1. **Purpose**

This Work Instruction describes the steps for investigating notifications of excessive lead exposure undertaken on behalf of Queensland Health (QH) by Environmental Health (EH).

2. **Scope**

This Work Instruction applies to all authorised environmental health officers who are responsible for the investigation and case management of lead exposure notifications.

3. **Background**

Exposure to lead has been recognised as a significant risk to public health. Unborn babies and children under the age of five years are at greatest risk of adverse health impacts from lead as they absorb about 50% of ingested lead and the brain in young children is still maturing and appears to be more vulnerable to lead. Lead hazards can exist in a variety of settings including in the workplace, at home or within the natural environment.

A blood lead level of 0.48µmol/L (10µg/dL) is a notifiable condition under the *Public Health Act 2005*. This involves keeping a record of all blood lead levels measured at 0.48µmol/L (10µg/dL) or greater on the Notifiable Conditions Register (NOCS) which is maintained by the Communicable Diseases Branch (CDB).

Environmental Health investigates notifications of lead exposure because of the potential for serious deleterious
consequences for the health of a person; and the potential for lead in the environment to impact on public health.

Notifications are received directly by Queensland Health from pathology laboratories for recording and do not contain details regarding type and source of exposure.

While all notifications are of interest to Queensland Health particular attention is paid to those notifications that are not linked to an occupational exposure. Occupationally exposed cases are managed differently through the Work Health and Safety Regulation 2011 administered by Workplace Health and Safety Queensland (WHSQ).

To limit potential duplication of actions by Queensland Health and WHSQ an administrative arrangement was developed. The arrangement involves Queensland Health conducting an initial screening process to determine whether the case is of interest or not to QH. The screening process results are recorded on the Enhanced Surveillance Form (ESF) based on agreed case validity rules which are outlined in section 6.

Details of the ESF are recorded and used for monitoring and reporting purposes.

4. Initial NOCS Case Entry Rules

CDB receive lead exposure notifications from pathology laboratories and enter the notifications into NOCS in accordance with the Rules for Case Entry listed below.

Rules for Case Entry

<table>
<thead>
<tr>
<th>BLL Range</th>
<th>NOCS record</th>
<th>CDB Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 0.47μmol/L (10μg/dL)</td>
<td>Nil (discarded)</td>
<td>Pathology report discarded</td>
</tr>
<tr>
<td>≥ 0.48μmol/L (10μg/dL) but related to a previous notification within 12 months</td>
<td>TEST RESULT</td>
<td>Pathology report forwarded to EH for information</td>
</tr>
<tr>
<td>≥ 0.48μmol/L (10μg/dL) - 2.41μmol/L (50μg/dL) in people 16 years and over</td>
<td>UNSURE</td>
<td>Pathology report and ESF forwarded to EH for investigation</td>
</tr>
<tr>
<td>≥ 0.48μmol/L (10μg/dL) in people 16 years and under</td>
<td>VALID</td>
<td>Pathology report and ESF forwarded to EH for investigation</td>
</tr>
<tr>
<td>≥ 2.41μmol/L (50μg/dL)</td>
<td>VALID</td>
<td>Pathology report and ESF forwarded to EH for investigation</td>
</tr>
</tbody>
</table>

Cases that have an initial entry classification of ‘valid’ or ‘unsure’ are referred to the relevant EH office for investigation and completion of the ESF.

Cases that have been coded as ‘test result’ are forwarded to the relevant Environmental Health Office for information. These are particularly important in cases where a source
could not readily be determined as they indicate whether exposure remains an issue and whether further investigation needs to occur depending on the level of risk.

Case referrals are made by NOCS to each Environmental Health Office via email.

5. **Role of Public Health Units**

It is the role of a Public Health Unit to:

- Verify whether the source of exposure is occupational or non-occupational. This determines whether the case meets the QH surveillance arrangements between occupational and non-occupational related cases
- Provide case management support where required
- Complete all details on the ESF and submit findings of investigation to CDB for NOCS recording and case closure
- Maintain records management of all lead notification investigative details

6. **Case Investigation**

The investigating officer should contact the treating physician whose details are recorded on the pathology report to obtain follow up details on the notification. Information to be discussed at a minimum includes:

- determination of exposure source (i.e. occupational or non-occupational)
- activity resulting in the exposure
- confirmation of case management strategies (recommendations for follow-up BL tests and exposure reduction strategies).

A. **Confirming Case Validity**

Part 1 of the ESF relates to the confirmation of the validity of the case. The following criteria must be used to determine the case validity.

**Valid case**

A case is considered valid if:

- Exposure is non-occupationally related and the blood lead level is 0.48 μmol/L (~10 μg/dL) and greater; or
- Exposure is occupationally related and the blood lead level is 2.41 μmol/L (~50 μg/dL) and greater.

Complete Parts 2 and 3 of ESF.

**Invalid case**
A case is invalid if the exposure is occupationally related and the blood lead level is between \(0.48 \mu\text{mol/L} (10\mu\text{g/dL})\) and \(<2.41 \mu\text{mol/L} (~50\mu\text{g/dL})\).

Complete only Part 2 of the ESF.

**Probable**

A case is probable if the exact cause of the exposure is not able to be determined.

Complete Parts 2 and 3 of ESF.

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**Disclosure of case information**

If the treating physician is unable to provide the necessary details regarding the notification, the EH investigating officer should seek permission from the physician to contact the case directly and request contact details such as a telephone number.

The treating physician whose details appear on the laboratory report is obliged to provide contact information for the case in accordance with the [Section 75(2) of the Public Health Act 2005](https://www.qld.gov.au/health/acts-and-regulations/public-health-act-2005). Providing confidential patient information for the purposes of investigating a notifiable condition does not contravene any other Act, oath or rule of law or practice and is not liable to disciplinary action for giving the information.

