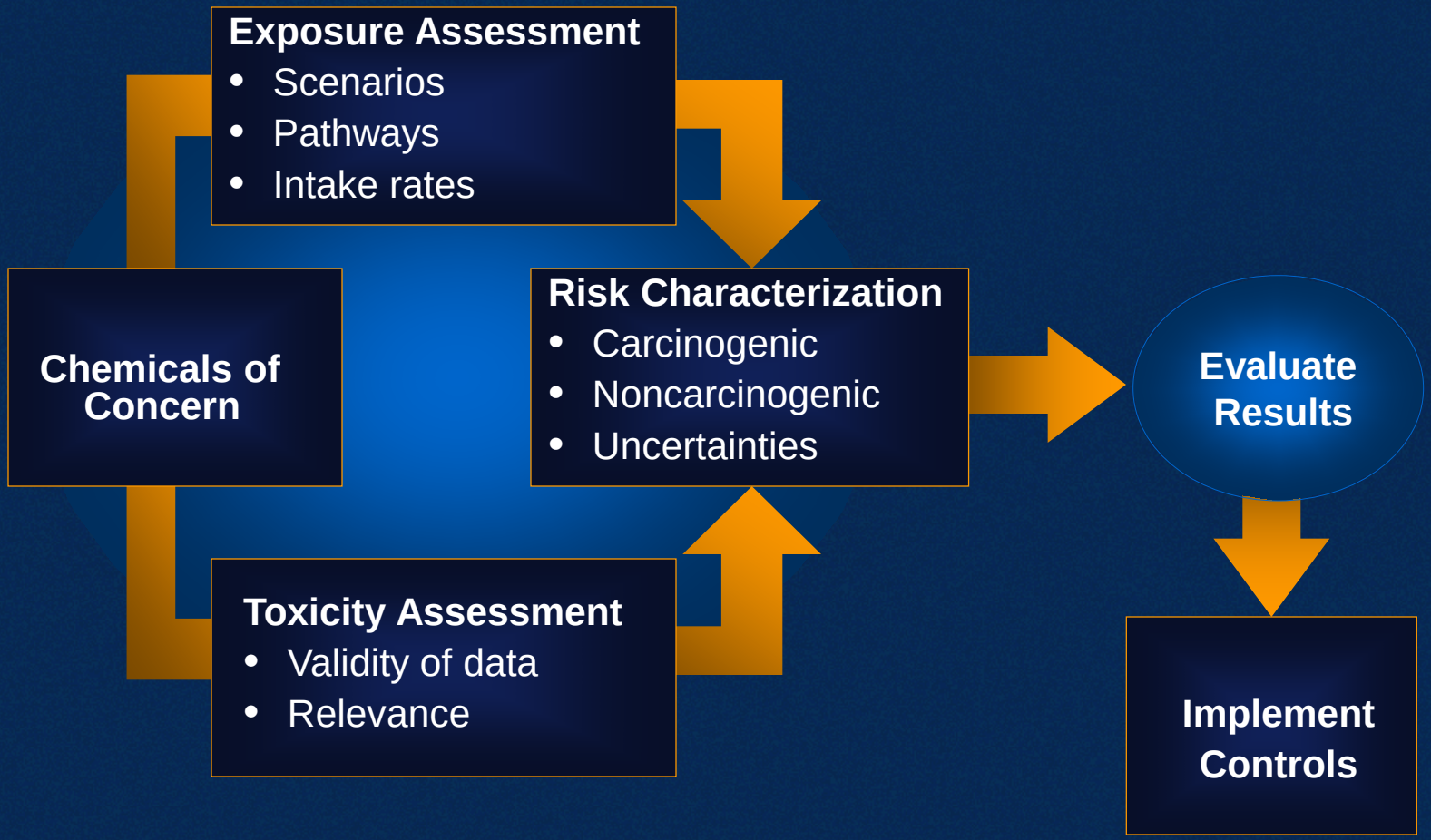
Exponent®

Risk Assessment Former Municipal Incinerator

August 24, 2004

Lisa Yost, M.P.H., DABT

Risk Assessment Framework



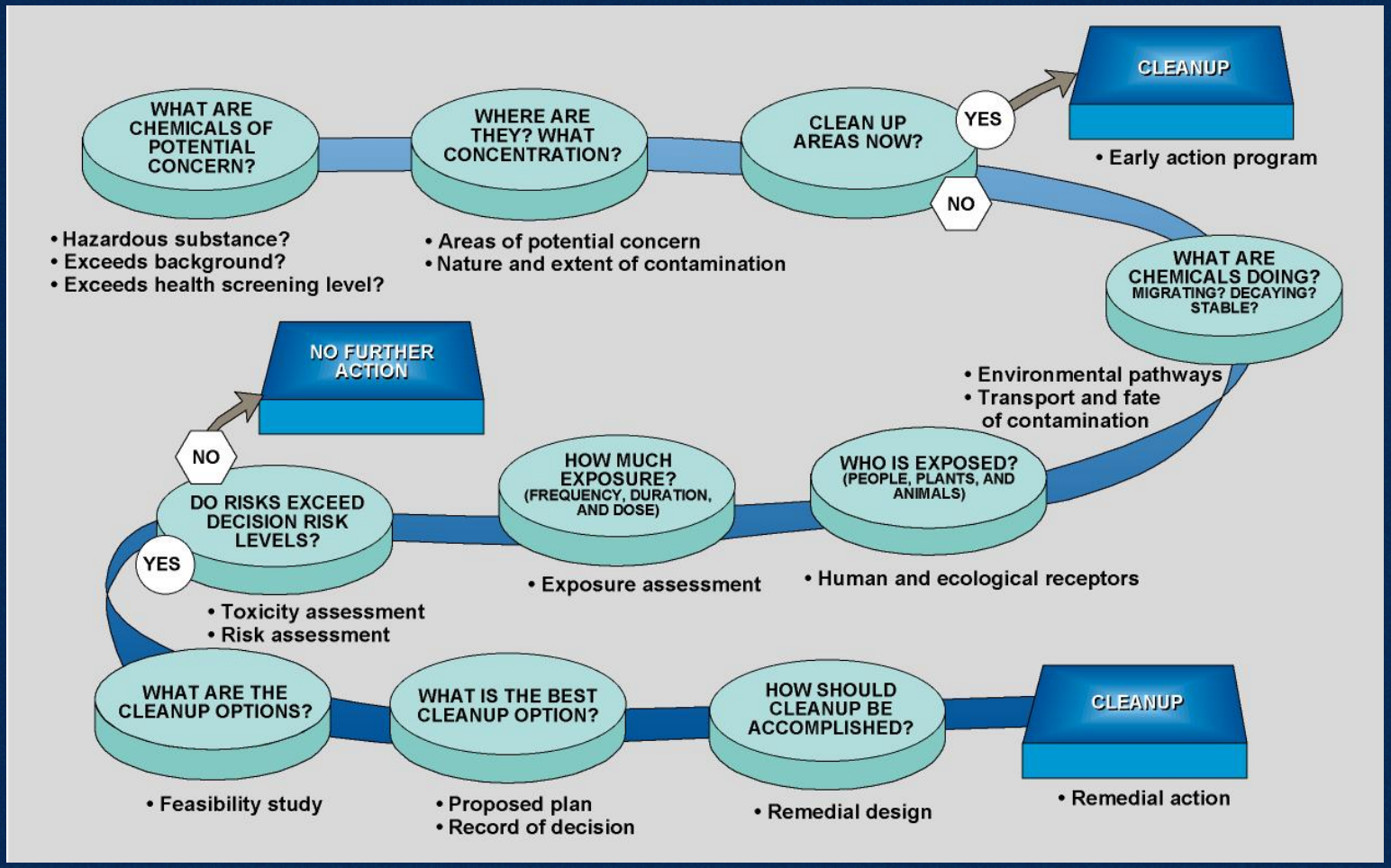
Context of Risk Assessments

- Waste-to-energy facility operated 1985 to 2000 cooperatively with SJC
- Prior operations resulted in residual contaminants
  - EPA conducted a Site Inspection in 1994
  - State required further investigation beginning 2001
  - Concerns regarding offsite migration
- Human health and ecological evaluations
- Consideration of cultural resources

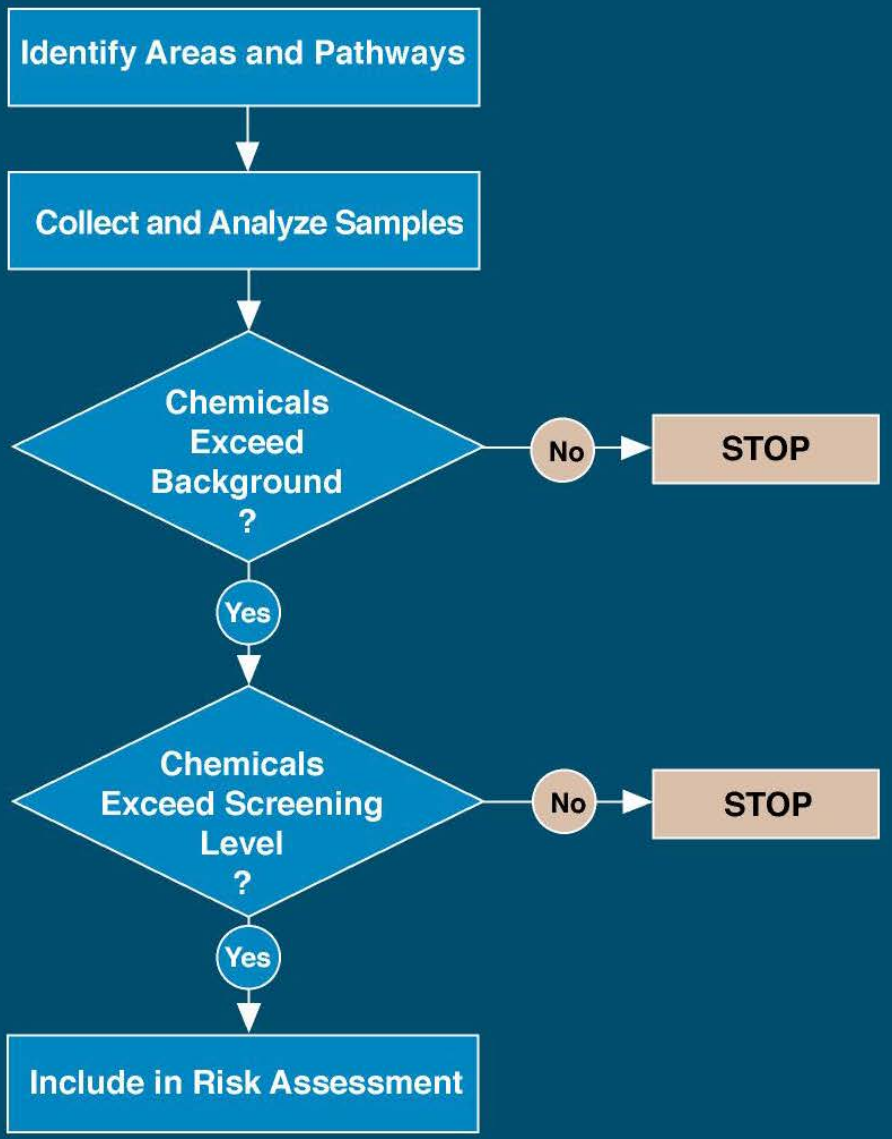
Project Team

- Directed by City of Sitka
- Regulatory oversight by DEC
- Conducted by:
  - James Clare, PE, LLC — Investigation
  - Exponent — Risk Assessments
- Reviewed by:
  - Sheldon Jackson College
  - Sitka Tribe
  - Public

