

Environmental Toxicology

Office of Environmental Health

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Health and Wellness for all Arizonans

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ADHS' Relationship with ATSDR

- **Funding:**
 - ADHS OEH's Risk Assessment and Health Consultation Services Program is funded by a cooperative agreement with the ATSDR (The Agency for Toxic Substances and Disease Registry)
- **Purpose:**
 - To respond to requests to evaluate potential environmental impacts on public health and provide technical guidance for site activities, while using the best available science
- **Outcome:**
 - This partnership provided ADHS with the necessary resources to investigate environmental health concerns and report findings

ADHS' Relationship with regulatory agencies

- ADEQ: the Arizona Department of Environmental Quality (state agency)
- EPA: the Environmental Protection Agency (federal agency)
- ADEQ and ADHS
 - Directors both report to the governor of Arizona
 - ADEQ is primarily regulatory, ADHS is primarily advisory

Environmental Toxicology Program

- Responds to communities where people might be exposed to hazardous substances in the environment
- Determines how hazardous a site is or has been
- Recommends actions that need to be taken to safeguard the health of community residents



Environmental Toxicology Program (continued)

- Educates communities statewide about hazardous chemicals and substances
- Involves communities when responding to their environmental public health concerns

How we get involved

- A site is on or proposed for the U.S. Environmental Protection Agency's Superfund National Priorities list (EPA's NPL)
- Other federal, state or local agencies request our help
- A community member requests help

Environmental health

Q: Where do you find hazardous substances?

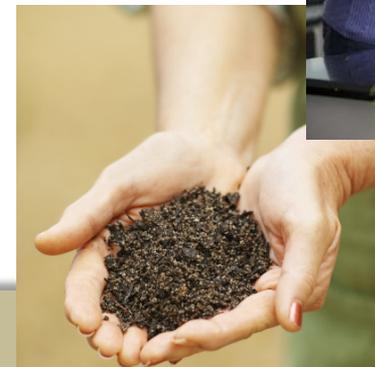
Q: What are hazardous substances?

A: Air, soil, water, food

Q: What is an exposure pathway?

A: Eating, drinking, breathing, touching

Q: What is exposure?



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Environmental Toxicology Program

- Gathers community concerns and information about the site
- Identify ways people might come in contact with hazards and the effects of that contact;
- Communicate final results and recommendations, and complete follow-up activities

