Jordan Crabbe

From: Mark Cossins
Sent: Thursday, 1 March 2018 10:36 AM
To: Kelven Hawke
Cc: Beverley Smith
Subject: RE: MC00002372 - Lucas Heights - Proposed disclosure of inspector report to ANSTO [DLM=Sensitive:Legal] CRM:0006300246

Security Classification:
Sensitive: Legal

Sensitive: Legal

Kelven,

Apologies, I thought Bev replied to your initial e-mail.

We do not require further assistance in relation to this matter.

For the record, the disclosure of the report was to ARPANSA – Australian Radiation Protection and Nuclear Safety Agency.

ANSTO were the subject of Inspection MC00002372.

Thank you
Regards

Mark Cossins BA MSc (OHS & Env Mgmt)
Senior Inspector
Regional Operations NSW | Regulatory Operations Group
T 02 8218 3736 | M S47F | E cossins.mark@comcare.gov.au
A GPO Box 1993, Canberra, ACT 2601

Australian Government
Comcare

Inspector Appointed under Work Health and Safety Act 2011

From: Kelven Hawke
Sent: Thursday, 1 March 2018 9:54 AM
To: Mark Cossins <Cossins.Mark@comcare.gov.au>
Cc: Beverley Smith <Smith.Beverley@comcare.gov.au>
Subject: MC00002372 - Lucas Heights - Proposed disclosure of inspector report to ANSTO [DLM=Sensitive:Legal]

Sensitive: Legal

Hi Mark,
I have an open file in regard to this matter where I provided some advice to Beverley and you in November 2017.
I have not heard anything since that time. If the matter is completed I should close the file. I am unable to close the file without confirmation from you or Beverley that the file can be closed.
Are you able to indicate if this file should be closed or is it possible that you will need further assistance from Regulatory Legal regarding disclosure of the inspector report to ANSTO?
Thanks,
Kelven

Kelven Hawke
Senior Legal Adviser | Regulatory Legal
P 02 6225 2341
F 02 6274 8767
A GPO Box 9905, Canberra, ACT 2601
1300 366 979 | www.comcare.gov.au

Please note that I do not work after 2pm on Tuesdays, Thursdays and Fridays.

Sensitive: This document may contain sensitive information as defined under Section 6 of the Privacy Act.

Jordan Crabbe

From: Mark Cossins
Sent: Monday, 27 November 2017 12:11 PM
To: 'LEVY, Shelley'
Subject: Sharing of Inspector Report Inspector Report MC00002372 ANSTO - Lucas Heights NSW [SEC=UNCLASSIFIED]

Security Classification:
UNCLASSIFIED

UNCLASSIFIED

Shelley,

RE: MC00002372 ANSTO- Worker exposed to radioactive MO 99 - Superficial Burn - Lucas Heights NSW

I am writing to you to seek ANSTO's agreement to the provision of a copy of the Comcare Inspector Report for the Mo99 exposure incident to ARPANSA.

Any names in the report will be redacted prior to sharing it with them.

Happy to discuss if you have any questions.

Thank you
Regards

Mark Cossins BA MSc (OHS & Env Mgmt)
Acting Assistant Director
Regional Operations NSW | Regulatory Operations Group
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A GPO Box 1993, Canberra, ACT 2601

Australian Government
Comcare

Inspector Appointed under Work Health and Safety Act 2011

Jordan Crabbe

From: Kelven Hawke
Sent: Friday, 24 November 2017 11:53 AM
To: Beverley Smith
Cc: Mark Cossins
Subject: FW: HPE CM: Inspector Report MC00002372 ANSTO - Lucas Heights NSW CRM:0006300124 [DLM=For-Official-Use-Only]
Attachments: Inspector Report #1- MC00002372 - Australian Nuclear Science and Technology Organisation.pdf

Security Classification:
For Official Use Only

For Official Use Only

Hi Beverley,
Comcare could provide the attached Comcare investigation report to ARPANSA with the consent of ANSTO.
In that circumstance, the names, contact details and job titles of the individuals referred to in the report (Shelly Levy, Ralph Blake and Mark Crossins) would need to be removed unless Comcare also has their permission to disclose that information.
ANSTO consent would need to identify the particular document being disclosed and they could, if they chose, limit the purposes for which ARPANSA could use that information (eg. just investigating this incident, investigating any incident, etc.).
Let me know if this is not possible and I can advise on other means by which we may be able to disclose this information to ARPANSA.
Regards,
Kelven

From: Beverley Smith
Sent: Friday, 24 November 2017 11:15 AM
To: Kelven Hawke
Cc: Mark Cossins
Subject: FW: HPE CM: Inspector Report MC00002372 ANSTO - Lucas Heights NSW CRM:0006300124 [DLM=For-Official-Use-Only]

For Official Use Only

HI Kelven

This is the report we are proposing to share with ARPANSA. We are also proposing to work together collaboratively in regards to the verification inspections.

