

Proposed Chunxing battery recycling facility



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Outline of session

1. What is the project?
2. Benefits of the project
3. Key environmental considerations – focus on air quality
4. Responses to claims made by the Action Group
5. Next steps
6. Questions



What is the project?

- Chunxing propose to construct and operate a Used Lead Acid Battery (ULAB) recycling facility in Hazelwood North
- Receive 50,000 tonnes per year of spent batteries and recycle them into 28,000 tonnes of refined lead per year
- The project requires a Works Approval from EPA, which must assess any potential impacts on the environment
- The project is backed by Chunxing Resource Recycling Group, the second largest recycler of lead acid batteries in the world
- The proposed facility will be 16x smaller than the one that currently operates in China



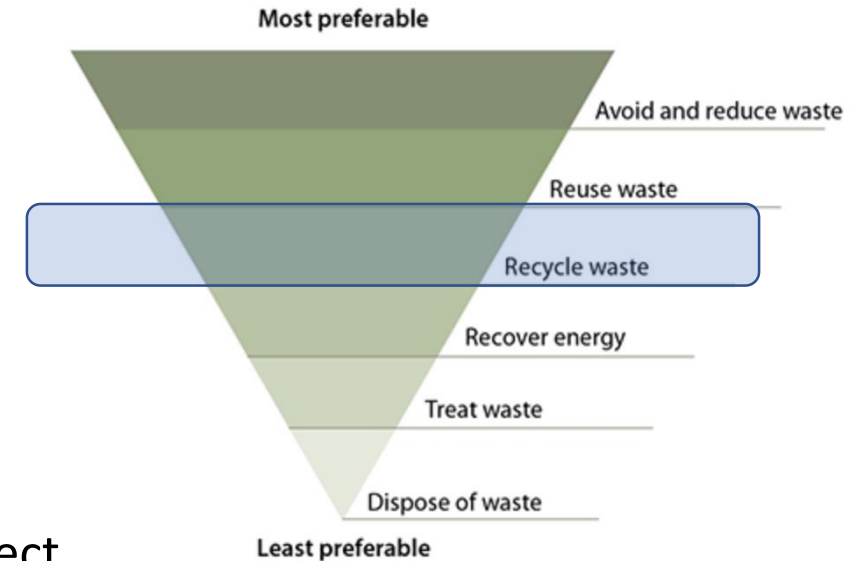
Site: CA 2047, Fourth Rd, Hazelwood North

(part of the previous
Lurgi Coal Gasification
facility site,
redeveloped as part of
the Gippsland Heavy
Industry Park
Infrastructure Project)



Benefits

- Step towards a strong recycling industry in the Valley
- Replace current practice of exporting waste overseas
- Most advanced secondary lead smelting technology in the world
- \$33M project, would inject ~\$10M into LV community
- 50 full-time jobs, larger numbers of construction employment & indirect benefits from expenditure on local services
- Ideal site, IN2 zoning & large buffer zones



Waste Hierarchy



Main aspects of the environmental assessment

1. Air emissions (such as lead) will be below measurable levels
2. Emissions control technology is the most advanced available in the world
3. Waste (slag) is lower in quantity and lead levels than similar facilities – landfill is standard management
4. There will be no discharge to waterways or discharge of contaminated runoff to stormwater
5. Resource use is lower than similar facilities (energy, gas, water)

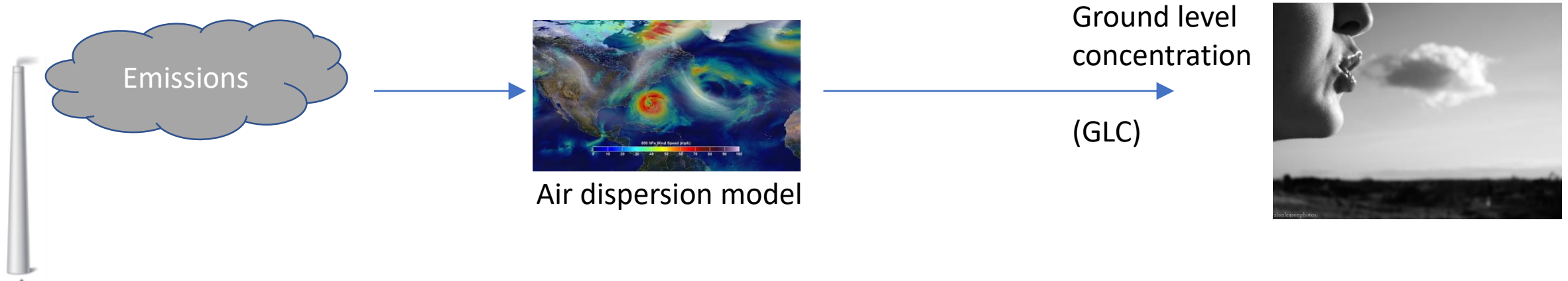


Context: the story so far...