Some treating physicians prefer to limit third party contact with the case. They may seek out the information from the case and then provide it to the EH investigating officer.

In cases where the treating physician refuses to provide case details, the EH investigating officer can issue a notice to the physician requiring them to provide the information stated in the notice within a reasonable time frame as stated in the notice.

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**B. Determining Source of Exposure**

It is important to try and determine the source of exposure as this data is used for surveillance and reporting purposes.

**Occupational (Current/Former)**

Exposure is occupationally related if:

- Exposure occurred as a result of current workplace duties/activities (including interstate and overseas occupations) ; or
- Exposure occurred as a result of previous employment activities (including interstate and overseas occupations). Blood lead levels may take time to reduce to non-occupational exposure notification levels.
Non-occupational

Exposure is non-occupationally related if the exposure source has been identified and is not related to the workplace of the case. An environmental investigation of the home of the case and other sites where the significant amounts of time are spent may be required in order to determine the source of exposure.

Undetermined

Exposure is undetermined if the source is unable to be positively identified.

Attachment 1 provides an overview of decision making process by CDB and EH.

7. Case Management of non-occupationally exposed individuals

To ensure that ongoing exposure is reduced, the investigating officer may provide the following information to the exposed individual:

- Lead education on environmental and dietary factors
- Results of investigations identifying the source of exposure
- Lead hazard reduction advice
- Advice on follow up blood lead monitoring within three months
- Lead Safety information to homeowners

8. Case Closure

The ESF is required to be completed and returned to CDB regardless of whether the case is ‘Valid’, ‘Invalid’ or ‘Probable’.

Scanned copies of the ESFs can be emailed to the Groupwise address CDIS-NOCS-Support@health.qld.gov.au.

The details of the ESF are input into NOCS for case closure.

Authorising Legislation or Policy and Standard/s:

- Public Health Act 2005

Forms and templates

- Enhanced Surveillance Form
## 9. Definition of Terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition / Explanation / Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cause of Exposure</td>
<td>The most likely cause of exposure (e.g., radiator repair work, smelter worker, removal of lead-based paint, swallowing of object such as a lead sinker, etc.).</td>
</tr>
<tr>
<td>Closed</td>
<td>The case is coded as Closed once the validity status is determined. For Valid and Probable cases, the source and cause must first be coded into the enhanced surveillance section of NOCS prior to being marked Closed.</td>
</tr>
<tr>
<td>Diagnosis Date</td>
<td>The date the laboratory reported the result.</td>
</tr>
<tr>
<td>Invalid</td>
<td>An occupationally related case with blood lead level is between 0.48μmol/L (10μg/dL) and &lt;2.41 μmol/L (~50 μg/dL).</td>
</tr>
<tr>
<td>Notification Date</td>
<td>The date that the CDB or the PHU received the blood lead report from the laboratory.</td>
</tr>
<tr>
<td>Occupational Exposure</td>
<td>Lead exposure associated with an occupation</td>
</tr>
<tr>
<td>Onset Date</td>
<td>Date of the sample collection</td>
</tr>
<tr>
<td>Open</td>
<td>The case is still under investigation.</td>
</tr>
<tr>
<td>Probable</td>
<td>When there is insufficient information to discount the notification. These cases are considered to be a notification under the Public Health Act 2005.</td>
</tr>
<tr>
<td>Source of Exposure</td>
<td>Whether the person was exposed occupationally (current or former) or non-occupationally.</td>
</tr>
<tr>
<td>Test Result</td>
<td>If the collection date of a blood lead result is within 12 months of a current notification, the latest result is recorded as a Test Result (it does not have an associated new NOCS Notification Identification Number) under the current notification.</td>
</tr>
<tr>
<td>Unsure</td>
<td>This is an administrative term used by NOCS for those cases where generally the source of exposure (i.e., occupational or non-occupational) needs to be determined prior to the case becoming Valid, Probable or Invalid. ‘Unsure’ notifications can not be coded as ‘Closed’.</td>
</tr>
<tr>
<td>Valid</td>
<td>Case complies with all the criteria outlined in the Operating Procedures.</td>
</tr>
</tbody>
</table>
## Procedure Revision and Approval History

<table>
<thead>
<tr>
<th>Version No.</th>
<th>Modified by</th>
<th>Amendments authorised by</th>
<th>Approved by</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Environmental Health Science and Regulation Unit</td>
<td>Uma Rajappa, Director EHS&amp;R</td>
<td>Simon Critchley, A/Senior Director Environmental Health Branch</td>
</tr>
</tbody>
</table>
At 0.47 µmol/L or less NOCS discard results or code as TEST RESULT if associated with current lead notification within 12 month period

Pathology Report

0.48µmol/L – <2.41µmol/L
NOCS code UNSURE 16 Yrs or older
NOCS code VALID for 0-16 years

16 Yrs or older
EH Investigation to confirm case validity and exposure source

0-16 years NOCS code VALID
EH Investigation to confirm exposure source

2.41µmol/L or greater
NOCS code VALID
EH Investigation to confirm exposure source

Occupational Exposure
EH code INVALID complete ESF part 2

Non-Occupational Exposure
EH code VALID/PROBABLE Complete ESF parts 2 & 3

EH Complete ESF parts 2 & 3 ESF

EH send completed ESF forms to CD_NOCS-SUPPORT for case closure

Annual Report developed by EHB

EH send TEST RESULT and file – No further action

EH Complete ESF parts 2 & 3 ESF

EH Investigation to confirm exposure source

Annual Report developed by EHB

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