Regards

Bev

From: Mark Cossins
Sent: Friday, 24 November 2017 11:13 AM
To: Beverley Smith
Subject: FW: HPE CM: Inspector Report MC00002372 ANSTO - Lucas Heights NSW CRM:0006300124 [DLM=For-Official-Use-Only]

For Official Use Only

Attached

From: Mark Cossins
Sent: Thursday, 16 November 2017 9:30 AM
To: 'LEVY, Shelley'
Cc: RPB
Subject: HPE CM: Inspector Report MC00002372 ANSTO - Lucas Heights NSW [DLM=For-Official-Use-Only] CRM:0006300124

For Official Use Only

Shelley,

RE: MC00002372 ANSTO- Worker exposed to radioactive MO 99 - Superficial Burn - Lucas Heights NSW

Attached is the Inspector Report for the above Comcare Monitoring and Compliance activity.

Please note the Inspector recommendations in the report. If you have any questions or concerns, please contact me.

Thank you
Regards

Mark Cossins BA MSc (OHS & Env Mgmt)
Acting Assistant Director
Regional Operations NSW | Regulatory Operations Group
T 02 8218 3736 | M s47F |E cossins.mark@comcare.gov.au
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INSPECTOR REPORT

COMCARE REFERENCE	MC000002372		**Report No.**	#1
PCBU DETAILS	**Name**	Australian Nuclear Science and Technology Organisation		
	Address	Locked Bag 2001 KIRRAWEE NSW 2232		
	ABN	47956969590		
REPORT ISSUED TO	**Name**	Shelley Levy		
	Position	Leader WHS Systems		
COPY OF REPORT GIVEN TO	**Name**	Ralph Blake		
	Position	Manager WHS		
RELEVANT WORKPLACE/S OR WORKSITE	**Name**	Building s33 (ANSTO Health Facility)		
	Address	New Illawarra Rd LUCAS HEIGHTS NSW 2234		
	Date	22 August 2017		
OTHER PERSONS ATTENDING WITH INSPECTOR	**Name**	NA		
	Position	NA		

PURPOSE OF INSPECTION

1. At approximately 07:00am on 22 August 2017, Australian Nuclear Science and Technology Organisation (ANSTO) Quality Control (QC) Analyst, working in the ANSTO Health Facility, received a radiation skin dose following the uncontrolled spillage of Molybdenum 99 (Mo-99) during a vial de-capping procedure (the incident).
2. The purpose of this compliance monitoring activity under the WHS Act to seek assurance that ANSTO:
    a. Responded appropriately to this incident;
    b. Took reasonable and practicable steps to remedy any ongoing risks;
    c. Identified and implemented appropriate corrective actions to prevent a recurrence; and
3. This compliance and monitoring activity also seeks to clarify the reasoning for the delay in notification.

OUTCOMES

4. From my observations and discussions with ANSTO representatives, and a review of the documentation provided I make the following recommendations:
    i. ANSTO are to review organisational awareness and training in relation to the notification of Dangerous Incidents;
    ii. ANSTO are to ensure risk assessments are reviewed:
        - at regular intervals proportional to the severity of the assessed risk;
        - whenever there is a change to process, procedure and/or equipment; and

- following incidents.

iii. ANSTO are to provide evidence of implementation of the above recommendations to Comcare by 20 December 2017.

5. Apart from the above recommendations, I am satisfied that ANSTO has undertaken a detailed investigation to identify relevant contributory factors to the incident; and actions as outlined are reasonable in the circumstance and adequately address any safety concerns identified to prevent a recurrence.

ACTIONS AND OBSERVATIONS

6. ANSTO first contacted Comcare in relation to the incident on 11 September 2017 to discuss notifying the incident. The incident was not initially notified to Comcare as ANSTO assessed the incident as not notifiable, based on the initial presentation of the injury and the criteria for a Serious Personal Injury.

7. The incident was formally notified to Comcare on 19 October 2017. ANSTO notified the incident to Comcare as a Serious Personal Injury based on worsening presentation of the injury to the QC analyst; and information provided by medical specialists.