- **June:** Two open community meetings in Morwell, as a means of starting a conversation with the local community.
- **June – now:** >20 more meetings with local stakeholders, often one-on-one, over kitchen tables, in local cafes and boardrooms.
 - Met with Action Group on at least five occasions, shared everything
 - Listened to some community concerns about air emissions
- **Sept:** Dr Jayaweera travelled to the China facility to discuss with facility engineers the feasibility of responding to these community concerns by further reducing emission levels
 - China have optimised their own facility further
 - These have now been incorporated into an improved Hazelwood facility design
- **June – now:** Working on environmental assessments: EPA WAA



Concepts of air quality assessment



Emissions from stack

1. How much is coming out (load kg per time)
2. Input into the model

What happens to the emission – model outputs

1. Ground level concentrations
2. Compare these against the Standards (EPA Design Criteria as a %)
3. Assume worst case occurs all of the time



Air quality modelling results

Ground level concentrations (GLCs) – worst found anywhere in study area

Parameter	EPA limit mg/m ³	Worst case GLC mg/m ³	Worst case GLC as % of EPA limit
Sulfur dioxide	0.45	0.0006	0.13%
Nitrogen oxides	0.19	0.0037	1.96%
Total Dust - (criteria for nuisance TPM)	0.33	0.0015	0.44%
Lead	0.003	0.000009	0.31%
Sulfuric Acid Mist	0.033	0.0003	1.04%
Chromium and its compounds	0.017	0.0000046	0.03%
Arsenic and its compounds	0.00017	0.0000068	3.99%
Cadmium and its compounds	0.000033	0.0000003	0.92%
Antimony and its compounds	0.017	0.0000013	0.01%
Dioxins and Furans (as TCDD I-TEQs)	0.0000000037	0.000000000018	0.50%

Extremely low
levels modelled

Lead: 0.31% of Std
300 times below



Emissions of lead - comparison

Lead emission unit of measure	Lead emission facility							
	Chunxing China plant	Proposed Chunxing Hazelwood plant	Current Australian ULAB smelter	Nyrstar Port Pirie primary lead smelter	Hydromet Laverton licence limit	Loy Yang A power station	Loy Yang B power station	Yallourn power station
Ratio of emission per year	17	1	17	3,515	159	8	4	9

Hazelwood North facility has extremely low emissions:

- lower than current background and
- too low to be detected by field monitoring equipment



Lead - how low?

Emission standards

- **EPA Design Criteria:**
Ground level concentration levels set to protect human health
- **EU's IED limits:**
Stack emission concentrations – lowest in world
- **EPA “Exemption” levels:**
Exceptionally low stack emission rates, below which a facility is not required to be assessed for Works Approval or licensed

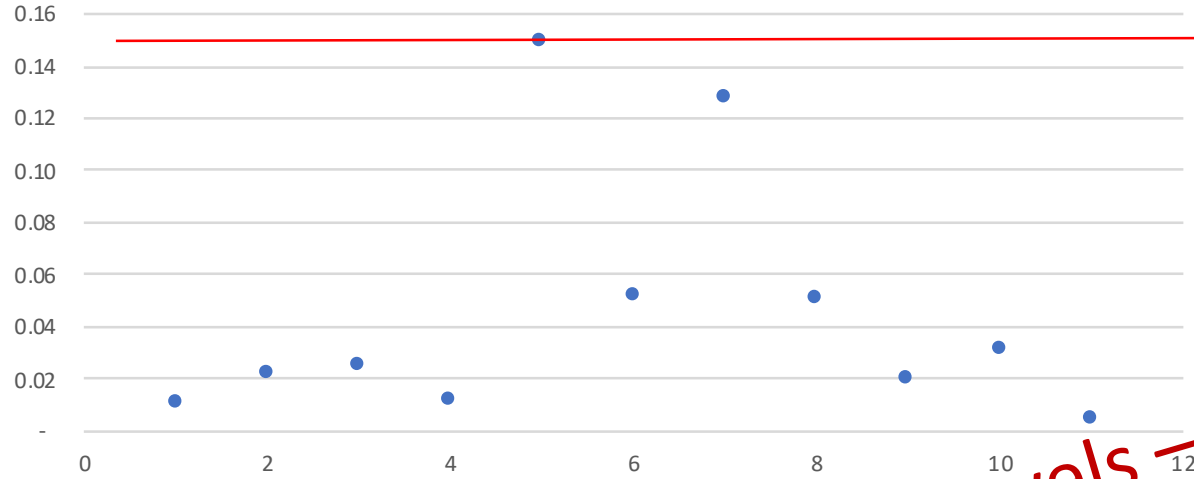
Hazelwood facility:

- Worst case: 300 times lower (4,000 times)
- Nearest house: 1,500 times lower (20,000 times)
- Below IED limits
- ...



Exemption levels

Lead (kg/day)



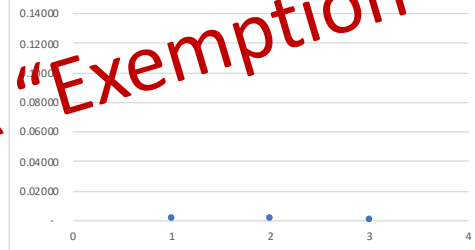
Sulfur dioxide (kg/day)



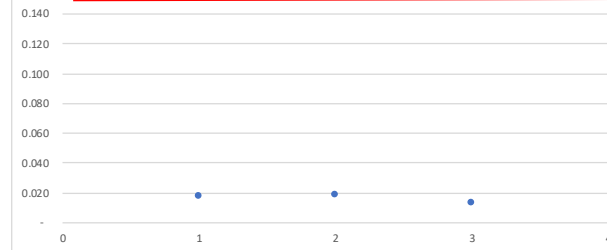
Chromium and its compounds (kg/day)



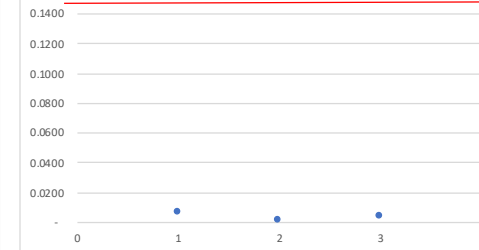
Cadmium and its compounds (kg/day)



Arsenic and its compounds (kg/day)



Antimony and its compounds (kg/day)



Dioxins and Furans (as TCDD I-TEQs in kg/day)



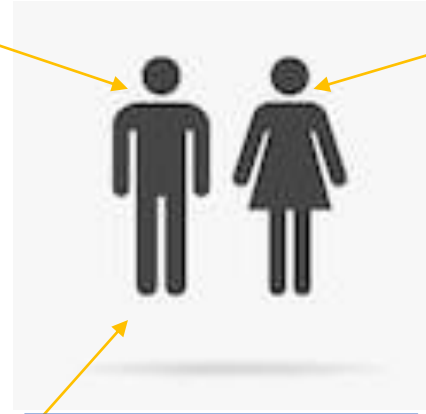
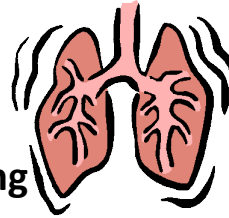
Below EPA "Exemption" levels – WAA (for air) not even required!



Lead “exposure” in context

Breathing air 1.5km from stack:

- Max of 0.000002 mg/m³
- 11m³ air breathed in/out per day
- Max total Pb per day = **0.00002 mg**

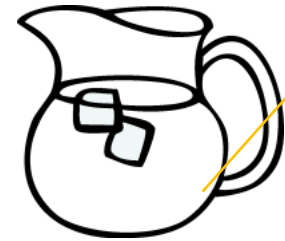


Ingestion from food:

- 5 µg/L for lead in food intended for use by infants and children (US FDA)
- Assume ADI protein intake
- Legal max total per day = **0.000255 mg**

Ingestion from tap water:

- Water met Std 100% of time
- Max of 0.002 mg/L Pb in 2015-16
- Recommended 8 glasses/ day
- Max total Pb per day = **0.004 mg**



8.8.4 Lead
Lead can be present in drinking water as a result of dissolution from natural sources or from household plumbing. Based on health considerations in the ADWG guidelines, concentrations of lead in drinking water should not exceed 0.01 mg/L. Gippsland Water sites achieved 100% ADWG guideline value against lead guideline values for all customer tap sites.