Context of Risk Assessment in Overall Process



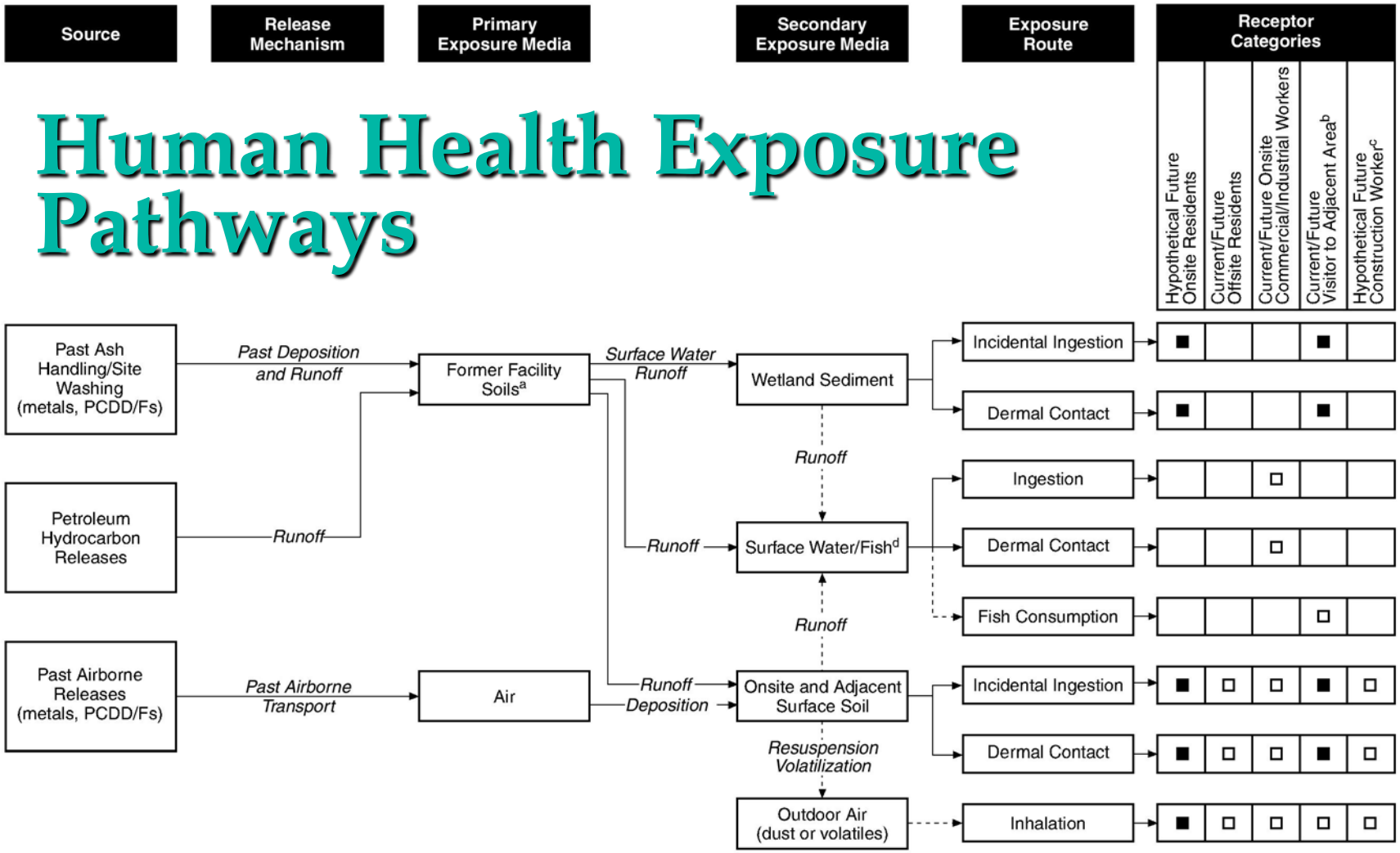
General Decision Framework for Screening Chemicals of Potential Concern



Contaminants of Potential Concern (CoPCs)

- Metals
  - Chromium, cadmium, mercury
- Residuals from burning
  - Dioxins (PCDD/Fs)
  - Polycyclic aromatic hydrocarbons (PAHs)
- Residual petroleum

Human Health Exposure Pathways



Human Health Exposure Assumptions

- Health protective assumptions applied
  - Worker and daycare child assumed 250 day per year exposure (25 years)
  - Visitor assumed 24 days per year (30 years)
  - Gravesite visits assumed 6 times per year (30 years)
- Hypothetical residential scenario evaluated
  - Adult and child evaluated
  - Assumes long-term residence
  - 350 days per year for 30 years

