

## Biosecurity - Lead affected food producing animals in New South Wales

NUMBER:	INT19/113810	VERSION:	2
AUTHORISED BY:	Group Director, Animal Biosecurity	AUTHORISED DATE:	06/09/2019
ISSUED BY:	Biosecurity & Food Safety	EFFECTIVE DATE:	11/09/2019
CATEGORY:	Operations and Industry	REVIEW DATE	06/09/2022

### 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 Planning, Industry and Environment (DPIE), 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 (SRC), 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 SRC 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
- cattle food commodities with lead levels exceeding those stated in the [Australia New Zealand Food Standards Code- Schedule 19](#) - Maximum levels of contaminants and natural toxicants

### 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 laboratory 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.

The [Work Health and Safety Act \(2011\)](#) and the NSW Government Department of Planning, Industry and Environment Work health and safety policies (see item 11) apply to all people using 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)	5
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	5
5.2 43 to 89 days since cattle have been removed from the lead source	6
5.3 90 to 364 days since cattle have been removed from the lead source	6
5.4 365 days or more since the cattle have been removed from the lead source, and the owner/manager agrees to retesting all individual PB1 cattle	6
5.5 365 days or more since cattle have been removed from the lead source and have not been previously tested.	6
6. Notification of the State Residue Coordinator	7
7. Biosecurity undertakings and directions	7
8. Update of NLIS statuses	7
9. Other considerations	7
9.1 Movement of cattle with PB1 status	7
9.2 Subsequent offspring of detained cattle	8
9.3 Milk from lactating cows with a PB1 or PB2 status	8
9.4 Payment for blood testing	8
9.5 Cattle with PB1 or PB2 statuses with lost RFIDs	8
9.6 Cattle with a PB1 or PB2 status that die on-farm	8
9.7 Cattle with PB1 and PB2 status at an abattoir	8
10. Definitions and acronyms	11
11. Documentation	11
12. Records	12
13. Revision history	12
14. Contact	12
Appendix One: Livestock Health Management System entry	13
Appendix Two: Storage of blood samples	13

# 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.

NOTE: where the term LLS Authorised Officer is used throughout this procedure, this activity could be undertaken by either an LLS veterinarian or a biosecurity officer.

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

The State Residue Coordinator (SRC) may receive 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.
- from the laboratory regarding samples submitted by a private veterinary practitioner. The SRC forwards the laboratory report to the relevant LLS region requesting a follow up investigation, in consultation with the private veterinary practitioner.
- from National Residue Survey (NRS) of lead having been detected in a commodity, in which case a trace back investigation to the property of origin is requested by the SRC and undertaken by an LLS veterinarian. Please refer to the [Chemical Trace back investigation](#) procedure for guidance for investigations.
- from an LLS veterinarian that they suspect cattle may be at risk of being lead affected to discuss case prior to any testing.

## 3. On-farm investigation

The initial investigation is conducted by an LLS veterinarian. An 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 State Veterinary Diagnostic Laboratory 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. Any animal which may have had prior contact with the source of lead must be considered to be at risk. Please refer to [Primefact 413 'Lead affected cattle'](#) for further information regarding possible lead sources. The LLS veterinarian advises the PIC owner/manager that all at-risk cattle must be detained on the PIC until confirmatory test results have returned.
- Once a diagnosis of lead toxicity has been confirmed, an LLS veterinarian may:
  - blood test any remaining at-risk cattle
  - accept a biosecurity undertaking from the owner/manager or issue an individual biosecurity direction to detain all at-risk cattle (refer to Chemical Residues templates on the DPIE Intranet, see item 11). At the discretion of the LLS veterinarian and SRC, the undertaking/individual biosecurity direction may apply to all or some cattle on the

- property. The RFID of all detained cattle must be recorded on the undertaking or direction.
- record the date the animals were removed from the source(s) of lead. The timing relating to blood tests and length of detention only starts when no further access to lead sources can be assured.
  - advise the stock owner/manager of requirements regarding:
    - retesting confirmed lead affected animals prior to release from detention
    - ensuring all confirmed lead affected animals are individually identified with RFID tags (some producers may also find additional management tags helpful to easily identify the lead affected animals)
    - ensuring all lead affected cattle identified in the undertaking or biosecurity direction remain 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) (see Appendix One).