Table 19: Lead results for all localities in 2015-16

Locality	Frequency of Sampling	No. of Samples	Max (mg/L)	Min (mg/L)	ADWG Guideline Value
Bonville	Quarterly	4	<0.001	<0.001	Yes
Bonville	Quarterly	4	<0.001	<0.001	Yes
Brayston	Quarterly	4	0.002	<0.001	Yes
Cherrell	Quarterly	4	<0.001	<0.001	Yes
Connaught & Glenmaggie	Quarterly	4	<0.001	<0.001	Yes
Convent	Quarterly	4	<0.001	<0.001	Yes
Droghda	Quarterly	4	<0.001	<0.001	Yes
Ennis	Quarterly	4	0.002	<0.001	Yes
Hayfield	Quarterly	4	<0.001	<0.001	Yes
Lynnhack	Quarterly	4	<0.001	<0.001	Yes
Haffra	Quarterly	4	0.001	<0.001	Yes
Heron North	Quarterly	4	<0.001	<0.001	Yes
Hoe	Quarterly	4	<0.001	<0.001	Yes
Horsewell	Quarterly	4	0.002	<0.001	Yes
Neerim South	Quarterly	4	<0.001	<0.001	Yes
Newborough	Quarterly	4	<0.001	<0.001	Yes
Norrie	Quarterly	4	<0.001	<0.001	Yes
Rowan	Quarterly	4	<0.001	<0.001	Yes
Rakely & Bush Bush	Quarterly	4	<0.001	<0.001	Yes
Rowville	Quarterly	4	<0.001	<0.001	Yes
Sale/Warrak	Quarterly	4	<0.001	<0.001	Yes
Seamans	Quarterly	4	<0.001	<0.001	Yes
Styford	Quarterly	4	<0.001	<0.001	Yes
Thornhill	Quarterly	4	<0.001	<0.001	Yes
Tongvalley	Quarterly	4	<0.001	<0.001	Yes
Traralgon	Quarterly	4	<0.001	<0.001	Yes
Traralgon South & Haslemore North	Quarterly	4	<0.001	<0.001	Yes
Tyren & Gersgery	Quarterly	4	<0.001	<0.001	Yes
Warragul	Quarterly	4	<0.001	<0.001	Yes
Warragul South	Quarterly	4	<0.001	<0.001	Yes

Air: Water: Food – max exposure

1: 200: 13



ALL LOCALTIES COMPARED WITH THE WATER QUALITY STANDARD.

Gippsland Water 2015-16 Annual Report on Drinking Water Quality

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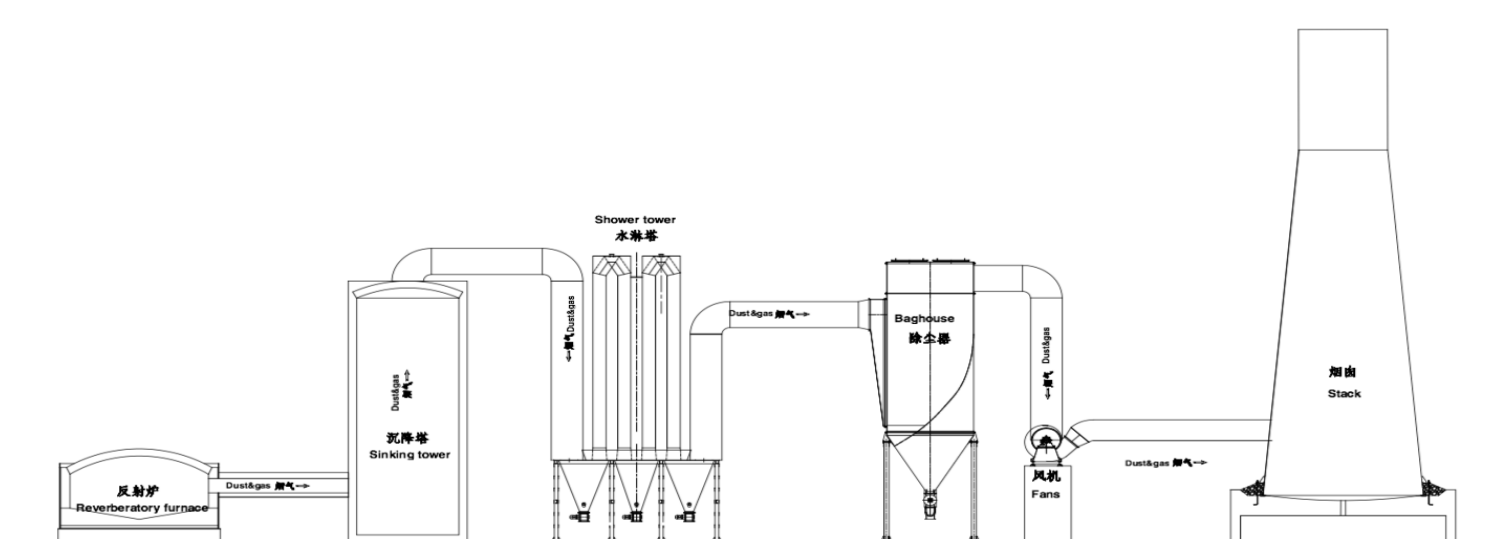
How?