How we will communicate with communities

- Public meetings
- Fact sheets
- Web site
- Other



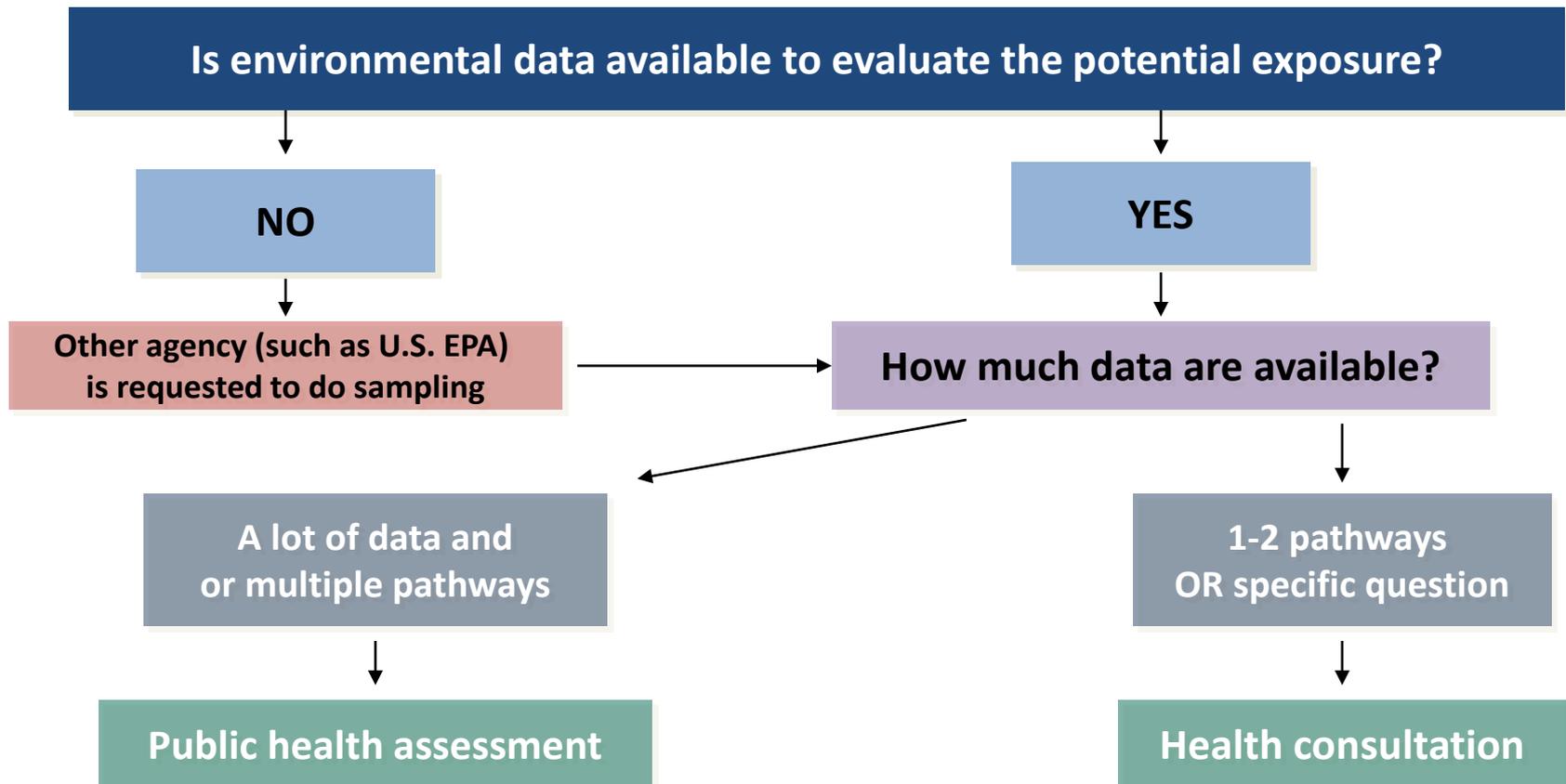
Evaluating health impacts



- Public health assessments
- Health consultations
- Technical Assists
- Health Education

Finding the best fit

Once it appears that a hazardous substance has been released, we ask



What is a Health Consultation?

- Specific public health issue
- Current exposures to toxic material
- A way for ADHS to provide health information and to make recommendations for actions to protect the public's health

Health Consultation Process

- Gather available data
- Identify chemicals of concern
- Evaluate exposure pathways and duration
- Calculate dose
- Make a health conclusion
- Finalize and distribute report

