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EPA Works Approval for Chunxing ULAB facility

Q & As: 31 August 2020

Q1: Will the facility cause pollution from emissions of lead to the air?

No.

- The worst case modelling result anywhere in the Hazelwood North area shows lead emissions at 300 times lower than EPA standards set to protect human health. This worst case result falls within the boundary of the Chunxing facility.
- At the nearest residences (approx. 1.5km from the stack emission point) the emissions are virtually zero (1,500 times lower than EPA standards), which is undetectable by field monitoring equipment. The Hazelwood North Primary School is further away again (2km from stack).
- These levels are significantly below the “natural concentration of lead in the air” according to the Australian Government environment department Error! Bookmark not defined.

Q2: Will the facility’s emissions impact human health, in particular the students at Hazelwood North Primary School?

No.

- The worst case modelling result at the Hazelwood North Primary School (2km from stack) is more than 1,500 times lower than EPA standards, which is negligible and indistinguishable from the existing air in Latrobe Valley.
- This is less than 2% of natural background levels typically found anywhere in Australia, or 50 times lower.
- An independent Human Health Risk Assessment concluded that *“there are no risks to the health of residents.”*
- Our commitment of zero impact to community health and environment from this project has been consistent from the beginning. There will be no health or environmental trade off.

Q3: Lead has been eliminated from petrol, so won’t these emissions be a major new impact to the Latrobe Valley’s air quality?

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No. People think that lead was eliminated from petrol (just like paint), but in both cases this is incorrect. Like paint, lead in petrol was significantly reduced but it is still present, mainly due to cross contamination in the supply chain due to avgas, which still contains lead.

- The legislated Australian standard for petrol (Fuel Quality Standards (Petrol) Determination 2019¹) specifically allows up to 5mg/L of lead in 'unleaded' petrol (it used to be 30 times higher).
- This means that there is still lead emitted from cars driving around the Latrobe Valley (and everywhere else) today.
- The National Pollutant Inventory (NPI)² shows that 47 kg of lead was emitted by motor vehicles in the Latrobe Valley in 2018-19, **which is 3 times the 16kg annual emission of the Hazelwood North facility**. And car exhausts are at ground-level.
- When you consider power stations, aviation emissions and other industry/ non industry emission sources of lead, the Hazelwood North facility's emissions would be just 1% of all current lead emissions in the Latrobe Valley.
- Monitoring of lead ceased not long after the advent of unleaded petrol, because lead could no longer be detected in ambient air. This means that despite these emission sources, lead is not an issue in Latrobe Valley air.

Q4: Isn't an emission of 16 kg per year a lot?

No.

- The NPI shows that 1,219 kg of lead was emitted in 2018-19 in Latrobe Valley. And yet there is no measurable lead concentration in ambient air.
- This is not surprising due to the very large atmospheric dilution that occurs. That 16 kg annual emission is dispersed at a 30m height into around **1.3 billion kg of air**, just in the air modelling study area.
- Wind dispersal at a typical wind speed is about 10 km/hr means that 1.3 billion kg is moving around and replaced hundreds of times over a year. It's no wonder there is no measurable ground level concentration of pollutants and "*there are no risks to the health of residents*".

Q5: How are such low emissions achieved?

Chunxing's emissions performance is due to three factors:

- Smart use of technology and chemistry; for example its patented battery 'breaking' process produces a solid lead component that is so pure it can be melted (at low temperature). That means around half of the lead recovered produces virtually no emissions. The other half (lead 'paste') goes to the smelting furnaces.

¹ Australian Government Department of Industry, Science, Energy and Resources, *Fuel Quality Standards (Petrol) Determination 2019*, available at: <https://www.legislation.gov.au/Details/F2019L00455>

² Lead emissions in the Latrobe Valley 2018-19, available at: <http://www.npi.gov.au/npidata/action/load/emission-by-source-result/criteria/airshed-catchment/9/substance/52/destination/AIR/source-type/DIFFUSE/substance-name/Lead%2B%2526%2Bcompounds/subthreshold-data/No/year/2019>

- Flue gases from smelting are passed through an exceptionally high level of pollution control equipment, including several baghouses and scrubbers.
- The plant is small – the smelting component (which produces emissions) is around **six times smaller** than the expanded capacity of the other ULAB facility in Australia, a plant that recently obtained NSW Government expansion approval without a single community objection, and one that has operated for a number of years without incident.

Q6: The Health Risk Assessment is not valid because it was based on the air modelling, which relied on data from the China plant.

Regardless of any concerns about integrity of the China plant monitoring data, and therefore the Hazelwood modelling data, the fact remains that this level of emission results in the conclusion of the Health Risk Assessment, that *“there are no risks to the health of residents.”*

Ultimately, the performance of the Hazelwood plant must be proven at commissioning. There are only two outcomes from this:

- If it does not meet the extremely low emission levels indicated in the WAA it cannot obtain a licence and therefore cannot operate.
- If it does, then the Health Risk Assessment conclusion that there is “no risk” to residents, which is based on the most current health science available, applies.

Q7: How do we know the company’s emissions (when operating) will be as low as its modelling says it will?

Chunxing’s Works Approval Application has been assessed and ultimately approved by the EPA. Once the facility has been constructed the emissions performance predicted by the Works Approval must be proven in practice in the commissioning process.

From there an EPA licence will be granted that will have the strictest emission limits of any ULAB recycling plant in Australia and most likely the world. These will be enforced by regular monitoring.

Q8: But doesn’t the WHO say there is no safe level of lead?

The WHO states that in the context of blood lead levels “there is no known safe level of exposure to lead”.

