

The Australian Olive Industry

- Production:
 - 20 million litres mostly Extra Virgin Olive Oil (EVOO)
 - 3000 tonnes Table Olives (TO)
 - 33,000 ha; national distribution
- Imports:
 - 40 million litres Olive Oil (mostly from Spain)
 - 17,000 t Table Olives (mostly from Greece)
- Annual Per Capita Consumption:
 - EVOO 2.4 litres; 0.8kg TO
- Ultra premium positioning
- Olives trees are C sequestering



A Healthy Food

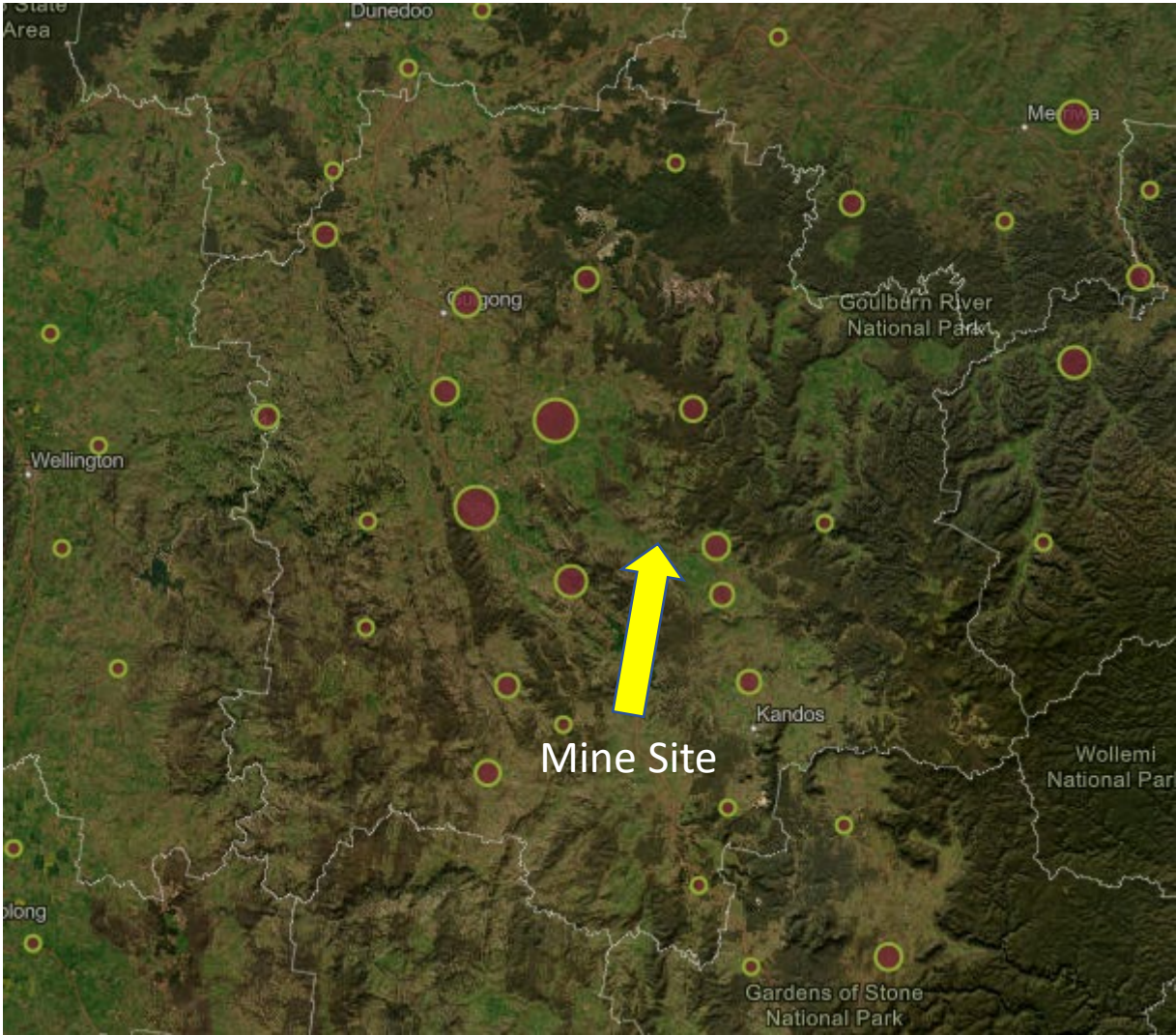
- Extra Virgin Olive Oil = juice of the olive
 - well documented for underpinning the health benefits of the Mediterranean diet
- EVOO quality is paramount and directly related to its health benefits
- The only Australian Standard that exists for food is for Olive Oil (AS 5264 -2011)