8. The Inspector notes that this incident falls within the definition of a dangerous incident as stated in s37 of the WHS Act 2011. The incident exposed a worker to a serious risk to their health and safety which emanated from an immediate exposure to an uncontrolled spillage of a substance.

9. The written notification to Comcare states the incident was notified to Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) as required.

10. On 02 November 2017, I requested a copy of the ANSTO Incident Investigation Report into the incident. On 09 November 2017, I received a copy of ANSTO Concise Investigation Report *Radiation Exposure to Hands of Mo-99 QC Analyst from Glove Contamination.*

11. The ANSTO Investigation Report states, on 08 September 2017, the QC Analyst's injuries were observed as skin reddening and some evidence of blistering on the third knuckle of more than one finger on each hand. The timing of the symptoms, 15 days after the incident, is consistent with mild forms of radiation dermatitis.

12. The investigation determined the QC Analyst received a significant radiation dose to the skin within a short time (approximately 20 seconds).

13. A retrospective dose assessment provided a probable equivalent skin dose of ~850 mSv ± 250 millisieverts (mSv) and a potential equivalent dose of up to 3320 mSv ± 985 mSv in the first 25.5 hours of exposure; both values are in excess of the annual regulatory dose limit of 500mSv.

14. The ANSTO report considered the likelihood of Acute Radiation Syndrome to be extremely unlikely based on the localised nature of the radiation exposure. The effective radiation dose is estimated to be equivalent to a whole body dose of ~8.5 mSv ± 2.5 mSv which is below the regulatory limit of 20 mSv per year averaged over 5 years; and below the 50 mSv in any single year.

15. The investigation found the QC Analyst had completed training in the dispensing of Mo-99 and was deemed competent to perform testing. Although the analyst had experience in analytical testing laboratories, their experience with working with radioactive materials only extended to s47F when they commenced working with ANSTO.

16. The glove removal technique used by the analyst at the time of the incident was

considered as a possible contributing factor to the spread of contamination.

17. The investigation found the de-capping equipment used during the vial de-capping procedure required maintenance or replacement prior to the incident; however, it appears to have been accepted as adequate for the task.

18. The design of the 25mm lead pot which housed the Mo-99 vial required the use of forceps to grip the neck of the vial to hold it above the rim of the pot to enable de-capping. The investigation report describes this manoeuvre as 'difficult'.

19. The technique for gripping the vial by the neck was included in training. The investigation found the analyst had gripped the vial by the body rather than the neck at the time of the incident.

20. The ANSTO investigation found the radioactive content of the Mo-99 sample was greater than what was required to undertake quality control testing.

21. Long cuff gloves normally used for quality control had recently not been used due to a lack of supply. The report states the use of long cuff gloves would likely have reduced the risk of skin contamination during glove removal following the spill.

22. The investigation found the Systems Safety & Reliability (SSR) Risk Assessment for the quality control process assessed the risk of injury as 'High' based on a 'Major' consequence with a likelihood of 'Likely'. The ANSTO Risk Analysis Matrix requires the following action where a risk is assessed as 'High":

    - *Report the situation immediately to the relevant Executive / General Manager advising them to withdraw from the risk, or control the risk source to achieve a tolerable level of risk (ensuring close scrutiny until the controls are implemented);*
    - *Report this risk also to the Senior Manager, GRC & Assurance.*

23. The investigator did not find any documentary evidence which showed the risk had been discussed with, or accepted by, the senior management of ANSTO Health.

24. The ANSTO Report states the SSR carried out the risk assessment for the Quality Control process in Building s33 in December 2015. The report does not provide evidence to indicate the risk assessment was reviewed following a change to the personal protective equipment (gloves) described at Paragraph 21; nor at any time between the initial assessment of the process and the incident, a period of 21 months.

25. The investigation found there was anecdotal evidence of previous occasions where vials had been dropped during similar de-capping procedures; however, these did not result in spillage. Reporting of these 'near hit' instances may have led to improvements in procedures to reduce the risks associated with radioactive vial handling.