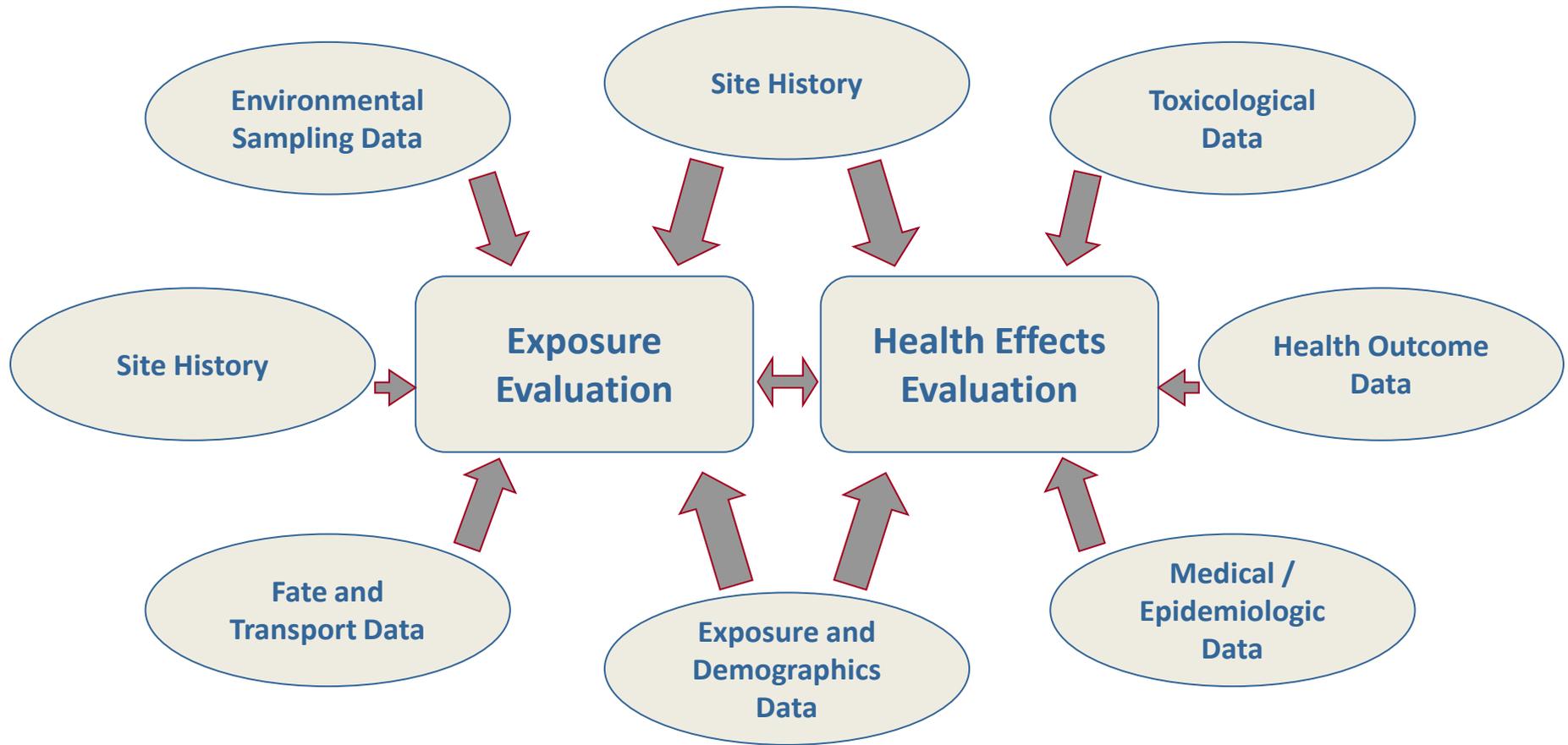
Analyzing the data

- Data come to us in “raw” format and are studied by our toxicologist.
- They are then compared to information we know about the community.
 - Remember: A contaminant cannot affect someone unless they come into contact with it.

Determining exposure

- Exposure pathways
 - Who are the exposed people?
 - How were these people exposed?
- Exposure Dose
 - How often did the exposures occur?
 - How much of the chemical were people exposed to?
 - How long did the exposures last?

Information Needed to Evaluate Exposures and Health Effects



Exposure Pathways



2a. Release & Migration (volatilization)

2b. Environmental Media (air)

4. Exposure Route (ingestion)



1. Source (drums)



3. Exposure Point (ambient air)



5. Potentially Exposed Population (residents)

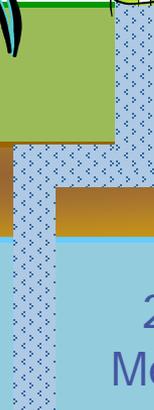
4. Exposure Route (inhalation)



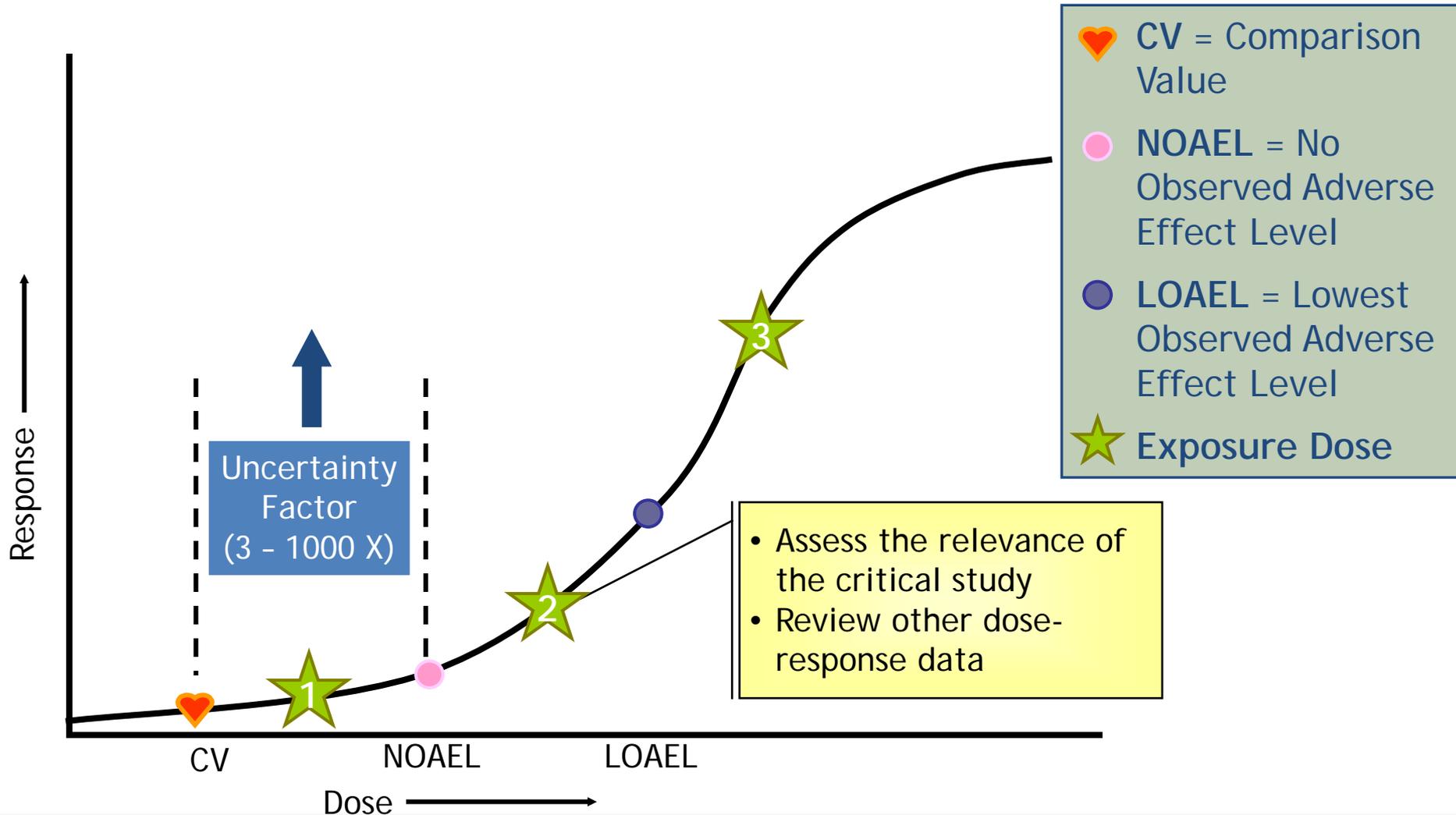
3. Exposure Point (Private wells)

2a. Release Mechanism (leaching)

2b. Environmental Media (groundwater)



Health Based Comparison Values vs. Exposure Dose



Response

- “Dose makes the poison”
- Chemicals cause their effects (either harmful or beneficial) by changing the way cells function

Toxicant	Acute Toxicity	Chronic Toxicity
Ethanol	CNS depression	Liver cirrhosis
Arsenic	gastrointestinal damage	Skin/liver cancer

Health Consultation Conclusions

Hazard

- 1: Urgent Public Health Hazard
- 2: Public Health Hazard

- Health advisory
- Measures to stop or reduce exposures
- health education
- Health studies / surveillance

No Hazard

- 4: No Apparent Public Health Hazard
- 5: No Public Health Hazard

- Health education
- Possible health surveillance
- Measures to prevent future exposures

Unknown

- 3: Indeterminate Public Health Hazard

- Further characterization of site-related exposures, where possible
- Health education
- Health studies / surveillance

Health Consultation

STATE OF ARIZONA
SILVER CREEK SUBDIVISION
TUCSON, PIMA COUNTY, ARIZONA

JUNE 3, 2005

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333



Final Report

Final steps

- Present the final report to the community
 - Answer questions
 - Provide contact information for follow-up questions
- Post final report on ADHS website
- Return as needed to the community
 - Ex. Site updates

Contact Information

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