- **Scale:**
 - 50-100 smaller than Paper Aust (EFW facility)
 - 3,500 times smaller than Port Pirie PRIMARY lead smelter
- **Technology:**
 - Chemistry/ engineering choices in process
 - Process control & automation
 - Enclosure of facility areas, negative pressure
- **Comprehensive pollution control equipment**
 - Baghouse to remove particles, lead, other metals
 - 4 x scrubbers to remove SO₂, other gases, particles, lead, other metals
 - Heat exchangers, cooling towers, in-stack water-scrubber

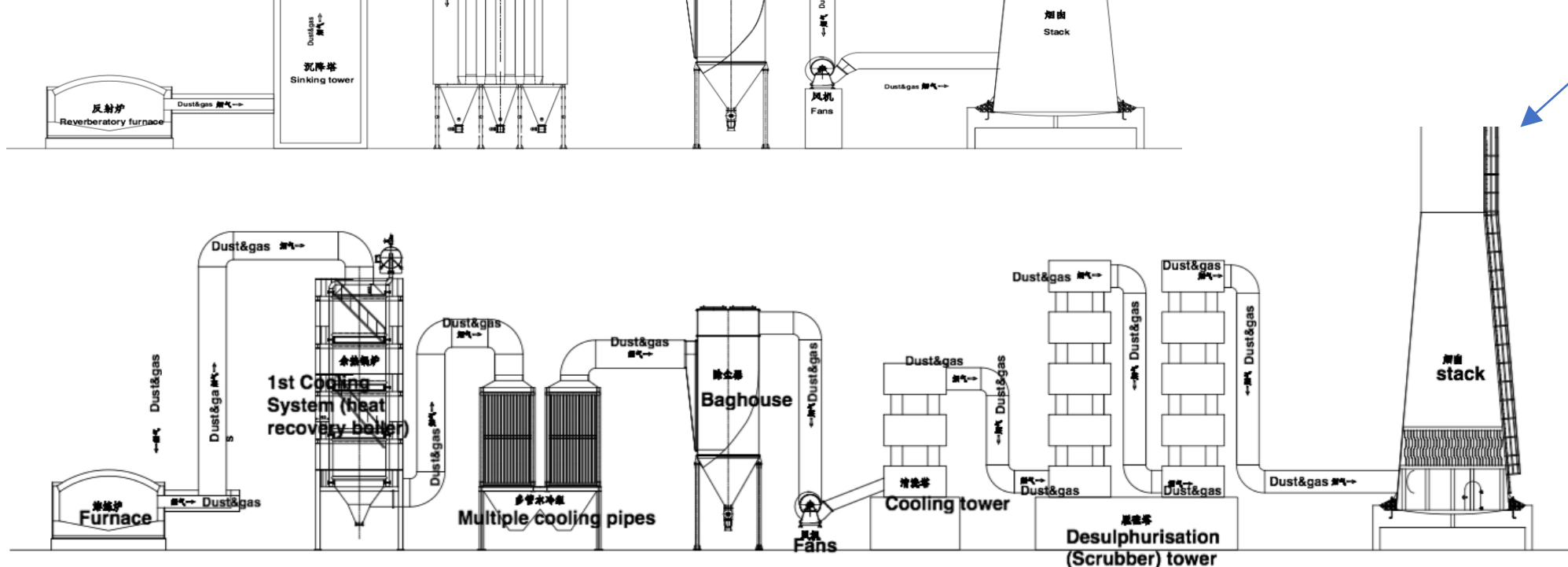


Pollution control system

Traditional ULAB recycling



Chunxing ULAB recycling



Responses to Action Group's claims (22)