ANSTO Recommendations

26. The ANSTO Investigation Report makes the following recommendations to prevent a recurrence:

    i. The faulty de-capper to be repaired or replaced (complete);

    ii. Long cuff gloves to be used as primary gloves for all QC Analysts; standard gloves are to be placed over the long cuff gloves and changed frequently (complete);

    iii. Retrain analysts on vial handling technique when using forceps (complete);

    iv. Reduce Mo-99 radioactive content to the minimum required for single

testing (complete);

v. Consideration of dilution of bulk Mo-99 samples to reduce radiation risk to analysts (in progress);

vi. Substitute 25mm lead pot with 19mm lead pot to reduce vial handling difficulty (complete);

vii. Consider substitution of straight forceps with shaped forceps to provide improved grip of the vial neck (in progress);

viii. Consider substitution of manual de-capper with a remotely operated de-capper (in progress);

ix. Review other quality control processes to identify if similar lead pot size issues exist (complete);

x. ANSTO Health and Mo-99 QC to consult with SSR and recommend changes where the potential dose is unreasonable and update changes in the SSR Risk Assessments for the QC Process;

xi. Re-train analysts in glove change techniques to ensure reduced risk of contamination;

xii. Refresher training in QC testing, including de-capping, dispensing and sampling provided to QC Analysts on a regular basis;

xiii. Post pictorial aids for correct de-capping and dispensing techniques adjacent to the facilities these operations take place;

xiv. Regular awareness training on potential consequences and responses to personal contamination for analysts;

xv. Review the Radiation Protection Services (RPS) Personal Contamination Form;

xvi. QC Analysts to wear extremity dosimeters on the fingers rather the wrist to provide accurate reflection of radiation exposure on the fingers, especially in the instance of glove contamination;

xvii. Review maintenance response on items such as the de-capper to investigate why it was not repaired / replaced promptly;

xviii. ANSTO Health toolbox talks and training should include enhanced awareness of localised high radiation hazards from glove contamination when working with high specific activity materials;

xix. Refresher training on incident reporting, especially 'near hits';

xx. Review of process and controls for identified high risk activities;

xxi. Identified safety related "High" or "Very High" risks (after mitigations) should be escalated to the responsible senior managers (GM and above). Justification to accept "High" risk to be documented in the GRC system; and

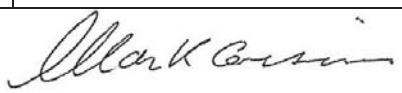
xxii. Review the potential for automation of sampling processes in QC activities within ANSTO to eliminate the potential for personal contamination with high specific activity radionuclides.

POWER EXERCISED (if any)

Section of Act	Nature of Inspector action/decision
None	Not exercised

COMPLIANCE STATUS OF PREVIOUSLY ISSUED NOTICES (if any)

Notice	Description	Status
None	None	None

REPORT ISSUED BY	**Inspector:**	Mark Cossins	**Phone:**	02 8218 3736
	Email:	cossins.mark@comcare.gov.au	**Region:**	NSW
INSPECTOR'S SIGNATURE	**Signature:** 		**Date:** 15/11/2017	

DISCLAIMER

This report contains information that may assist you take steps in regards to your obligations under the WHS Act. You must refer to the *Work Health and Safety Act 2011* (Cth) (**WHS Act**) and *Work Health and Safety Regulations 2011* (Cth) (**WHS Regulations**) to understand your duties and obligations. Comcare's external website contains hyperlinks to WHS Act legislation.

Comcare does not accept liability for any errors or omissions or for any loss or damage suffered by you or any person which arises from your reliance on this report or for any breach by you of your obligations under the WHS Act. Where a Comcare Inspector has inspected a particular workplace is not a representation by Comcare that the particular workplace is in any way free of hazards.

NEED HELP?

Contact the Inspector to discuss any aspect of this Inspector Report. The Inspector should be contacted if you wish to view photographs, documents or other evidence taken by the Inspector if they attended your workplace.

Comcare has a range of publications and fact sheets to help explain your responsibilities and provide guidance to make your workplace safer. The *Compliance and Enforcement Policy* provides guidance as to how Comcare approaches regulation. To access these, visit our website.

REVIEW OF DECISIONS

Where a Decision Maker Review is unsatisfactory, the recipient of the report should seek independent legal advice on review rights.

PRIVACY STATEMENT

Your privacy is important to us. We will only collect, use or disclose personal information in accordance with the *Privacy Act 1988* (Cth) and if it is reasonably necessary for, or directly related to, one or more of our functions, powers and/or activities. These include functions and activities under the *Safety, Rehabilitation and Compensation Act 1988* (Cth), the WHS Act, the *Seafarer's Rehabilitation and Compensation Act 1992* (Cth), and the *Asbestos-related Claims (Management of Commonwealth Liabilities) Act 2005* (Cth). If Comcare does not collect personal information from you, for the purposes of its legislated functions or related functions, we may not be able to respond appropriately.