The Australian Olive Industry



Mid-Western Regional LGA – 336 ha; 44,400 Olive Trees



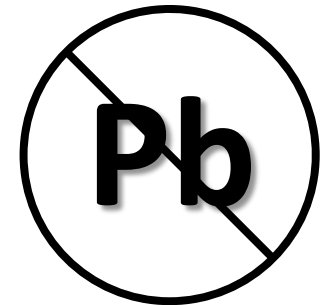
Australian International Olive Awards

- Industry Positioning & Reputation
- Industry Evaluation - quality performance
- Individual benchmarking
- <https://internationaloliveawardsaustralia.com.au>



The Australian Olive Industry at Risk

- Risk of Australia's olive industry's reputation being destroyed!
- Importers initiated a strategic campaign last year to promote imported olive oil over Australian product:
 - They are not supporting Extra Virgin Olive Oil (because this is what Australia mostly produces and the rest of the world produces lesser quality)
 - Importers will latch onto any reason why Australian EVOO should not be consumed to promote their position
 - A lead mine in an olive growing region gives the importers that reason



IPC Assessment Report

- Agricultural Impacts p 78
 - *enRiskS also determined that contributions of lead to soil and water would be negligible, with the incremental increase in lead in agricultural soil at the maximum impacted receptor as a result of the project predicted to be below the detection limit for lead in soil (and deposition decreasing with increasing distance from the mine site). enRiskS also noted that lead is poorly taken up into plants, so impacts on crops are unlikely.*
- Enrisk's report indicated bioaccessibility of Pb was 33% - this was from soil samples taken mostly at 0-5 cm with only 1 sample taken from 30-60 cm. How representative is this of the mine? This value only relates the ingestion of soil or dust, not the ingestion of lead from any other media such as water or food products (Enrisk report p 71).

Table 3. Total lead concentration and bioaccessible lead in impacted soils (< 250 µm soil particle size fraction).

Soil	Lead		
	Total (mg kg ⁻¹)	Bioaccessible (mg kg ⁻¹)	Bioaccessible (%) [‡]
47A	24.5	8.5	34.7
47B	12.0	3.5	29.2
52	12.5	3.5	28.0
58	12.5	5.5	44.0
60A	8.0	2.5	31.3
61	16.0	6.0	37.5
67 5-15	147.5	27.5	18.6
67 30-60	305.5	44.5	14.6
68	81.5	19.5	23.9
69	6.5	3.5	53.8
72	9.0	4.0	44.4
73	9.0	4.0	44.4
84	8.5	2.0	23.5
85	13.5	4.0	29.6
QC1	6400	4740	74.1 [‡]

IPC Assessment Report

- Agricultural Impacts p 78

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- Enrisk's report indicated modelling was via the uptake of "persistent chemical substances" into edible crops following atmospheric deposition and via the roots. These models *calculated the potential accumulation of persistent and bioaccumulative chemical substances in soil (relevant to Project emissions), which may be the result of **deposition from a number of air emissions sources***

