Management of the biosecurity risk

Lead contamination of food producing animals and animal food commodities is potentially harmful to the health of humans and animals. The purpose of this procedure is to specify the response required by NSW Department of Primary Industries (NSW DPI), an office within the NSW Department of Industry, and Local Land Services (LLS) to suspect or confirmed lead contamination of food producing animals.

Scope

The Biosecurity Act 2015 (the Act) promotes biosecurity as a shared responsibility between government, industry and communities. This procedure is a State Priority for NSW and should be read in conjunction with the policy ‘Chemically affected food producing animals, animal food commodities and stock food’. The procedure applies to NSW DPI and LLS in their role as authorised officers under the Act when responding to cattle that are suspect or confirmed to be lead affected.

For all other food producing animals and animal food commodities, the State Residue Coordinator in consultation with the NSW Food Authority and /or National Residue Survey will investigate any lead detection in such an animal or commodity. If as a result, a food producing animal or animal food commodity is deemed chemically affected, the State Residue Coordinator will coordinate management of the animal to prevent lead affected animal food commodities entering the human food chain.

Cattle are considered lead affected if one or more of the following lead levels are detected:

- blood level greater than or equal to 0.24 µmol/L
- liver and kidney lead levels are greater than 0.5mg/Kg

Biosecurity legislation summary

Under the Act, lead contamination of food producing animals and animal commodities may result in a biosecurity event (section 39 (1)) with the animals and their products becoming chemically affected (section 13 (2)).

Mandatory measures for chemicals in food producing animals and animal food commodities are detailed in Division 10 of the Biosecurity Regulation 2017. These measures detail the obligation for the reporting of test results for metals, including lead, in animal food commodities and the obligation of vendors of a food producing animal to notify a purchaser if the animal is chemically affected.

All members of the NSW community have a general biosecurity duty to take reasonably practicable steps to prevent food producing animals from having access to items that contain lead.
The collection, use and disclosure of information in accordance with this procedure, including any internal or external discussion or distribution of information, must be in compliance with the Privacy and Personal Information Protection Act 1998 or be exempted by the operation of section 387 of the Act.

Section 387 (2) of the Act provides authority for the disclosure of information about a person, without the consent of the person: to a public sector agency, or to any other person, but only if the disclosure is reasonably necessary for the purpose of exercising a biosecurity risk function.

**Work health and safety**

The *Work Health and Safety Act 2011* places an obligation on the agency (NSW DPI and LLS) as a person conducting a business or Undertaking and workers to provide a safe and healthy workplace. Safe Work Method Statements that support activities included in this procedure must be used in identifying, assessing and controlling risks.

NSW DPI and LLS will work together to create a safe and supportive work environment when undertaking any activities for this procedure.


Animals that are lead affected generally show neurological signs, including blindness. Care must be taken when handling any animals showing abnormal behaviour.
Contents

Lead affected food producing animals in New South Wales 4

1. Roles and responsibilities 4
   1.1 NSW Department of Primary Industries 4
   1.2 Local Land Services 4

2. Initial diagnosis and notification of lead affected cattle or cattle commodities 4

3. On-farm investigation 4

4. Livestock Health Management System (LHMS) 4

5. Blood test monitoring and management of lead affected cattle 5
   5.1 Less than 42 days since cattle have been removed from the lead source (Figure 1) 5
   5.2 43 to 89 days since cattle have been removed from the lead source: 5
   5.3 90 to 364 days since cattle have been removed from the lead source (Figure 2) 5
   5.4 365 days or more since the cattle have been removed from the lead source and the owner/manager agrees to individual testing. (Figure 3) 5
   5.5 365 days or more since cattle have been removed from the lead source and have not been previously tested. (Figure 4) 6

6. Notification of the State Residue Coordinator 6

7. Biosecurity undertakings and directions 6

8. Update of NLIS statuses 6

9. Other considerations 6
   9.1 Movement of cattle with PB1 status 6
   9.2 Subsequent offspring of detained cattle 7
   9.3 Milk from lactating cows with a PB1 or PB2 status 7
   9.4 Payment for blood testing 7
   9.5 Cattle with PB1 or PB2 statuses with lost RFIDs 7

10. Definitions and acronyms 10

11. Documentation 11

12. Records 11

13. Revision history 11

14. Contact 11

Appendix One: Livestock Health Management System entry 12

Appendix Two: Storage of blood samples 12
Lead affected food producing animals in New South Wales

1. Roles and responsibilities

1.1 NSW Department of Primary Industries
• will appoint a State Residue Coordinator to oversee the management of lead-affected food producing animals in NSW.

1.2 Local Land Services
• will ensure that government field veterinarians are available to investigate and manage cases of lead-affected food producing animals in NSW.