#### 5. Blood test monitoring and management of lead affected cattle

Selection of a testing option is made based on consultation with 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

See 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 State Veterinary Diagnostic Laboratory
- animals:
  - with blood lead < 0.24 µmol/L are released from detention
  - with blood lead levels ≥ 0.24 µmol/L continue detention and are 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 to 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 to 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 (see Appendix Two). When these stored blood samples are tested at a time in the future, the actions taken are as below depending on the time since removal from the lead source. In the meantime, all such untested animals will receive a PB1 status on their RFIDs until such time they are tested and cleared.

Similarly, if a PIC owner/manager is unable to have **any** of the at-risk cattle tested in the first 42 days after removal from the lead source the LLS veterinarian should:

- ensure all at risk animals are individually identified with RFID tags

- record the RFID for all at-risk cattle
- accept a biosecurity undertaking from the owner/manager or issue an individual biosecurity direction to detain all at-risk cattle (refer to Chemical Residues templates on the DPIE Intranet, see item 11)
- notify the SRC who will apply a PB1 status to all at-risk cattle
- advise the stock owner/manager that potentially lead affected animals require blood lead level testing prior to release from detention as per items 5.3 or 5.5, depending on when testing is eventually done.

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

Blood must **not** be tested 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**

See Figure 2.

- collect blood from all at-risk cattle, label and dispatch as in step 5.1
- animals with:
  - blood lead levels  $< 0.24 \mu\text{mol/L}$  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. PB2 cattle may go to slaughter but the liver and kidneys will be condemned.
  - blood lead levels  $\geq 0.24 \mu\text{mol/L}$  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 retesting all individual PB1 cattle**

See Figure 3.

- collect blood from all cattle with a PB1 status and label and dispatch as in 5.1
- animals with:
  - blood lead levels  $< 0.24 \mu\text{mol/L}$  release from detention
  - blood lead levels  $\geq 0.24 \mu\text{mol/L}$  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.  
NOTE: Retest blood collection may be undertaken by LLS authorised officers such as biosecurity officers. The case still remains the responsibility of an LLS veterinarian who should be involved in the blood result interpretation, decision making and advice provided to the stock owner/manager.

## **5.5 365 days or more since cattle have been removed from the lead source and have not been previously tested.**

See 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:
  - If all sampled cattle are  $< 0.24 \mu\text{mol/L}$ : release entire mob/herd from detention
  - If one or more animals from the tested sample have blood lead levels  $\geq 0.24 \mu\text{mol/L}$ , 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  $\geq 0.24 \mu\text{mol/L}$  from this test will continue with detention and PB1 status. Any cattle with blood lead levels  $< 0.24 \mu\text{mol/L}$  will be released from detention and PB1 status removed.

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 XXXXXXXXXXXXX. Handwritten RFIDs or lists in pdf format will not be accepted.

When emailing the SRC to request removal of PB1 status, please include details of the PIC number, the original date of removal from the lead source, the RFID's that are eligible to have the PB1 status removed and the blood results, including the key used to identify the animals.

## **7. Biosecurity undertakings and directions**

LLS authorised officer 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. See item 11). Example individual biosecurity direction and undertaking for chemically affected food producing animals is available on DPIE intranet (see item 11).

## **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 Example –Individual Permit Chemical Residues on the Chemical Residues landing page of the DPIE intranet, see item 11). 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.

Cattle with PB2 status are allowed to move without a permit.

## **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 five 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 practicable. 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.

## **9.6 Cattle with a PB1 or PB2 status that die on-farm**

The producer is responsible for informing an LLS authorised officer of any deaths of animals with PB1 or PB2 statuses on-farm as soon as practicable – maximum two business days after becoming aware of the death. The LLS authorised officer must then inform the SRC of the death via email, including the RFID number and photographic evidence of the carcass, including the ear tag in a photo. The SRC must then deactivate the animal on the NLIS within one business day of receiving the email and send a confirmatory email to the LLS authorised officer.

If the producer does not have photographic evidence that the animal has died the LLS authorised officer should request written confirmation from the producer that the animal has died. The LLS authorised officer must then inform the SRC of the death via email, including the RFID number and a copy of the email /letter from the producer. The SRC will deactivate the animal on the NLIS database but the RFID will always have a PB status which would be detected if the animal shows up at a saleyard or abattoir at a later date.