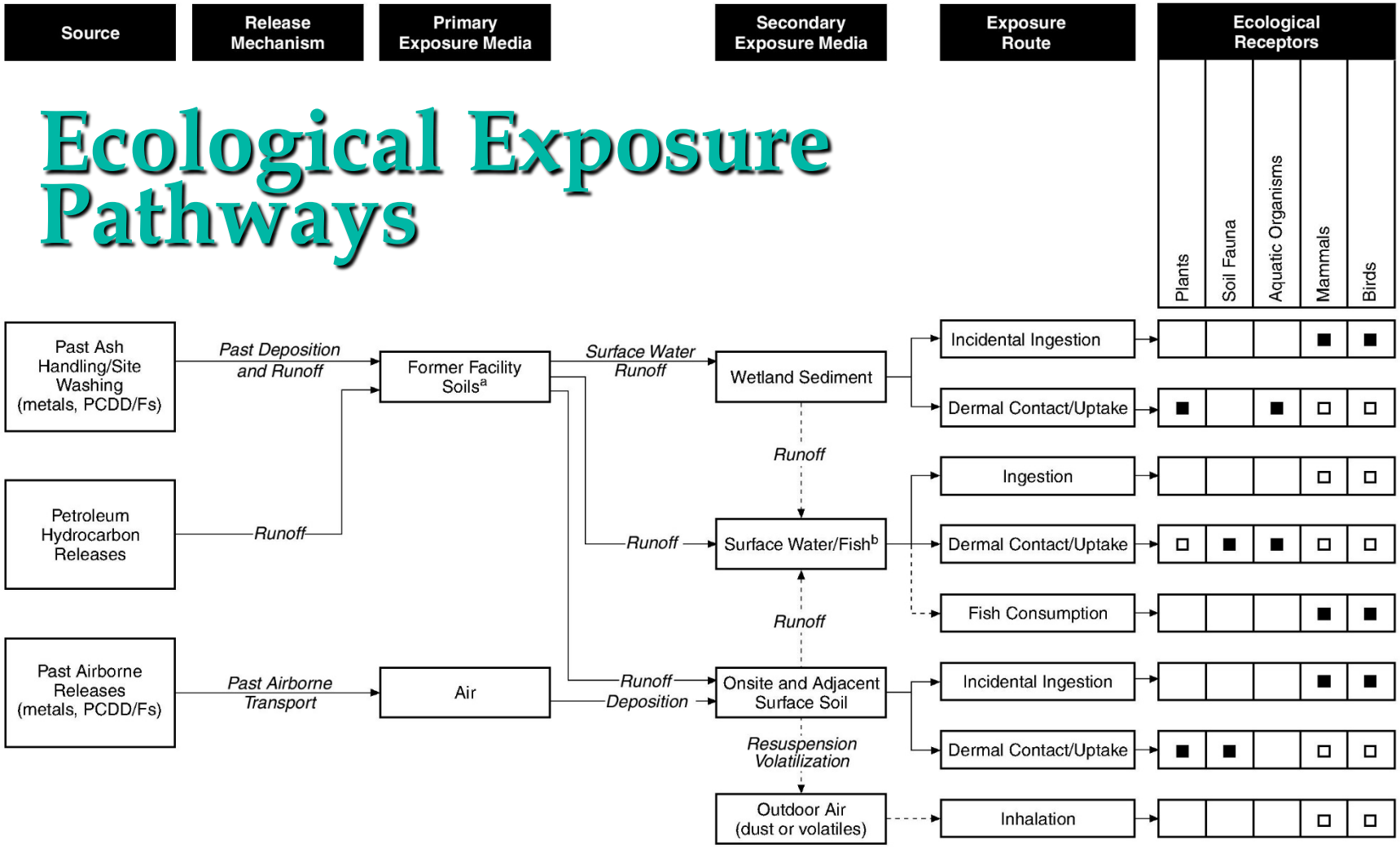
Risk Estimates for Human Health

Scenario	Risk Estimate Adult	Risk Estimate Child
Occasional visitor	2×10^{-5}	3×10^{-5}
Hypothetical resident	3×10^{-4}	5×10^{-4}
Gravesite visitor	1×10^{-6}	2×10^{-6}
Daycare worker / child	7×10^{-7}	2×10^{-6}

Ecological Assessment

- Screening based on conservative toxicity benchmarks and on exposure assumptions identified by DEC
- Contaminants of concern identified
  - Metals (cadmium, chromium, lead, and mercury)
  - Dioxins (PCDD/Fs)
- Indicator species evaluated in food web model
  - Mink, robin, Sitka mouse, shrew, and great blue heron

Ecological Exposure Pathways



Ecological Assessment—Results

- Risk assessment could not rule out potential for impact based on comparison to screening values
- Effects, if any, restricted within wetland area
- Population-level effects highly unlikely in terrestrial area
- No effects on fish

Conclusions

- Human health and ecological risks are within acceptable levels for current use
- Potential for elevated risks can be managed with use restrictions:
  - Residential use should be restricted
  - Subsurface excavation may require special health and safety procedures
- Offsite migration limited to adjacent wetland