2. Initial diagnosis and notification of lead affected cattle or cattle commodities

Notification can be received by:

State Residue Coordinator (SRC)
• receives notification of lead affected cattle via a laboratory report from NSW DPI Laboratory Services. Blood or tissue samples may have been submitted to the laboratory by the LLS or a private veterinary practitioner as part of an on-farm investigation
• if the notification has come from samples submitted by a private veterinary practitioner, the SRC forwards the laboratory report to the relevant LLS requesting a follow up investigation, in consultation with the private veterinary practitioner
• receives notification from National Residue Survey (NRS) of lead having been detected in a commodity in which a trace back investigation to the property of origin is requested by the SRC and undertaken by the LLS veterinarian.

3. On-farm investigation

This is conducted by the LLS veterinarian.

LLS veterinarian attends a property to investigate unusual behaviour and/or mortalities and if lead toxicity is considered a reasonable differential diagnosis, submits relevant samples (blood or tissue) to NSW DPI Laboratory Services for testing.

The Property Identification Code (PIC) owner/manager is advised by the LLS veterinarian to identify and safely remove all access that food producing animals may have to lead sources. The LLS veterinarian

• determines which cattle are at-risk of being lead affected and blood tests all such animals. Any animal which may have had prior contact with the source of lead must be considered to be at risk
• may accept a biosecurity undertaking from the owner/manager or issue an individual biosecurity direction to detain all at-risk cattle (refer to templates on Intranet). At the discretion of the LLS veterinarian and SRC, the undertaking/individual biosecurity direction may apply to all or some cattle on the property
• advises the stock owner/manager requirements viz:
  o retest confirmed lead affected animals to release from detention
  o ensure all confirmed lead affected animals are individually identified with RFID tags
  o all lead affected cattle are identified in the undertaking or biosecurity direction remaining on the PIC unless authorised by LLS to be moved elsewhere.

4. Livestock Health Management System (LHMS)

LLS veterinarian enters all PIC visits and reports, including laboratory reports and legal documents into Livestock Health Management System (LHMS) (Appendix one).
5. Blood test monitoring and management of lead affected cattle

Selection of a testing option is made based on advice to the producer by the LLS veterinarian. Testing all at-risk cattle within 42 days of removal from source is the preferred option to ensure the security of the food chain.

5.1 Less than 42 days since cattle have been removed from the lead source (Figure 1)

- collect blood samples from all at-risk cattle
- record all individual NLIS/RFID tag numbers with reference to their corresponding blood samples
- send blood samples to the NSW DPI Laboratory Services
- animals:
  - with blood lead < 0.24 µmol/L are released from detention
  - with blood lead levels ≥ 0.24 µmol/L continue detention and assigned PB1 statuses on the NLIS by the SRC.
  - In the majority of cases, cattle with blood levels ≥ 0.24 µmol/L will be retested at 12 months from the date of removal from the lead source (refer item 5.4 below). If the owner wishes to retest these PB1 status cattle sooner than the 12 month period, any animal with a subsequent test result <0.24 µmol/L will be assigned a PB2 status (PB1 is removed), which will mean these animals are released from detention and may go to slaughter but the liver and kidneys will be condemned (refer item 5.3 below). The PB2 status will be set to automatically expire at 365 days from the date of removal from the lead source.
- if the owner/manager chooses not to pay for all blood samples from at-risk cattle to be tested immediately, the LLS veterinarian may agree to temporarily store the remaining blood samples (Appendix two). When these stored blood samples are tested at a time in the future, the actions taken are as below. In the meantime, all such untested animals will receive a PB1 status on their RFIDs until such time they are tested and cleared).

5.2 43 to 89 days since cattle have been removed from the lead source:

Do not blood test during this period; the tissue/blood levels are in a state of flux during this time and blood test results are unreliable.

5.3 90 to 364 days since cattle have been removed from the lead source (Figure 2)

- collect blood from all at-risk cattle, label and dispatch as in step 5.1
- animals:
  - with blood lead levels <0.24 µmol/L will be released from detention and assigned a PB2 status. This will automatically expire 12 months from the date of removal from the lead source.
  - with blood lead levels ≥ 0.24 µmol/L will be assigned a PB1 status and be detained.

