
From: [Redacted]
Sent: Thursday, 1 April 2021 2:17 PM
To: [Redacted]
Subject: Brief to CES ammendments
Attachments: Lead in wetlands investigaton - Brief to CES final.docx

Hi [Redacted]

See my manager comments and my input in violet. Can you please check my additions (in violet) and any other comments?

Please let me know if you have any questions.

Thanks!

[Redacted]

Water Sciences



Environment Protection Authority Victoria
Centre for Applied Sciences, Macleod

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[BRIEF NUMBER]	
PURPOSE:	For decision
ACTION REQUIRED BY:	15/04/2021. This date is proposed to allow the collection of samples during the hunting season in Autumn 2021.
Core message: In 2018, EPA's emerging contaminants in biota program identified potential lead contamination in duck samples collected from Serpentine Creek and Richardsons Lagoon. The duck samples were re-tested in 2020. Additional environmental (water, sediment and soil) samples were also collected and analysed. The results suggest the potential for duck contamination in the two wetlands, however, the risk for human health from consumption of ducks remains unclear. A decision on next steps from the two options presented in this brief is needed. Option 1 is recommended.	
Recommendations: 1. Note the content of the brief and make a decision on Option 1 (recommended) or Option 2. <input type="checkbox"/> Noted <input type="checkbox"/> Please discuss	
ED/CES comments:	Signed: Out of scope [Redacted] Environment Protection Authority Victoria Date: / / 2021

KEY INFORMATION

1. Elevated lead concentrations were recorded in breast composite samples from ducks collected in Serpentine Creek and Richardsons Lagoon as part of EPA's 2018 Emerging Contaminants in Biota Program.
2. These results triggered further investigation to evaluate potential risks to human health from consumption of ducks. The investigation included:
 - a) The re-analysis of the 2018 samples using individual duck samples rather than composite samples previously used.
 - b) The collection and analysis of environmental samples (water, sediment and soil) from Richardsons Lagoon and Serpentine Creek.
3. For Serpentine Creek, only four individual liver samples were available for re-analysis. Results showed that one individual liver sample exceeded the Food Standards Australia New Zealand (FSANZ) maximum level (ML) of 0.5 mg/kg for poultry offal (lead concentration in the liver sample was 1.5 mg/kg). Given the consumption scenario of two serves of 20 grams liver per month (consistent with known upper limits of duck taken per season per recreational hunter, this is, 20.8 ducks), children consuming two serves of 20 grams liver per month will only reach approx. 24% of their total daily intake (TDI) for lead (Hazard Quotient (HQ) 0.24). The liver results indicate a low risk to public health and does not require consumption advice to recreational hunters. No breast samples were available for re-analysis. Therefore, the risk from consumption of breast remains unknown.
4. For Richardsons Lagoon, one individual liver sample and three breast samples were available for re-testing. Results showed that one individual breast sample exceeded the FSANZ ML of 0.1 mg/kg for poultry meat (lead concentration in the breast sample was 0.69 mg/kg). Lead concentration in the liver sample was 0.11 mg/kg, which is below the FSANZ ML for poultry liver of 0.5 mg/kg. If the concentration of lead in the breast sample was considered a true reflection of concentrations of lead in Richardsons Lagoon, consumption advice would be warranted. However, this result was unusual as the ratio of concentrations of lead in the re-tested breast to liver samples was >1 (0.69/0.11). This is suggestive that the breast samples may have been contaminated, possibly with (through the ingestion of) lead shot (but not through ingestion).
5. The analysis of environmental samples from the two wetlands showed high lead concentrations in water samples from Richardsons Lagoon (Attachment 1). These results further suggest the potential for duck contamination in this wetland.
6. It is not clear from the limited re-analysis of individual duck samples, and the lead concentrations found in the environmental samples, if ducks from Serpentine Creek and Richardsons Lagoon are contaminated and therefore, require consumption advice to be issued. For Serpentine Creek, no breast samples were available for re-testing. Therefore, it was not possible to confirm the previous result of lead concentration above FSANZ ML in composite samples. For Richardsons Lagoon, one individual breast sample yielded lead concentrations above FSANZ ML. However, the unusual ratio in breast to liver lead concentrations suggest potential sample contamination.
7. A decision on next steps is required. Two options are presented:
 - a) **Option 1 (recommended):** continue the investigation.
 - Collect and analyse additional duck samples from Richardsons Lagoon and Serpentine Creek to allow for the determination of human health risk from consumption of ducks.
 - The cost and funding for this option is estimated to be \$12,000 (please note that this cost is estimated based on the 2018 sampling, which cost \$150,000 for a total of 19 wetlands) and the funding source will need to be identified. The Arthur Rylah Institute (ARI) coordinated EPA's 2018 fieldwork for the collection of ducks. The ARI will need to be engaged to confirm costs and timing.
 - This should be conducted as soon as possible to allow for the collection of ducks during the hunting season in Autumn 2021.

Commented [Out of]: expand acronym in first use

OU – please check

Commented [Out of]: Expand

OU – please check

Commented [Out of]: would this be ingestion of lead shot?
Please clarify

Commented [PS4]: OU please check that this is ok

Commented [Out of]: Comment from [Out of scope]: we need an additional point after this one that explains the concern/risk/gap. Are the number of samples a concern? Is the community query raised still a concern/ cant be answered?
I've re-arranged the narrative. OU – please see next point.

Commented [Out of]: Why would we do this? I thought that all results indicate this is clear? Is there a confidence in results issue that needs to be highlighted?

OU – see point 6. I think that would be enough to explain why the two wetlands are needed.



Environment
Protection

Brief
Chief Executive Officer

- Consumption advice for the community may need to be developed rapidly, and in collaboration with CEG and EPA's Bendigo office.

b) **Option 2:** close the investigation.

- This option will not allow the determination of the risk to human health from consumption of recreational hunted ducks in Richardsons Lagoon or Serpentine Creek.

BACKGROUND

- Lead concentrations in ducks collected as part of EPA's 2018 Emerging Contaminants in Biota Program were revisited in September 2020 following a community member inquiry about EPA's 2017 lead in wetlands study (EPA Publication 1681).
- Elevated concentrations were found in composite breast samples from ducks collected in Serpentine Creek and Richardsons Lagoon in north-central Victoria. These results were unusual as, opposite to what is expected, the ratio of concentrations of lead in breast to liver was >1 in both locations. This was suggestive that the breast samples may have been contaminated, possibly with lead shot.
- The concentrations were above FSANZML for lead in poultry and warranted further investigation.
- Previous briefing was presented to **Out of scope** (Appendix 2). The briefing introduced the problem and included the sampling plan for the collection of samples in December 2020.
- Out of scope** approved the plan on 25 November 2020 (AS Connect item AST0016393 and Appendix 3).
- The results from the analysis of samples collected in December 2020 can be found in Appendix 1.

Commented **Out of scope**: Include in here the background – the emerging contain program, and what led to the most recent round of testing.

Commented **Out of scope**: Needs further explanation – what is expected?

Out of scope – check my input in violet

CONSULTATION

- Out of scope** (EPHU) and **Out of scope** (WSU) have provided input to the development of this brief.

ATTACHMENTS

No.	Attachment name
1	Appendix 1 - Lead in wetlands investigation report
2	Appendix 2 – Lead in wetlands investigation – Brief to Out of scope
3	Appendix 3 – Approval of plan by Out of scope