Assessment of Health Impacts of Project including Lead

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Assessing Health Impacts in the EIS

The Secretary's Environmental Assessment Requirements (SEARs) require health impacts from the Project to be evaluated in the EIS.

Potential for impacts to human health:

- air quality (particulates from crustal materials and heavy metals, in particular)
- noise and vibration (including blasting)
- drinking water quality (surface and/or groundwater)

Lead is of particular concern for the local community and will be addressed in a separate assessment that has focused specifically on the impact of the mine on lead exposures in the community.

The assessment will evaluate how these exposures may change as a result of the Project, and what these changes may mean in terms of risks to human health.

How do we assess Health Impacts?

Step 1 – understand the concerns of the community and requirements in the SEARs.

Step 2 – evaluate the existing baseline environment/conditions, specifically existing exposure to lead and other metals (and particles) in the environment.

Step 3 – evaluate how the mine will change exposures to lead, metals and particles in the community, and evaluate the impact of those changes on the health of the community.

Step 4 – evaluate how the mine will impact on the health of the community as a result of noise and vibration.

Step 5 – provide technical reports on lead and health risks, to be incorporated into the EIS.

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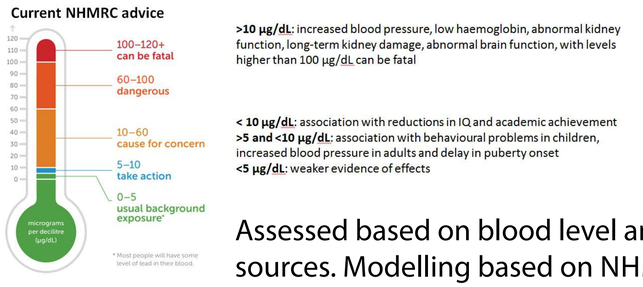
Existing conditions:

We are all exposed to particles in air, and metals/metalloids, including lead throughout our daily life.

Metals and metalloids are naturally occurring in the environment and are therefore present in soil, water, and food. Sometimes metals may also be present in the environment from other sources.

Data is available to better understand what is currently present in the environment in and around Lue. This data has focused on lead in the environment, but also includes other metals.

Assessing health risk: lead



>10 µg/dL: increased blood pressure, low haemoglobin, abnormal kidney function, long-term kidney damage, abnormal brain function, with levels higher than 100 µg/dL can be fatal

< 10 µg/dL: association with reductions in IQ and academic achievement
>5 and <10 µg/dL: association with behavioural problems in children, increased blood pressure in adults and delay in puberty onset
<5 µg/dL: weaker evidence of effects

Assessed based on blood level and modelling intakes from all sources. Modelling based on NHMRC guidelines and criteria for soil and water blood lead.

Assessing health risks: other metals and particles

Range of health effects relevant to the public given exposure to particles and other metals.
Assessment based on estimating intakes into the body and comparing with acceptable intakes (i.e. level where there are no health effects) .
Acceptable intakes set by the National Environment Protection Council (NEPC) and NHMRC, and others such as WHO and USEPA.

$$\text{Risk}^* = \frac{\text{Exposure from all sources (existing and mine)}}{\text{Acceptable intake (i.e. dose with no health effects)}}$$

* Other metals excluding lead

Want to know more about Lead?

Register to be notified about future sessions.

Assessment of Existing Exposures in the Community

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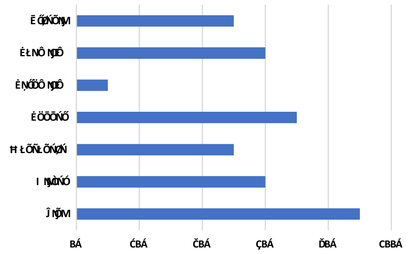
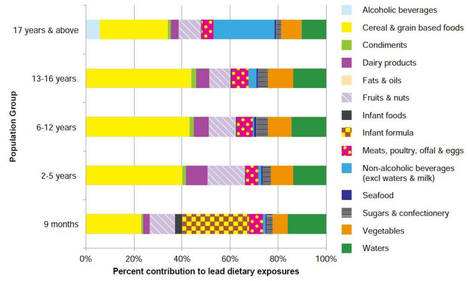
Contribution of Acceptable Intake from Dietary Sources:

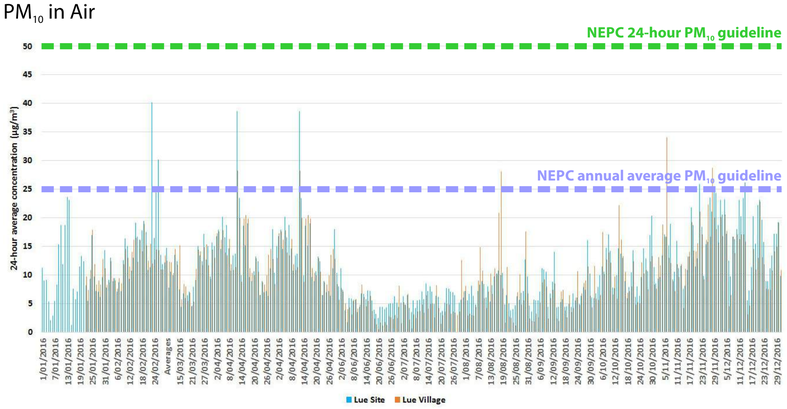


Major food contributors to lead dietary exposures:

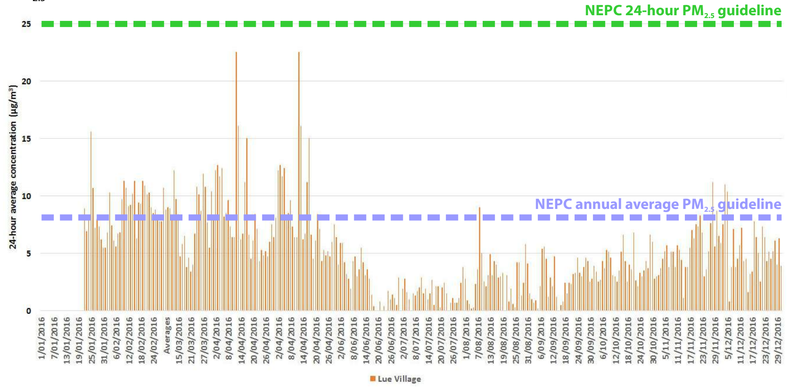


Analysis of course particles from area indicates lead comprises <0.05% of total particles measured:

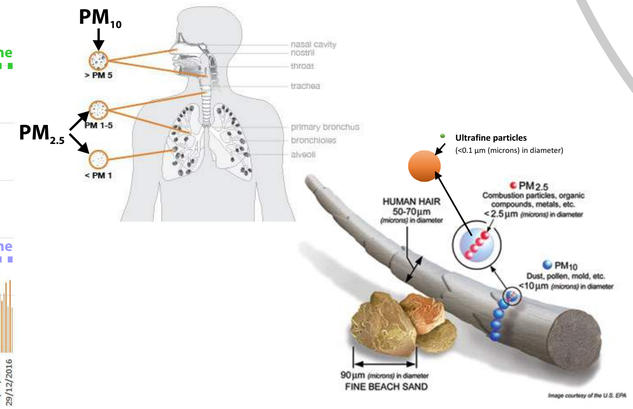
PM_{10} in Air



$PM_{2.5}$ in Air



Particle Matter in the Respiratory System



Diet (metals and lead in food)

Air (as particles, and metals/lead bound to particles)

Existing Exposures (intakes from existing sources)

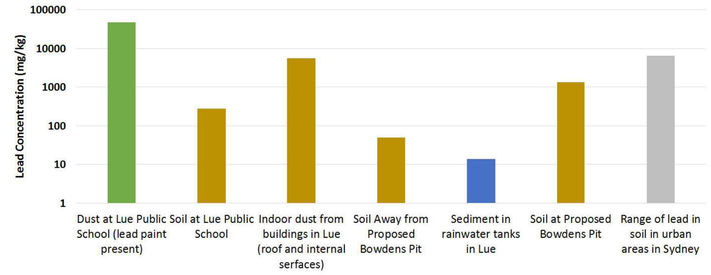
Soil & Dust (Lead and other metals)

Lead Paint (where present)

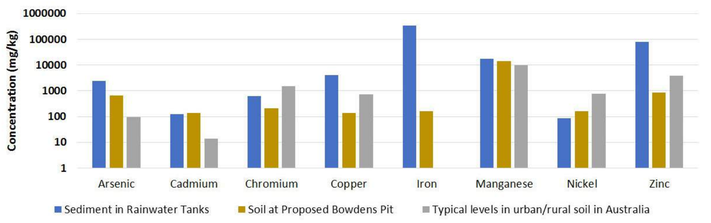
Tank Water (metals and lead dissolved in water and in sediments in the tank)

River Water & Groundwater (metals and lead dissolved in water, where used)

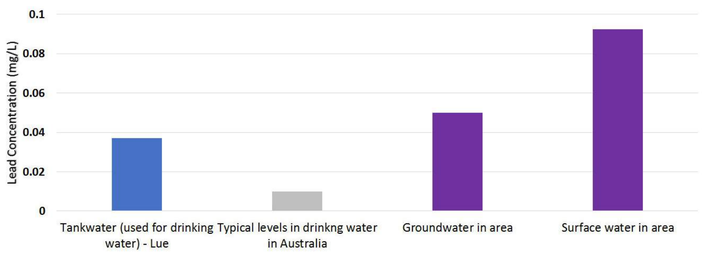
Lead in Soil, Dust and Sediment:



Other metals in Soils:



Lead in Water:



Other metals in Water: