

# Assessing Community Health Risks: Proactive vs. Reactive Sampling

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# Overview

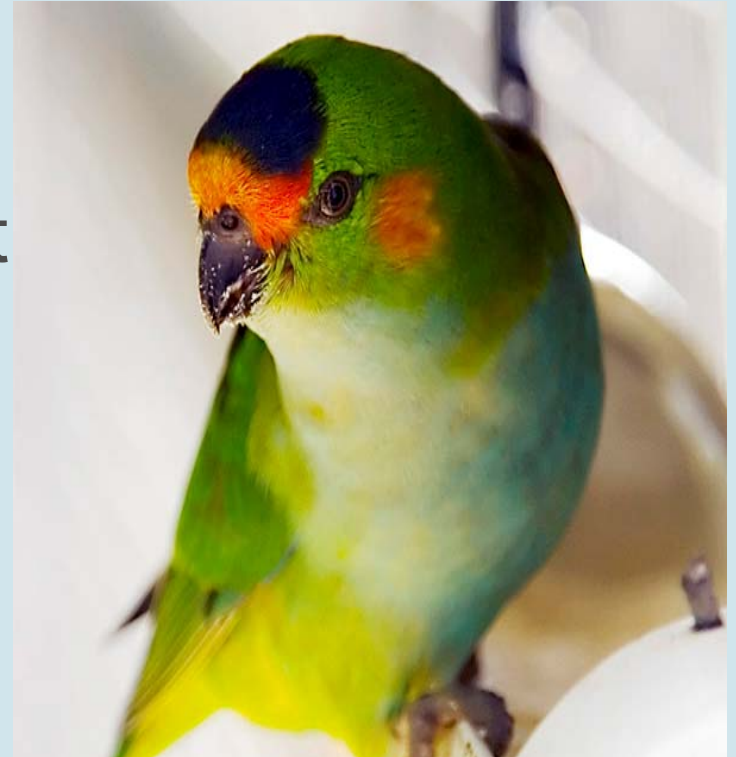
- Background
- Risk assessment
- Data and data use
- Summary





## Background

- Lead carbonate ~2 years
- Nickel concentrate - 1970s
- Bird deaths (nectar & insect
- Incident investigation-  
parliamentary inquiry
- Golder commissioned by  
DEC

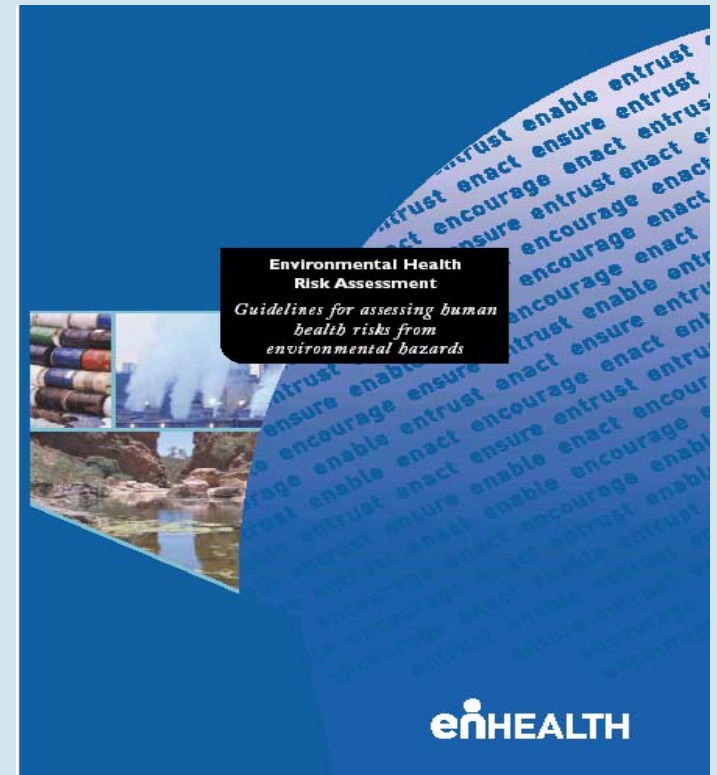


**Purple Crested Lorikeet**



# Health Risk Assessment

- Golder Associates commenced project end 2007
- Followed enHealth model:
  - Issue Identification
  - Hazard Assessment
  - Exposure Assessment
  - Risk Characterisation





# Issue Identification

- Establishes context
- Why?
- Identifies concerns to address
- Conceptual site model
- How?
- Sampling and analysis plan or data gap analysis