Comcare is the Commonwealth agency authorised by the WHS Act to collect personal information relevant to the exercise of functions and powers under the WHS Act, *Work Health and Safety Regulations 2011* and the administration and evaluation of Comcare's WHS programs. Any personal information collected in these forms will be used for those purposes.

In exercising our functions and powers, we may disclose personal information, subject to confidentiality of information provisions under the WHS Act, to the following bodies and agencies, including but not limited to:

- Comcare's internal and external legal advisers
- the Safety, Rehabilitation and Compensation Commission
- a court or tribunal
- state or territory work health and safety regulatory agencies
- personnel engaged by Comcare to conduct research related activities
- enforcement agencies or bodies
- state and territory Coroners
- Commonwealth, state or territory industry regulators
- any other person assisting Comcare in the performance of its functions or exercise of its powers, including contractors and consultants
- any other person where there is an obligation under law to do so (for example but not limited to, responding to the direction of a court to produce documentation).

For further information on how Comcare handles personal information, please read our Privacy Policy on our website. To request a change to your personal information or to make a complaint, please phone or email us at privacy@comcare.gov.au.

www.comcare.gov.au | 1300 366 979

Jordan Crabbe

From: LEVY, Shelley <sll@ansto.gov.au>
Sent: Thursday, 21 December 2017 2:33 PM
To: Lisa Daffen
Cc: Mark Cossins
Subject: RE: Sharing of Inspector Report Inspector Report MC00002372 ANSTO - Lucas Heights NSW CRM:0006300186 [SEC=UNCLASSIFIED]

Hi Mark and Lisa

Thanks for the detail on the process of review. This is helpful.

I understand the points made below for not amending or re-issuing the report.

We will proceed based on the initial recommedations.

Many thanks for your support throughout 2017. Merry Christmas to the team and your families. We'll see you in 2018.

Kind Regards
Shelley

From: Lisa Daffen [mailto:Daffen.Lisa@comcare.gov.au]
Sent: Thursday, 21 December 2017 11:12 AM
To: LEVY, Shelley
Cc: Mark Cossins
Subject: FW: Sharing of Inspector Report Inspector Report MC00002372 ANSTO - Lucas Heights NSW CRM:0006300186 [SEC=UNCLASSIFIED]

UNCLASSIFIED

Hi Shelley
Thanks for your question to Mark below.

I have reviewed the report and the supplementary information you have provided and have formed the view that nothing in Mark's Inspector Report indicates any fault on the part of the worker, and therefore that no correction of Mark's findings is applicable.

Comcare's policy is not to amend inspector reports because the Inspector Report is based on information provided to the inspector during the course of inspection. If an Inspector has made an error, we can re-issue the report with an appendix outlining the mistake and its correction. However, I am of the opinion that you have not indicated that Mark has made a mistake based on the information available to him at the time of the report.

In the event that there is new evidence, Comcare can commence a new inspection to evaluate the new information and then issue an inspector report, based on new information, at conclusion of the enquiries. In this instance, your updated report has provided new information to Mark. As such, Mark will conduct a verification inspection into this incident next year and will incorporate the new findings in your updated report in his enquiries.

Please feel free to contact me if you would like to discuss this further.

Thanks & kind regards

Lisa Daffen
A/Assistant Director | Regional Operations NSW | Regulatory Operations Group
Inspector Appointed under Work Health and Safety Act 2011
P 02 8218 3703 | M s47F
E lisa.daffex@xxxxxxx.xxx.au

Comcare
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From: Mark Cossins
Sent: Thursday, 14 December 2017 2:37 PM
To: Lisa Daffen
Subject: FW: Sharing of Inspector Report Inspector Report MC00002372 ANSTO - Lucas Heights NSW [SEC=UNCLASSIFIED] CRM:0006300186

UNCLASSIFIED

Lisa,

Attached are the amended ANSTO report (GRC3273), original ANSTO report and my Inspector Report.

As discussed, I would appreciate your review in light of the request below.