5.4 365 days or more since the cattle have been removed from the lead source and the owner/manager agrees to individual testing. (Figure 3)

- collect blood from all cattle with a PB1 status and label and dispatch as in 5.1
- animals:
  - with blood lead level <0.24 µmol/L release from detention. Cattle with blood lead levels ≥ 0.24 µmol/L will continue detention and PB1 status. The timing of future retesting will be determined by the LLS veterinarian and SRC based on lead levels detected at this test compared to previous test results.
  - all PB2 statuses are automatically removed 365 days after removal from lead source i.e. no blood test is required to remove a PB2 status.
5.5 365 days or more since cattle have been removed from the lead source and have not been previously tested. (Figure 4)

- collect blood from a sample of cattle from the mob/herd (Table 1: Sampling size for herd release from detention). Label and dispatch as in step 5.1
- results:
  - All sampled cattle are < 0.24 µmol/L: release entire mob/herd from detention.
  - If one or more animals from the tested sample have blood lead levels ≥ 0.24 µmol/L, then all remaining animals in the mob/herd will need to be individually tested (pooling may be considered, see below). Any cattle with blood lead levels ≥ 0.24 µmol/L from this test will be detained and have a PB1 status applied, while any cattle with blood lead levels <0.24 µmol/L will be released from detention.

NOTE: To reduce costs on large numbers of untested cattle which are considered to be low risk, samples may be pooled, in pools of two at the laboratory. Individual samples are retrieved on any positive pools to determine whether one or both samples are lead affected. Pooling individual samples is a considerable cost reduction, when the anticipated number of positives is considered to be low and the number of animals high.

6. Notification of the State Residue Coordinator

LLS veterinarian immediately notifies SRC of all NLIS/RFID tag numbers and the corresponding current statuses based on all blood test results, so that appropriate NLIS statuses may be applied.

All RFID status updates must be emailed to the SRC by the LLS veterinarian and be in Excel, Word or email formats. Exporting from the RFID scanner in Excel format is the most efficient method; if this is not possible please email the numbers as a list typed in the following format: 9XX XXXXXXXXXXXX. Handwritten RFIDs will not be accepted

7. Biosecurity undertakings and directions

LLS veterinarian varies undertaking/ individual biosecurity direction to reflect the number of animals detained and their most recent statuses (refer to biosecurity undertaking procedure and biosecurity direction procedure). Example individual biosecurity direction and undertaking for chemically affected food producing animals is available on NSW Department of Industry intranet (Biosecurity Act 2015 Forms landing page)

8. Update of NLIS statuses

SRC updates NLIS with most recent statuses (PB1 or PB2) and emails any status change to LLS veterinarian as confirmation.

The PIC on which a PB1 or PB2 status RFID is currently linked will automatically be assigned an Early Warning (EW) status in the NLIS database. If the PIC currently linked with a PB1 or PB2 status RFID is not the same as the PIC in reality, the LLS veterinarian will inform the producer as such, and it is the producer’s responsibility to update movements on the NLIS database. See work instruction- NLIS PB status application INT17/41995

9. Other considerations

9.1 Movement of cattle with PB1 status

Movement is allowed with a movement permit (refer to movement permit for chemically affected food producing animals). This permit is issued by an authorised officer, preferably the locally based LLS veterinarian in the LLS region within which the animal/s reside. If moving to another LLS area or interstate, the authorised officer issuing the permit will notify the destination LLS area or jurisdictional equivalent of the movement, prior to the event. Movement of any animal with a PB status to another PIC will automatically cause the recipient PIC to be assigned EW status, as soon as the movement is recorded on NLIS.

Movement permits should not be issued for PB1 status animals destined for a knackery. The meat from these animals is considered not suitable for pet food.
9.2 Subsequent offspring of detained cattle
Calves born to cows with PB1 statuses are considered to be lead affected and assigned a PB1 status. These calves will need to be tagged with an RFID. Calves weaned from their PB1 status dams and greater than 5 months of age can be considered to be lead free and their status removed. The LLS veterinarian must send the calf’s RFID number to the SRC for status removal. Calves from PB2 status dams will not be considered lead affected.

9.3 Milk from lactating cows with a PB1 or PB2 status
Milk from a cow with a PB1 status is not fit for sale and not fit for human consumption. Milk from PB2 cows may be used for human consumption.

9.4 Payment for blood testing
NSW DPI will pay for blood testing of up to six animals if lead toxicity is a reasonable differential diagnosis. Once lead toxicity is confirmed as a diagnosis, all further testing is at the owner’s expense.

9.5 Cattle with PB1 or PB2 statuses with lost RFIDs
The producer is responsible for replacing the tag and informing the LLS veterinarian as soon as practical. The LLS veterinarian in turn advises the SRC of the new NLIS/RFID tag number. If two animals or more have lost their tags and the LLS veterinarian is unable to distinguish between the animals, all animals with lost tags will require retesting if there is doubt about the lead status of any. The LLS veterinarian updates the undertaking/individual biosecurity direction with the new RFID tag numbers and advises the SRC who will update the NLIS database.
Figure 1: Removal of lead source 0-42 days previously

0-42 days since removal of lead source

- Blood lead <0.24 µmol/L
  - Release from detention
- Blood lead ≥0.24 µmol/L
  - Apply a PB1 status and continue detention
- Untested
  - Apply a PB1 status and continue detention