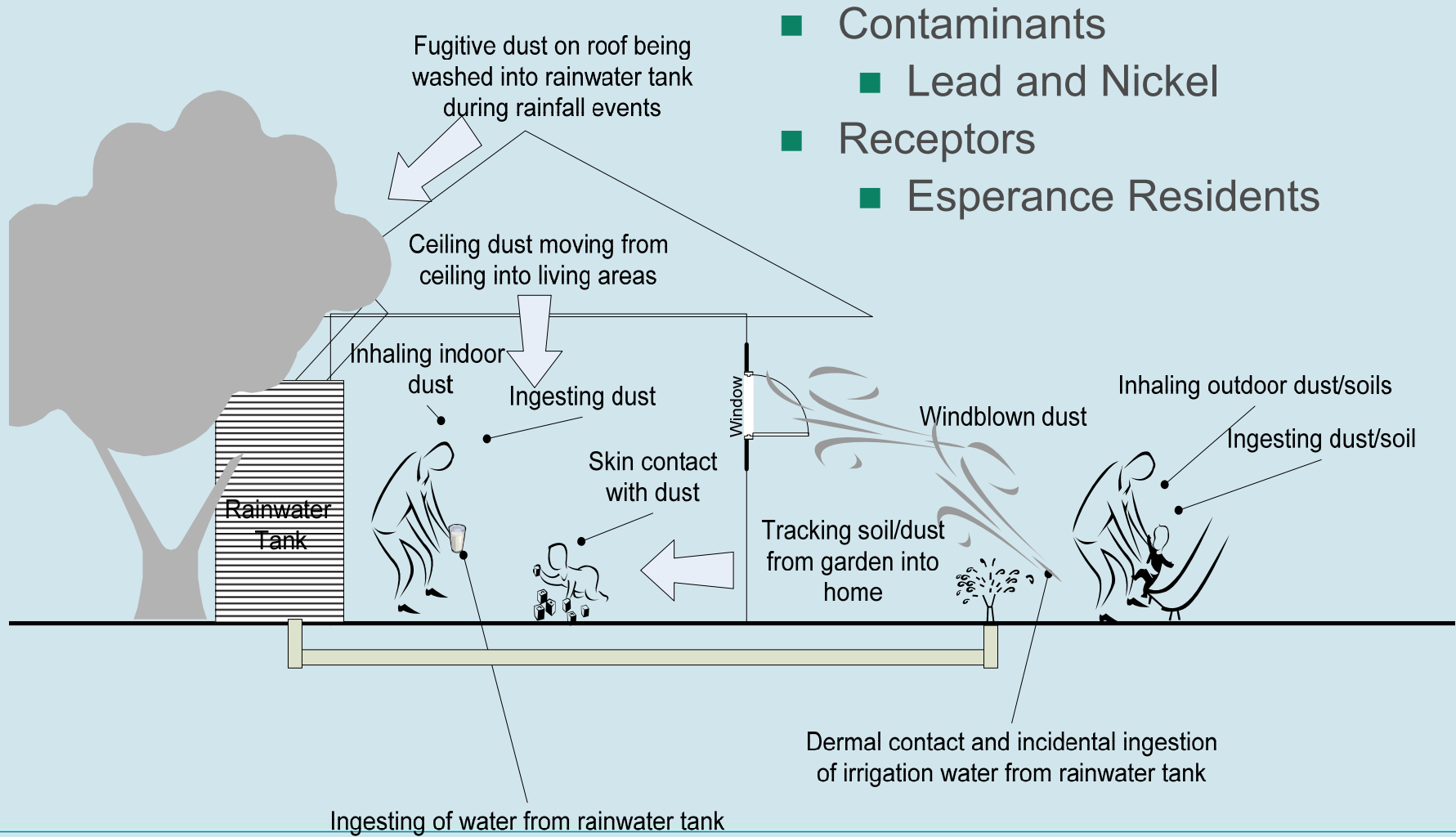
*Hooded Plover*



**Chuditch (*Dasyurus geoffroii*)**



# Graphical Conceptual Site Model



- Contaminants
  - Lead and Nickel
- Receptors
  - Esperance Residents



# Data for Assessment of Exposure?

- Incident response-reactive sampling
  - Soil
  - Rainwater tank
  - Swab and dust samples (ceiling)
  - Blood lead levels
  - Bird autopsies
  - Plant
- Esperance Port
  - Air quality monitoring (PM10, TSP and Pb and Ni)

**Was this suitable or sufficient for assessing risks to human and environmental values?**



# Data Gap Analysis

**YES** but.....

ranked according to:

- Higher confidence level (lower uncertainty)
- Medium confidence level (medium uncertainty)
- Lower confidence level (higher uncertainty)



## Higher Confidence

### Rainwater and Air

- Both were comprehensive data sets
- Provided an indication of the distribution of lead and nickel in the environment
- Results provided a reasonable basis for estimating exposure via water ingestion/contact and dust inhalation





## Medium Confidence

### Soil

- Good data set
- Spatial distribution limited
- Concentration statistics used in risk assessment

### Blood lead levels-unidentified data

- Other potential sources of exposure
- Co-location analysis- unique identifier
- Excellent at indicating if actual exposure has occurred...but not necessarily source



## Lower Confidence

### Swabs and dust

- Exposure unclear - confounding factors
- Good abatement verification

### Bird and vegetation

- Small data set
- Lack of comparative data
- Exposure unclear as not a static organism
- Food chain modelling approach-soil



## Summary

- Risk assessment could be undertaken
- Limitations on assessment of pathways –default assumptions
- To decrease uncertainty initiate issue identification prior to sampling and analysis plan  
→ proactive sampling

**Lots of good data but not always useful  
for lots of different problems**