Thank you
Regards

Mark Cossins BA MSc (OHS & Env Mgmt)
Senior Inspector
Regional Operations NSW | Regulatory Operations Group
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A GPO Box 1993, Canberra, ACT 2601

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From: LEVY, Shelley [mailto:sll@ansto.gov.au]
Sent: Tuesday, 12 December 2017 4:26 PM
To: Mark Cossins
Cc: BERGHOFER, Paula
Subject: RE: Sharing of Inspector Report Inspector Report MC00002372 ANSTO - Lucas Heights NSW [SEC=UNCLASSIFIED]

Hello Mark

As we discussed on the phone, ANSTO would like to resubmit our minor amendments to the internal investigation conducted for this event.

Please find attached here.

A summary of our amendments:

- Overview – a review of the anticipated dose exposure
- Contributory Causes 4, 5 and 6 have been reworded to remove any perceived implication that the operator was to blame for this event.
  Please note that the original wording was not intended or written to imply that the operator was to blame, however s4 perceived it as such, and so the wording has been amended.

We would appreciate an amended Inspectors Report to reflect the amendments here. ANSTO is comfortable with you sharing your amended Inspectors report with ARPANSA. We have also been working closely with ARPANSA on the review and actions arising from this event.

We are just finalising one of our actions in response to your original inspectors report and still anticipate providing a response and update on action plans within the specified timeline of 20 December 2017.

Please feel free to contact me as per the details below.

Kind Regards
Shelley

Shelley Levy
Leader, WHS Systems/Acting Manager WHS
People Culture Safety and Security

Australian Nuclear Science and Technology Organisation

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Attachments: Concise Investigation Report GRC3273 rev1 FINAL (2).pdf; Concise Investigation Report 21 Sept.pdf; 2017-11-16 - Final Inspector Report #1- MC00002372 - Australian Nuclear Science and Technology Organisation.pdf

Security Classification:
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Shelley Levy
Leader, WHS Systems/Acting Manager WHS
People Culture Safety and Security

Australian Nuclear Science and Technology Organisation

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Mobile s47F
Email sll@ansto.gov.au
Web www.ansto.gov.au

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Shelley,

RE: MC00002372 ANSTO- Worker exposed to radioactive MO 99 - Superficial Burn - Lucas Heights NSW

I am writing to you to seek ANSTO's agreement to the provision of a copy of the Comcare Inspector Report for the Mo99 exposure incident to ARPANSA.

Any names in the report will be redacted prior to sharing it with them.

Happy to discuss if you have any questions.

Thank you
Regards

Mark Cossins BA MSc (OHS & Env Mgmt)
Acting Assistant Director
Regional Operations NSW | Regulatory Operations Group
T 02 8218 3736 | M s47F | E cossins.mark@comcare.gov.au
A GPO Box 1993, Canberra, ACT 2601

Australian Government
Comcare

Inspector Appointed under Work Health and Safety Act 2011

Australian Government
Comcare

INSPECTOR REPORT

COMCARE REFERENCE	MC000002372		**Report No.**	#1
PCBU DETAILS	**Name**	Australian Nuclear Science and Technology Organisation		
	Address	Locked Bag 2001 KIRRAWEE NSW 2232		
	ABN	47956969590		
REPORT ISSUED TO	**Name**	Shelley Levy		
	Position	Leader WHS Systems		
COPY OF REPORT GIVEN TO	**Name**	Ralph Blake		
	Position	Manager WHS		
RELEVANT WORKPLACE/S OR WORKSITE	**Name**	Building s33 (ANSTO Health Facility)		
	Address	New Illawarra Rd LUCAS HEIGHTS NSW 2234		
	Date	22 August 2017		
OTHER PERSONS ATTENDING WITH INSPECTOR	**Name**	NA		
	Position	NA		

PURPOSE OF INSPECTION

1. At approximately 07:00am on 22 August 2017, Australian Nuclear Science and Technology Organisation (ANSTO) Quality Control (QC) Analyst, working in the ANSTO Health Facility, received a radiation skin dose following the uncontrolled spillage of Molybdenum 99 (Mo-99) during a vial de-capping procedure (the incident).
2. The purpose of this compliance monitoring activity under the WHS Act to seek assurance that ANSTO:
    a. Responded appropriately to this incident;
    b. Took reasonable and practicable steps to remedy any ongoing risks;
    c. Identified and implemented appropriate corrective actions to prevent a recurrence; and
3. This compliance and monitoring activity also seeks to clarify the reasoning for the delay in notification.

OUTCOMES

4. From my observations and discussions with ANSTO representatives, and a review of the documentation provided I make the following recommendations:
    i. ANSTO are to review organisational awareness and training in relation to the notification of Dangerous Incidents;
    ii. ANSTO are to ensure risk assessments are reviewed:
        - at regular intervals proportional to the severity of the assessed risk;
        - whenever there is a change to process, procedure and/or equipment; and

- following incidents.

iii. ANSTO are to provide evidence of implementation of the above recommendations to Comcare by 20 December 2017.