Figure 2: Removal of lead source 90-364 days previously

90-364 days since removal of lead source

- Blood lead <0.24 µmol/L
  - Apply PB2 status and release from detention
- Blood lead ≥0.24 µmol/L
  - Apply a PB1 status and continue detention
Figure 3: Removal of lead source 365 days or more previously - individual testing

365 days or more since removal of lead source

- Blood lead <0.24 µmol/L → Release from detention
  - Status automatically removed 365 days after removal from lead source

- Blood lead ≥0.24 µmol/L → PB2 status cattle (no testing required)
  - Apply a PB1 status, continue detention and retest at determined time
Table 1: Sampling size for herd release from detention

<table>
<thead>
<tr>
<th>Total number of at-risk animals</th>
<th>Number of at-risk animals to be sampled</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 15</td>
<td>Test all animals</td>
</tr>
<tr>
<td>16-20</td>
<td>15</td>
</tr>
<tr>
<td>21-30</td>
<td>18</td>
</tr>
<tr>
<td>31-40</td>
<td>23</td>
</tr>
<tr>
<td>41-50</td>
<td>26</td>
</tr>
<tr>
<td>51-60</td>
<td>30</td>
</tr>
<tr>
<td>61-100</td>
<td>35</td>
</tr>
<tr>
<td>101-200</td>
<td>45</td>
</tr>
<tr>
<td>201 or more</td>
<td>50</td>
</tr>
</tbody>
</table>

10. Definitions and acronyms

Animal is a food producing animal as defined in the Biosecurity Regulation 2017.
Authorised officer as defined in Biosecurity Act 2015.
Blood sample is 5 mL of blood collected in an EDTA tube. Lead levels ≥ 0.24 µmol/L are considered positive.
Commodity is an animal food commodity as defined in the Biosecurity Regulation 2017.
DPI NSW Department of Primary Industries.
EWearly warning status- property carrying cattle with a high-risk status that may be unfit for human consumption.
LHMS Livestock Health Management System.
11. Documentation

Policy - Chemically affected food producing animals, animal food commodities and stock food

Policy - Biosecurity collection, use and disclosure of information

Policy - Records Management (IND-I-177)

Policy - Information Security (IND-I-197)

Policy - Classified Information (IND-I-196)

Policy - Government Information (Public Access) (IND-I-178)

Procedure - Biosecurity collection, use and disclosure of information

Primefact 413 Lead affected cattle

Work instruction NLIS PB status application INT17/41995

12. Records

Individual biosecurity direction for lead affected food producing animals – available on NSW Department of Industry intranet

Undertaking for lead affected food producing animals - available on NSW Department of Industry intranet

Biosecurity permit for movement of chemically affected food producing animals - available on NSW Department of Industry intranet

Records created as a result of this procedure are stored in the Livestock Health Management System (LHMS).

Records relating to properties placed under biosecurity restrictions must be maintained for at least ten years.

13. Revision history

<table>
<thead>
<tr>
<th>Version</th>
<th>Date issued</th>
<th>Notes</th>
<th>By</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>01/07/2017</td>
<td>Substantially revised procedure - in response to the Biosecurity Act 2015.</td>
<td>Animal biosecurity and Welfare</td>
</tr>
</tbody>
</table>

14. Contact

Biosecurity NSW – General Enquires
1800 808 095
biosecurity@dpi.nsw.gov.au
Appendix One: Livestock Health Management System entry

- Select diagnostic event
- In general details tab: differential diagnosis select “toxicity- lead”
  - Program: select “surveillance” and “residue & food safety” on the initial visit; select “residue & food safety” for all follow up visits.
- Complete clinical exam tab.
- Complete lab tests tab.
  - Specimen advice should be diagnosis for initial testing and monitoring for follow-up testing.
- Complete diagnosis tab
  - select “toxicity- lead” for final diagnosis if positive for lead toxicity; select “toxicity- lead” for evidence based exclusions if negative for lead toxicity,
  - include lab reference no.
  - attach all laboratory results and NLIS/RFID tag numbers list.
- Complete advice/plan tab
  - Attach any relevant documents (e.g. undertakings, individual biosecurity direction).

Appendix Two: Storage of blood samples

- EDTA tubes should be stored as whole bloods, i.e. not centrifuged.
- Samples need to be frozen to prevent bacterial overgrowth
- Sample tubes should be plastic, half full and stored on the side to minimise the risk that frozen tubes split/burst on freezing.
- Sample tubes that split or burst during freezing require additional packaging while thawing to contain the eventual spill as it may present a hazard to laboratory staff.
- Frozen samples are to be stored at the LLS office.