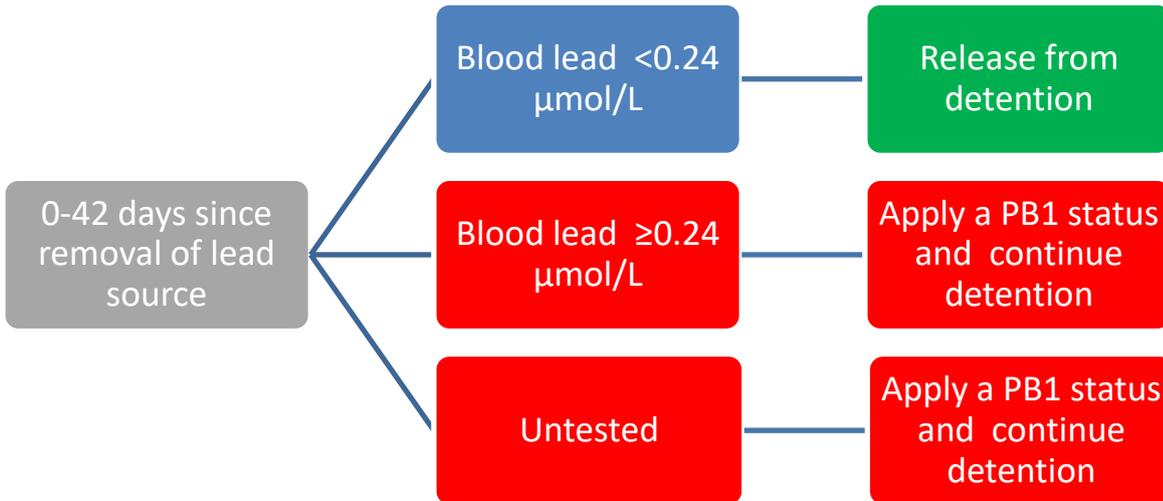
If a producer opts to humanely euthanase an animal with a PB1 or PB2 status on-farm, they must inform the LLS authorised officer prior to the event. The LLS authorised officer must then discuss the case with the SRC, prior to the euthanasia. The LLS authorised officer must either witness the euthanasia or receive photographic evidence of the animal prior to and post euthanasia. The LLS authorised officer must then inform the SRC of the euthanasia via email, including the RFID number and photographic evidence of the event (if relevant). The SRC must then deactivate the animal on the NLIS within one business day of receiving the email and send a confirmatory email to the LLS authorised officer.

## **9.7 Cattle with PB1 and PB2 status at an abattoir**

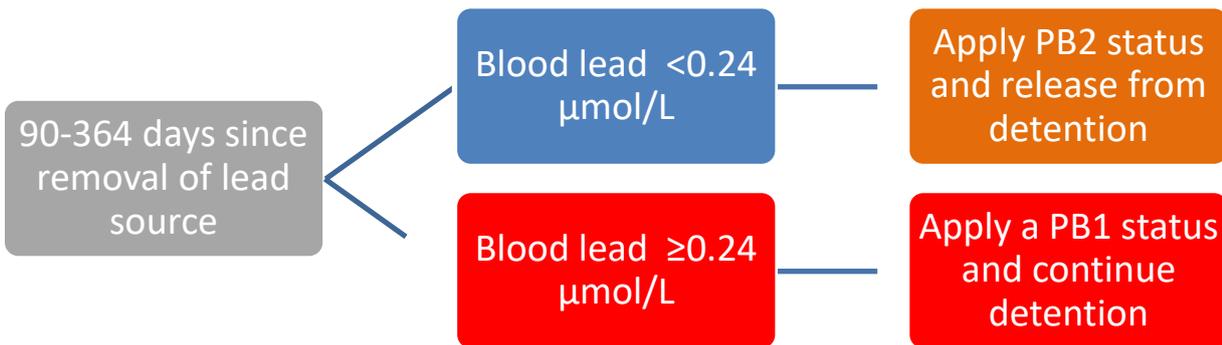
PB1 cattle must not be sold for slaughter. If a PB1 animal reaches an abattoir, the EW status should alert the establishment to prevent the animal entering the food chain. This may involve the animal being returned to the property of origin. If the animal is slaughtered the carcass is retained and sampled and tested for lead at the owner's expense. Kidneys and liver are destroyed.