5. Apart from the above recommendations, I am satisfied that ANSTO has undertaken a detailed investigation to identify relevant contributory factors to the incident; and actions as outlined are reasonable in the circumstance and adequately address any safety concerns identified to prevent a recurrence.

ACTIONS AND OBSERVATIONS

6. ANSTO first contacted Comcare in relation to the incident on 11 September 2017 to discuss notifying the incident. The incident was not initially notified to Comcare as ANSTO assessed the incident as not notifiable, based on the initial presentation of the injury and the criteria for a Serious Personal Injury.

7. The incident was formally notified to Comcare on 19 October 2017. ANSTO notified the incident to Comcare as a Serious Personal Injury based on worsening presentation of the injury to the QC analyst; and information provided by medical specialists.

8. The Inspector notes that this incident falls within the definition of a dangerous incident as stated in s37 of the WHS Act 2011. The incident exposed a worker to a serious risk to their health and safety which emanated from an immediate exposure to an uncontrolled spillage of a substance.

9. The written notification to Comcare states the incident was notified to Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) as required.

10. On 02 November 2017, I requested a copy of the ANSTO Incident Investigation Report into the incident. On 09 November 2017, I received a copy of ANSTO Concise Investigation Report *Radiation Exposure to Hands of Mo-99 QC Analyst from Glove Contamination.*

11. The ANSTO Investigation Report states, on 08 September 2017, the QC Analyst's injuries were observed as skin reddening and some evidence of blistering on the third knuckle of more than one finger on each hand. The timing of the symptoms, 15 days after the incident, is consistent with mild forms of radiation dermatitis.

12. The investigation determined the QC Analyst received a significant radiation dose to the skin within a short time (approximately 20 seconds).

13. A retrospective dose assessment provided a probable equivalent skin dose of ~850 mSv ± 250 millisieverts (mSv) and a potential equivalent dose of up to 3320 mSv ± 985 mSv in the first 25.5 hours of exposure; both values are in excess of the annual regulatory dose limit of 500mSv.

14. The ANSTO report considered the likelihood of Acute Radiation Syndrome to be extremely unlikely based on the localised nature of the radiation exposure. The effective radiation dose is estimated to be equivalent to a whole body dose of ~8.5 mSv ± 2.5 mSv which is below the regulatory limit of 20 mSv per year averaged over 5 years; and below the 50 mSv in any single year.

15. The investigation found the QC Analyst had completed training in the dispensing of Mo-99 and was deemed competent to perform testing. Although the analyst had experience in analytical testing laboratories, their experience with working with radioactive materials only extended to s47F when they commenced working with ANSTO.

16. The glove removal technique used by the analyst at the time of the incident was

considered as a possible contributing factor to the spread of contamination.

17. The investigation found the de-capping equipment used during the vial de-capping procedure required maintenance or replacement prior to the incident; however, it appears to have been accepted as adequate for the task.

18. The design of the 25mm lead pot which housed the Mo-99 vial required the use of forceps to grip the neck of the vial to hold it above the rim of the pot to enable de-capping. The investigation report describes this manoeuvre as 'difficult'.

19. The technique for gripping the vial by the neck was included in training. The investigation found the analyst had gripped the vial by the body rather than the neck at the time of the incident.

20. The ANSTO investigation found the radioactive content of the Mo-99 sample was greater than what was required to undertake quality control testing.

21. Long cuff gloves normally used for quality control had recently not been used due to a lack of supply. The report states the use of long cuff gloves would likely have reduced the risk of skin contamination during glove removal following the spill.

22. The investigation found the Systems Safety & Reliability (SSR) Risk Assessment for the quality control process assessed the risk of injury as 'High' based on a 'Major' consequence with a likelihood of 'Likely'. The ANSTO Risk Analysis Matrix requires the following action where a risk is assessed as 'High":

    - *Report the situation immediately to the relevant Executive / General Manager advising them to withdraw from the risk, or control the risk source to achieve a tolerable level of risk (ensuring close scrutiny until the controls are implemented);*
    - *Report this risk also to the Senior Manager, GRC & Assurance.*

23. The investigator did not find any documentary evidence which showed the risk had been discussed with, or accepted by, the senior management of ANSTO Health.