The WHO has also published³ an indicative relationship between ambient levels of lead in the air and how that might translate to blood levels in children, the most vulnerable group. It deduced a relationship that a concentration of 1 µg/m³ Pb in ambient air could approximately produce a blood concentration (in children) of 1.9 µg/dL of Pb in blood, and that 10 µg/dL was a ‘critical level’ for children.

Chunxing’s annual average ground level concentration modelled for lead was 0.0011 µg /m³. Using the WHO data, it could theoretically result in a level in blood of 0.0021 µg/dL, which is 4,800 times below this ‘critical level’ and 2 orders of magnitude below typical

³ http://www.euro.who.int/_data/assets/pdf_file/0020/123077/AQG2ndEd_6_7Lead.pdf

detection limits blood testing laboratories are capable of achieving (0.1µg/L). Detection limits are science's practical way of determining "zero".

Further validating this, Environmental Risk Sciences' independent Human Health Risk Assessment concluded that "there are no risks to the health of residents."

Q9: EPA's lead standards are outdated and set too high.

While the currency of their standards is a matter for EPA, Chunxing's emissions can be compared against any standard in the world.

- The US EPA's NAAQS; at 0.15 µg/m³ it is often quoted as the world ambient air benchmark for lead.
- As documented in the Addendum, the model was re-run to produce ambient ground level concentration results, rather than the hourly (or less) averaging times used in EPA assessment, so that comparison against NAAQS could be made.
- The annual average ground level concentration modelled for lead was 0.0011 µg /m³, or just 0.75% of the US EPA's NAAQS (0.15 µg/m³), or 133 times below it.

On the basis of annual average modelled emissions, the Hazelwood North facility's emissions are demonstrated to be infinitesimal – to the point that they are substantially below the most stringent ambient standards applied around the world and 100 times below natural background.

Q10: The other plant in Wagga Wagga is operating with a 5km 'buffer' to residents.

There is no "5km buffer zone" in NSW. The NSW EPA does not specify buffer distances at all, but relies on case by case air quality modelling to assess impacts to sensitive receptors.

The Wagga Wagga plant expansion (more than double the capacity of the Hazelwood facility) was approved by NSW EPA in 2019, and this facility is actually located 1.2km away from the nearest residence, not 5km.

The NSW Government (Department of Planning and Environment), in its assessment report dated February 2019, simply noted the geographical reality of the 1.2km nearest residence and 5km nearest township. The Department's assessment further 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).

The Chunxing facility's stack emission point is located 1.5km away from the nearest residence (sensitive receptor). The Wagga Wagga plant is located 1.25 km from the nearest residence and there are four residences located within 2km of it.

Q11: Lead exposure can be very harmful, particularly to children.

Agreed. There is no question about the health and environmental impacts of lead and that is why it is important to recycle batteries in a highly-controlled facility, such as this one.

Emissions from this plant will be negligible, such that exposure to children (or anyone else) will not occur. The future EPA licence will have the strictest emission limits of any ULAB recycling plant in Australia and most likely the world.

The independent Human Health Risk Assessment says of the closest residences (noting that the Hazelwood North Primary School is further away):

*“In relation to those residential areas located closest to the site:
The assessment of potential acute inhalation and chronic inhalation and multi-pathway exposures in the residential and rural residential areas has concluded that **there are no risks to the health of residents.**”*

Q12: What job opportunities will come out of the project?

The ULAB recycling facility will be a significant economic boost to the region. It is estimated that \$30 million in revenue will be injected into the local community each year.

We are committed to providing around 100 direct and indirect job opportunities to the existing, highly skilled local workforce and will continue to have discussions with local services and construction industries.

Q13: What about the risk of fires like that one recently in Melbourne?

The facility in Campbellfield (where the fire occurred) did not process ULABs at all. It disassembled and processed e-waste, such as computers and TVs, as well as nickel-cadmium (NiCad) batteries. It also accepts lithium-ion batteries.

While fires can occur in a range of industrial and residential settings, ULABs themselves are not a particular fire risk – there are no flammable components to their chemistry.

The major hazard associated with lithium-ion batteries, on the other hand, both in use and spent, is fire and explosion risk. Lithium-ion batteries have a number of operational advantages over other battery types but their lack of viable recycling infrastructure and significant safety risks with disposal are major disadvantages compared to longstanding lead acid battery technology.

Lithium-ion batteries are very energy-dense when compared to lead acid. They can also contain flammable electrolytes (rather than water in a lead acid battery). That is why these batteries are strictly prohibited by airlines and are not allowed in checked luggage. While these factors are not typically a concern in the operational battery, damage or puncture during collection, sorting or disposal, as a waste, can result in explosion.

Used lead acid batteries have endured over a long period of time because they are inexpensive, use well-established and economic recycling technologies and have these safety advantages in storage and recycling, when compared to other battery types.

Equating the Campbellfield facility’s operations and risks with the proposed ULAB facility in Hazelwood North has no basis in fact. The batteries received and technology applied are totally unrelated.

Q14: What about lead in blood levels of workers at the facility?

- Any Victorian operation must comply with blood lead management requirements of WorkSafe Victoria, which Hazelwood North will.
- The WorkSafe Vic limit that applied up until 4 June 2020 (<https://www.worksafe.vic.gov.au/are-you-performing-lead-risk-work>) was 30 µg/dL and has since then been reduced to 20 µg/dL
- For comparison, NSW still retains 30 µg/dL now, which it will not reduce until July 1 2021 (<https://www.safework.nsw.gov.au/notify-safework/lead-notifications>) so these changes are both recent and not yet consistent throughout Australia.