devices.

# Level 3 EI

- General assessment and research.
  - **Hypothetical Example:** There are three Title V, Part 71 permitted sources of air pollution on the reservation. A brown haze is often observed over the reservation and community members complain about excessive dust. The Tribe wants to determine where the brown haze and dust are coming from and if they can be controlled. The Tribe would like to have some data to support their funding request to install ambient air monitors on their reservation.

# Level 4 EI

- Inventory compiled entirely from previously published data or other inventories.
  - **Hypothetical Example:** The Tribe has a very small reservation with no significant sources of pollution on it, but they are concerned about their air quality and how it is affected by sources off the reservation.

# First EI is Often a Level 4 EI

- Compile existing data from the National Emission Inventory (NEI)
  - NEI is a national emissions data set compiled and maintained by EPA
  - Use it to show air pollution emitting facilities in your area (point sources) and identify nonpoint sources that create emissions in your area
- This first step allows you to see what is already in the EPA database that has been reported by state and local agencies



# Two Online, Self-Paced Trainings



- **EI Fundamentals**
  - Focus is primarily on reviewing existing data for off reservation sources
  - Outcome is a draft Level 4 EI: List of sources and pollutants
- **EI Advanced**
  - Focus is on collecting data and calculating emissions for on reservation sources
  - Outcome is the start of a Level 1, 2, or 3 EI, with calculated emissions
- In both of these courses, when you complete the homework exercises, you complete pieces of your EI

# How To Register for Trainings



- Create a free user account here: <https://itep.scholarlms.com/>
  - If you have taken other ITEP trainings through Scholar LMS, you can use your existing account
- Select Emissions Inventory Fundamentals and/or Emissions Inventory Advanced under the Available Courses
- Complete the Self-enrollment (Student) form toward the bottom of this page
- Receive a confirmation email from professional@nau.edu after approval by ITEP staff

# Poll Question 6



- Have you taken any online ITEP trainings through Scholar LMS?
  - Yes
  - No
  - Not Sure

# Questions?

- [Angelique.Luedeker@nau.edu](mailto:Angelique.Luedeker@nau.edu)



# EI Trivia Question 1



- Of the following, what source would definitely not be classified as a point source in an EI?
  - Gas Station
  - Residential Natural Gas Heating
  - Airport
  - Sand and Gravel Pit
  - Resort Casino

# EI Trivia Question 2



- True or False: The geographic area of a Tribal EI must include the reservation and a 50 mile buffer zone around the reservation.
  - True
  - False

# ET Trivia Question 3



- For what source category does EPA currently estimate emissions specific to both Counties and Tribes every three years?
  - Point
  - Nonpoint
  - Event
  - Mobile
  - Biogenic

# ET Trivia Question 4



- True or False: The non-road mobile category could include sources that are not vehicles.
  - True
  - False



# EI Trivia Question 5



- In an EI, what are typical units that emissions are reported in?
  - $\text{mg}/\text{m}^3$
  - ppb
  - lb/gallon
  - tons/year
  - lb/tons

# EI Trivia Question 6



- What does Angelique really like?
  - Numbers and Calculations
  - Spreadsheets
  - Databases
  - Assisting with EIs
  - All of the Above

# Resources

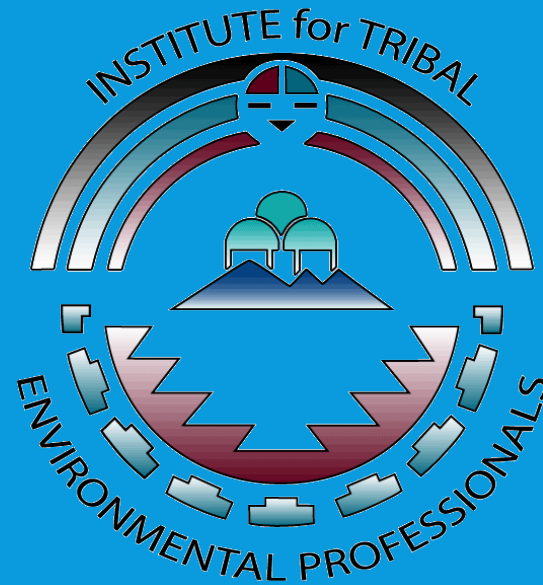


## Online Courses:

- [Emission Inventory Fundamentals](#)
- [Emission Inventory Advance](#)
- [Air Pollution Training Institute](#)

## Tribal Air Monitoring Support Center Resources:

- [TAMS Guidance on Developing Tribal Air Quality Programs](#)
- [Professional Assistance](#)



Thank you for joining today's webinar!