1. Lead emissions and “poisoning” (7)
2. The technology is “old” – there are better options (4)
3. “Buffer” distance is too small (5)
4. Emissions to air other than lead (4)
5. Community consultation so far (1)
6. “Toxic” waste (1)



Responses to Action Group's claims

Lead emissions and “poisoning” (7 claims: #1-4, 7, 8, 16))

FACTS

- any emission levels are modelled to be so low as to be indistinguishable from background levels – levels which do not cause lead poisoning
- Lead poisoning is a specific condition from repeated exposure to excessive levels of lead. These days, lead poisoning can occur from unwitting exposure to lead-containing paint, such as when renovating an old house.
- Comparing lead concentrations from paint versus air:
 - Pre-1970s paint is **2,000 billion times** more concentrated in lead than the air around the facility
 - Current legal maximum concentration paints would be **4 billion times** more concentrated in lead than the air around the facility
- **Impossible to get “lead poisoning” from breathing the air in the area of this facility**

Aust Gov DoEE (<https://www.environment.gov.au/protection/chemicals-management/lead>):

- *“The natural concentration of lead in the air is less than 0.1 microgram per cubic metre.”*
- *Worst case at residence = 0.002 microgram per cubic metre (50 times lower than this)*



Responses to Action Group's claims

The technology is “old” – there are better safer options (4 claims: #5, 6, 9, 19)

FACTS

- World leading technology: smelting + melting, VSF furnace design, automation, comprehensive pollution control. The evidence is in the emissions performance
- All other technology options have been evaluated in the WAA and found to be inferior
- Solvent dissolution and electrolytic processes – major safety issues with F-based acids
- Aqua Metals process (MSA then electrolysis):
 - still requires both smelting and melting
 - Only a pilot facility (largest yield 161 tonnes August 2019, 15 times less than Chunxing)
 - Current class action by investors, major losses
- **None of these technologies are proven safe, at sufficient scale or commercially viable**



Responses to Action Group's claims

The “buffer” is too close to residences (5 claims: #10, 11, 15, 17, 21)

FACTS

- EPA requires a buffer of 500m for non-ferrous metal production premises
- The nearest residence is 1.1km away (fence boundary); 1.5km from stack location
- The Hazelwood North school is 2.0km from stack location
- The Wagga Wagga facility expansion (more than double the capacity) has recently been approved by NSW EPA, and is located 1.2km away from the nearest residence.
- The Department's assessment states: “No public submissions were received during the exhibition of the EIS, likely due to the isolated nature of the facility which is located 1.2km from the nearest residence” (emphasis added)
- There is no buffer distance assessment criteria applied to similar proposals in NSW
- **The current “buffer” ensures no measurable lead emissions at the nearest residence**



Next steps

- EPA works approval application to be formally submitted (Nov 2019)
- EPA acceptance of WAA (pre-Christmas)
- EPA-convened community consultation as part of assessment (1st quarter 2020)
- EPA approval decision (April 2020)
- If approved, planning & construction commences (mid-2020)
- Commissioning approval (late 2021)
- Application for operating licence (2022)



Questions?



HAZARDOUS WASTE MARKET AND INFRASTRUCTURE STUDIES



HAZARDOUS WASTE DATA ANALYSIS & REPORTING



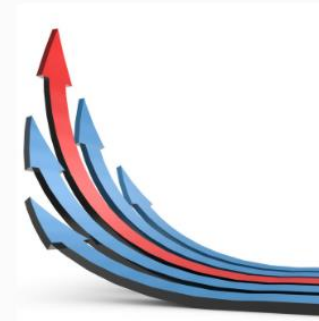
POPS & OTHER EMERGING CHEMICAL HAZARDS



E-WASTE



ENVIRONMENTAL REGULATORY APPROVALS & COMPLIANCE



HAZARDOUS WASTE POLICY DEVELOPMENT & IMPLEMENTATION

Handouts:

- Fact sheet
- Responses to Action Group's claims

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