

# EXCERPTED FROM A RECENT "TALK" ON TRIBAL RISK

## Tribal Risk Assessment

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- Toxicology - health effects in humans & eco
- Risk Assessment - degree of adverse impact
  - Community Env. Health - health data
  - Tribal - subsistence, cultural risk

AESE Partners - geostatistics, hydrology, GIS,  
decision analysis, strategy, regulatory oversight,  
capacity building & training tribal staff

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## What is an Exposure Scenario and how is it used?

Scenario – a set of activities and ingestion rates that describe a lifestyle and its degree of environmental contact, and therefore the amount of exposure.

It is the core of risk assessment, which is the basis for many decisions.

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## What is a SUBSISTENCE Exposure Scenario?

Subsistence is a spiritual LIFESTYLE, not just a diet, an option or a hobby.

Subsistence is not "recreation."

Reservations conditions are not understood.

Tribal history & culture are not understood.

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## If salmon are contaminated...



Media and biotic resources are degraded



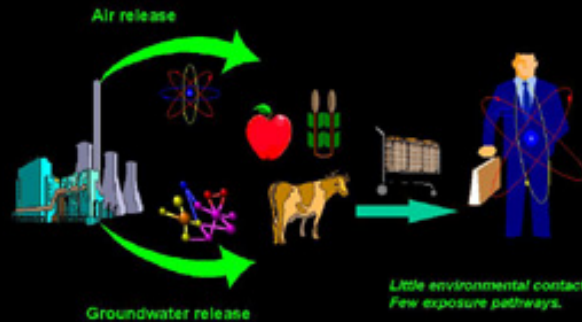
People are exposed through food



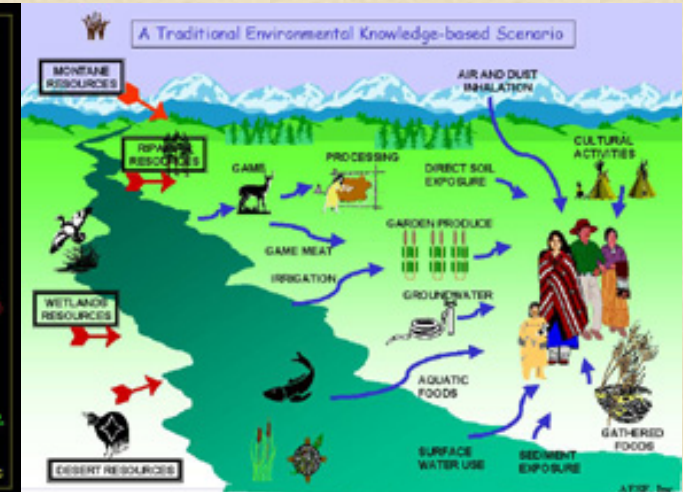
Social, religious, educational and other activities are impaired.

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## Simplified Concept of a Suburban Exposure Scenario



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## Confidentiality, Daubert, FOIA, and Intellectual Property Rights



Human research is governed by Institutional Review Boards; is anthropological research? Informed Consent & Consultation



## The Remediation Problem: Background vs. Land Use?

Contaminated Site - Remedial Objective

"Make the Site Whole"

"Control Unacceptable Risk"

Remedial Objective: Remediate to Background; Restore Original Conditions

Remedial Objective: Achieve a risk range based on land use; requires an exposure scenario based on the land use

What is geological "background" in a heterogeneous area?

There is almost always residual contamination - how much is OK (how clean is clean)? Requires an exposure scenario.

If residual contamination remains, are there Institutional Controls? Lost Use? NRDA?

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## How CERCLA and NRDA mesh



Are Cleanup and NRDA concurrent or sequential?  
Are they separate processes?  
Is there a distinct boundary between them?  
Do they require separate assessments?

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## Large Department of Energy Sites

RIFS Cleanup

"Stewardship"

Perpetual O & M  
Institutional Controls  
Natural Attenuation

Undefined end state

"Stewardship" is the perpetual post-cleanup O&M activities that are needed after cleanup is "complete."

Superfund "mega sites" may be similar - mines, harbors, rivers, industrial complexes.

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## Examples of CERCLA issues

- Splitting the site into multiple sub-areas
- Failure to have an appropriate exposure scenario
- Dangers of changing tribal exposure factors
- Screening COCs singly by medium, pathway, benchmarks
- Skipping the sitewide baseline risk assessment
- Closing individual subsites with no sitewide closure plan
- The Future Land Use pitfall
- Spatial extent (acreage) of contamination is not considered.
- The duration of contamination is not considered.
- The Incremental Risk pitfall
- The Background pitfall
- Splitting NRDA entirely away from CERCLA
- Splitting the remedy into separate sequential phases

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## Examples of NRDA issues

- Assuming that NRDA can fix CERCLA deficiencies
- Starting NRDA too soon or too late
- Forming a Natural Resource Trustee Council too early or too late
- Lack of community or tribal technical expertise - merely tracking the process implies endorsement of the outcome
- Failure to mesh human and ecological risk assessment with natural resource injury endpoints
- Failure to quantify ecological functions and human services, especially lost subsistence and cultural use
- Failure to integrate NRDA with CERCLA even though funding a tribe's or community's participation must be separate
- Using valuation methods not appropriate for tribes

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# Chemical Assimilation



**Imposing Anglo suburban standards  
on a Tribal lifestyle, making the  
culture unsafe to practice.**