HOWEVER-

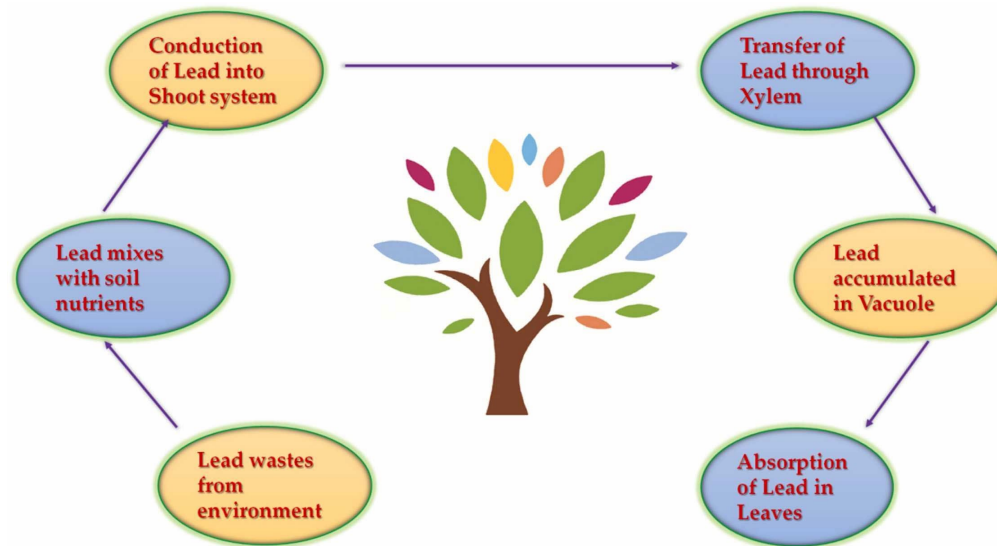
IPC Assessment Report

- Acid Mine Drainage is a significant risk
- Low pH soil/water created by AMD solubilizes heavy metals such as Cu, Zn and Pb*
- Solubilised Pb reaching the water table/water courses presents a significant pathway for Pb to be taken up by plants (olives) from soil water and irrigated with bore/dam/creek water
- The enRiskS report did not address this significant pathway for Pb to enter local food production

*Reddy, K.J., Wang, L. & Gloss, S.P. Solubility and mobility of copper, zinc and lead in acidic environments. *Plant Soil* **171**, 53–58 (1995).
<https://doi.org/10.1007/BF00009564>

IPC Assessment Report

- Pb is absorbed by plants mainly through the roots from soil solution and causes lipid peroxidation (ie in the case of olive trees **destroys the quality of olive oil!**)*



*Pourrut B, Shahid M, Dumat C, Winterton P, Pinelli E. Lead uptake, toxicity, and detoxification in plants. *Rev Environ Contam Toxicol.* 2011;213:113-36. doi: 10.1007/978-1-4419-9860-6_4. PMID: 21541849.

Figure from Samuel Collin, Amritha Baskar, Deepthi Mariam Geevarghese, Mohamed Niyaz Vellala Syed Ali, Praveena Bahubali, Rajan Choudhary, Vladislav Lvov, Gabriel Ibrahim Tovar, Fedor Senatov, Sivasankar Koppala, Sasikumar Swamiappan, Bioaccumulation of lead (Pb) and its effects in plants: A review, *Journal of Hazardous Materials Letters*, Volume 3, 2022, 100064, ISSN 2666-9110, <https://doi.org/10.1016/j.hazl.2022.100064>. (<https://www.sciencedirect.com/science/article/pii/S266691102200017X>)

Australian Olive Industry Message

- The **reputation** of the Australian olive industry for producing the highest quality Extra Virgin Olive Oil is at risk, because:-
- Lead will be released during the mining operation with the greatest potential for plant and crop uptake via the roots from the soil water (not covered in the assessment report)
- This will give the olive oil importers the opportunity to position imported product as superior to the Australian product
- How will this project protect the reputation and profitability of the Australian olive and other agricultural industries?