PB2 animals are allowed to be slaughtered but the kidneys and liver are destroyed, unless tested at the owner's expense and confirmed to meet food standards.

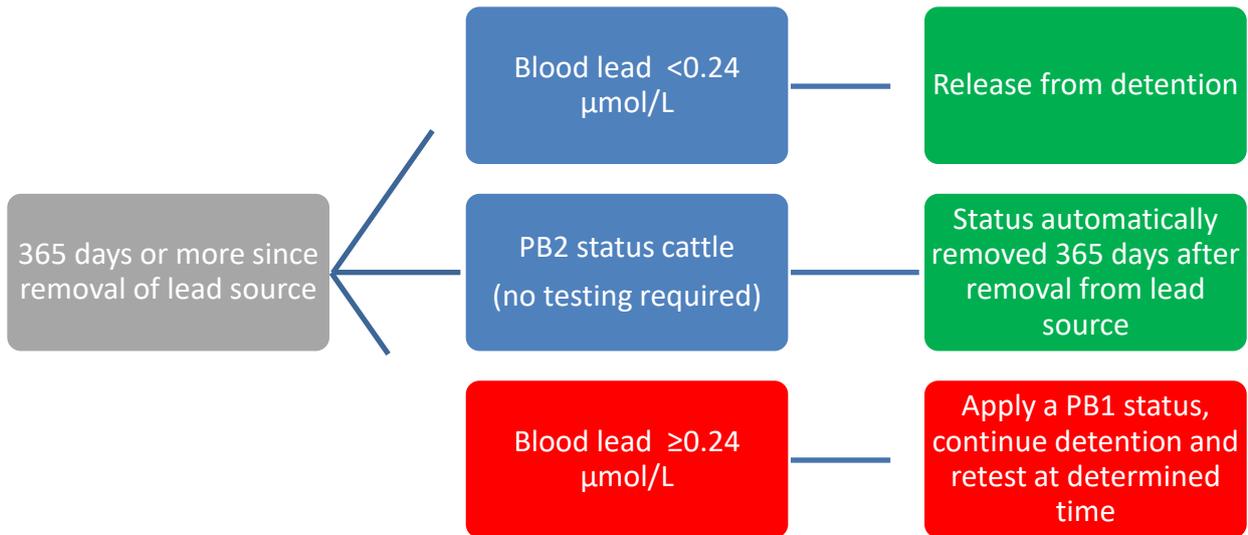
**Figure 1: Removal of lead source 0-42 days previously**



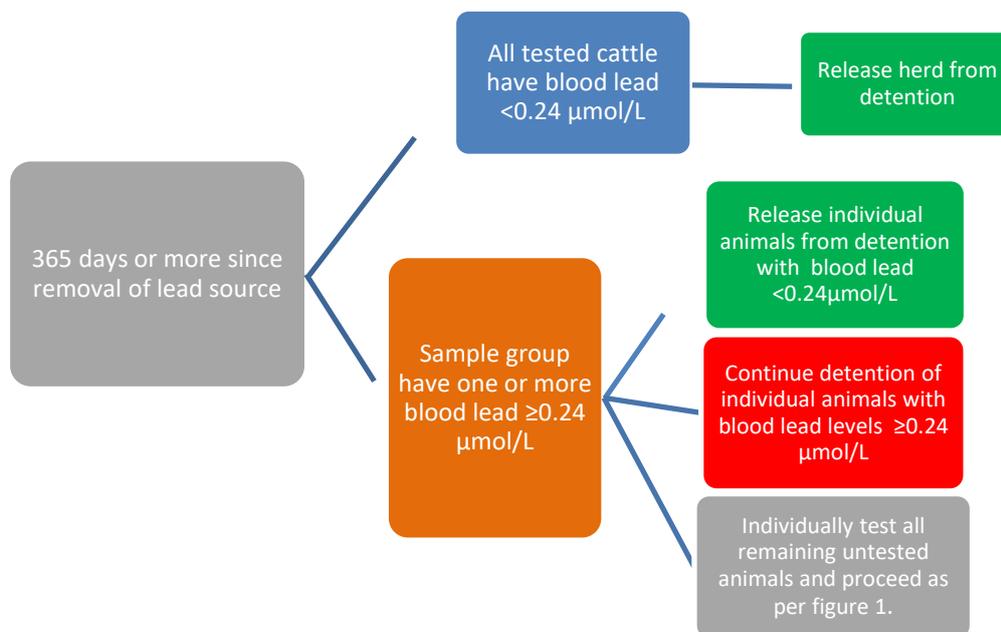
**Figure 2: Removal of lead source 90-364 days previously**



