JATAP
Joint Air Toxics Assessment Project

A Successful Multi-Jurisdictional Research Partnership

National Air Toxics Monitoring and Data Analysis Workshop
US EPA Region 6 Headquarters, Dallas TX
April 5, 2011
Presented by:

Leroy Williams, Environmental Engineer
Department of Environmental Quality
Air Quality Program
Gila River Indian Community
Joint Air Toxics Assessment Project (JATAP)

Multi-Jurisdictional Collaboration:
tribal, state, county, federal governments

- determine types, distribution and sources of air toxics in central Arizona (local-scale, high quality data for modeling and risk assessment)
- determine health risks from air toxics
- reduce health risks from air toxics
Air Pollution Does Not Recognize Political Boundaries

To understand air toxics, Tribes, State and Counties need data from on and off their jurisdictions:

- sampling for 1 year at all 7 sites; also meteorological data
- 24 hour average samples taken every 6th day
Key Tribal Interests

Are air toxics coming onto tribal lands from neighboring urban areas?

What air toxics are being emitted from freeways on tribal lands?
JATAP is a Successful Multi-jurisdictional Project

- Multi-jurisdictional Steering Committee
- Consensus decision-making;
- ADEQ Tribal Policy
- Coordination and TA
- ASU American Indian Policy Institute (ITEP for the first phase)
- Funding
- EPA Grants; EPA scientist on special detail;
- State and Tribal funds
JATAP Participants

Agencies with Monitoring Sites
Salt River Pima-Maricopa Indian Community EPNR
Gila River Indian Community DEQ
Arizona DEQ

Other participants
Fort McDowell Yavapai Nation
Maricopa County & Pinal County
Air Quality Control Districts
EPA Region 9 & OAQPS
City of Phoenix
JATAP monitored for Gaseous Air Toxics and Fine Particulates

FROM:

- **mobile sources (cars, trucks)**
  1,3-butadiene, acetaldehyde, formaldehyde, benzene, ethylbenzene, toluene; PM$_{2.5}$

- **stationary sources (industry)**
  chloroform, methylene chloride, trichloroethylene, tetrachloroethylene, styrene, o,m,p-xylenes, hexachlorobutadiene, vinyl chloride

- **background (throughout US)** carbon tetrachloride

- **Fine Particulates (speciated)**
  arsenic, cadmium, chromium VI, nickel, cobalt, manganese, Diesel Particulates
Overall Study Area Cancer Risks

90% of risk from:
- diesel particulates
- all carbonaceous particulates

Slightly increased risk:
- formaldehyde; 1-3 butadiene
  acetaldehyde; benzene; chloroform; arsenic; cadmium
Geographical Distribution of Risk
Tribal Locations

Salt River (transport; freeway emissions)

- Gila River emissions closer to background
- Exposure
Stationary source dispersion and exposure modeling (HEM-AERMOD model)
- developed emissions inventory (EI) containing 4000+ emission point entries (‘model ready’)

Urban area-wide mobile source modeling (CAMx model)
- developed EI
- includes diesel PM

Mobile source dispersion modeling to identify near-roadway concentrations and exposures
- highest mobile source concentrations within 250m of freeways; drop off at 500m
ARIZONA

JATAP
Study Area
Monitoring Sites
- Modeling and Risk Assessment (no NAAQS)
- Outreach Messages: include Action Plan for risk reduction
Case Study of Unintended Consequences

- Multiple Air Toxics Exposure Study (South Coast, CA 1999)
- ban on new schools or expansions near freeways; school over-crowding

Possible Options:
- filters in near roadway buildings
- targeted reduction in outdoor activities
- school bus anti-idling and retrofit
- buffer zones (land use planning)
- roadway design
- trees and vegetation
The Gila River Indian Community’s air quality is good (particularly from a regional perspective).

Data indicates essentially no health risk in District 6 of air toxics coming from industries in urban areas.

There is a low level increase in air toxics (benzene) from vehicles; these air toxics are distributed though the whole Valley; at Gila River the levels are lower than at Salt River and only slightly higher than at Queen Valley (a fairly remote site).
The primary health risk from these vehicle air toxics is an increased risk of cancer (leukemia); essentially all urban areas in the U.S. have levels of air toxics that pose some increased cancer risk.

High traffic roadways and freeways will increase air pollution near the roadway; air pollution declines 60% at 320 feet from the roadway and drops to background levels at 650 feet.
There are mitigation measures that potentially reduce health risks from near-roadway pollution.

JATAP is researching these measures and working in the Community to develop projects to reduce air toxics, particularly at schools.
THANK YOU!

For More Information:

Leroy Williams (520) 562-2234
williams@gilanet.net