**Figure 3: Removal of lead source 365 days or more previously - individual testing**



**Figure 4: Removal of lead source 365 days or more previously - sample mob/herd testing**



**Table 1: Sampling size for herd release from detention  $\geq$  12 months after removal from lead source**

Total number of at-risk animals	Number of at-risk animals to be sampled
$\leq 15$	Test all animals
16-20	15
21-30	18
31-40	23
41-50	26
51-60	30
61-100	35
101-200	45
201 or more	50

## 10. Definitions and acronyms

Animal	is a food producing animal as defined in the Biosecurity Regulation 2017.
Authorised officer	as defined in <i>Biosecurity Act 2015</i>
Blood sample	5 mL of blood collected in an EDTA tube. Lead levels $\geq 0.24 \mu\text{mol/L}$ are considered positive.
Commodity	is an animal food commodity as defined in the Biosecurity Regulation 2017.
DPI	NSW Department of Primary Industries.
EW	early warning status- property carrying cattle with a high-risk status that may be unfit for human consumption.
LHMS	Livestock Health Management System
LLS	NSW Local Land Services.
LLS veterinarian	district veterinarian or team leader animal biosecurity. LLS veterinarians are authorised officers under the <i>Biosecurity Act 2015</i> .
NLIS	National Livestock Identification Scheme
NRS	National Residue Survey- the purpose of this is to manage monitoring programs for agricultural chemicals, veterinary drugs and natural contaminants in animal food commodities in Australia.
PB1	Cattle under restrictions due to lead residues and not to be sold for slaughter. If slaughtered, test meat for lead, at owner's expense. Condemn liver and kidneys.
PB2	Cattle under restrictions due to lead residues. Unacceptable residues may not apply to carcass meat. Condemn liver and kidneys, or test at owner's expense.
PIC	Property Identification Code
RFID	Radio Frequency Identification Device
SRC	State Residue Coordinator- a contact officer appointed by NSW Government to liaise with the Commonwealth Government of Australia to manage the NRS.
Tissue samples	kidney is the preferred tissue, but liver is also acceptable. Require 5g of tissue for analysis and prefer fresh tissue. Lead levels $> 0.5 \text{ mg/kg}$ are positive.

## 11. Documentation

Biosecurity Regulation 2017

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  
 Intranet Chemical Residues landing page <https://intranet.industry.nsw.gov.au/know-the-department/our-structure/primary-industries/dpi-biosecurity-food-safety/biosecurity-act-forms/biosecurity-forms/animal-biosecurity/chemical-residues>

## 12. Records

Individual biosecurity direction for lead affected food producing animals – available on NSW DPIE intranet

Undertaking for lead affected food producing animals - available on NSW DPIE intranet

Biosecurity permit for movement of chemically affected food producing animals - available on NSW DPIE 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

Version	Date issued	Notes	By
1	01/07/2017	Substantially revised procedure - in response to the <i>Biosecurity Act 2015</i> .	Animal biosecurity and Welfare
1.1	25/09/2017	Minor amendments to 5.1, 5.3 and 6.	Manager Animal Biosecurity Services and Response
1.2	06/09/19	Minor amendments to hyperlinks, 5.1. Addition of items 9.6 and 9.7. Clarification of what biosecurity officers can do.	Animal Biosecurity Risk Management

## 14. Contact

Biosecurity NSW – General Enquires  
 1800 808 095  
[biosecurity@dpi.nsw.gov.au](mailto: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.
- For long term storage samples need to be frozen to prevent bacterial overgrowth. For short term storage (up to a week) EDTA tubes can be stored in the fridge.
- 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.