24. The ANSTO Report states the SSR carried out the risk assessment for the Quality Control process in Building s33 in December 2015. The report does not provide evidence to indicate the risk assessment was reviewed following a change to the personal protective equipment (gloves) described at Paragraph 21; nor at any time between the initial assessment of the process and the incident, a period of 21 months.

25. The investigation found there was anecdotal evidence of previous occasions where vials had been dropped during similar de-capping procedures; however, these did not result in spillage. Reporting of these 'near hit' instances may have led to improvements in procedures to reduce the risks associated with radioactive vial handling.

ANSTO Recommendations

26. The ANSTO Investigation Report makes the following recommendations to prevent a recurrence:

    i. The faulty de-capper to be repaired or replaced (complete);

    ii. Long cuff gloves to be used as primary gloves for all QC Analysts; standard gloves are to be placed over the long cuff gloves and changed frequently (complete);

    iii. Retrain analysts on vial handling technique when using forceps (complete);

    iv. Reduce Mo-99 radioactive content to the minimum required for single

testing (complete);

v. Consideration of dilution of bulk Mo-99 samples to reduce radiation risk to analysts (in progress);

vi. Substitute 25mm lead pot with 19mm lead pot to reduce vial handling difficulty (complete);

vii. Consider substitution of straight forceps with shaped forceps to provide improved grip of the vial neck (in progress);

viii. Consider substitution of manual de-capper with a remotely operated de-capper (in progress);

ix. Review other quality control processes to identify if similar lead pot size issues exist (complete);

x. ANSTO Health and Mo-99 QC to consult with SSR and recommend changes where the potential dose is unreasonable and update changes in the SSR Risk Assessments for the QC Process;

xi. Re-train analysts in glove change techniques to ensure reduced risk of contamination;

xii. Refresher training in QC testing, including de-capping, dispensing and sampling provided to QC Analysts on a regular basis;

xiii. Post pictorial aids for correct de-capping and dispensing techniques adjacent to the facilities these operations take place;

xiv. Regular awareness training on potential consequences and responses to personal contamination for analysts;

xv. Review the Radiation Protection Services (RPS) Personal Contamination Form;

xvi. QC Analysts to wear extremity dosimeters on the fingers rather the wrist to provide accurate reflection of radiation exposure on the fingers, especially in the instance of glove contamination;

xvii. Review maintenance response on items such as the de-capper to investigate why it was not repaired / replaced promptly;

xviii. ANSTO Health toolbox talks and training should include enhanced awareness of localised high radiation hazards from glove contamination when working with high specific activity materials;

xix. Refresher training on incident reporting, especially 'near hits';

xx. Review of process and controls for identified high risk activities;

xxi. Identified safety related "High" or "Very High" risks (after mitigations) should be escalated to the responsible senior managers (GM and above). Justification to accept "High" risk to be documented in the GRC system; and

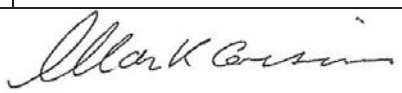
xxii. Review the potential for automation of sampling processes in QC activities within ANSTO to eliminate the potential for personal contamination with high specific activity radionuclides.

POWER EXERCISED (if any)

Section of Act	Nature of Inspector action/decision
None	Not exercised

COMPLIANCE STATUS OF PREVIOUSLY ISSUED NOTICES (if any)

Notice	Description	Status
None	None	None

REPORT ISSUED BY	**Inspector:**	Mark Cossins	**Phone:**	02 8218 3736
	Email:	cossins.mark@comcare.gov.au	**Region:**	NSW
INSPECTOR'S SIGNATURE	**Signature:** 		**Date:** 15/11/2017	

DISCLAIMER

This report contains information that may assist you take steps in regards to your obligations under the WHS Act. You must refer to the *Work Health and Safety Act 2011* (Cth) (**WHS Act**) and *Work Health and Safety Regulations 2011* (Cth) (**WHS Regulations**) to understand your duties and obligations. Comcare's external website contains hyperlinks to WHS Act legislation.

Comcare does not accept liability for any errors or omissions or for any loss or damage suffered by you or any person which arises from your reliance on this report or for any breach by you of your obligations under the WHS Act. Where a Comcare Inspector has inspected a particular workplace is not a representation by Comcare that the particular workplace is in any way free of hazards.

NEED HELP?

Contact the Inspector to discuss any aspect of this Inspector Report. The Inspector should be contacted if you wish to view photographs, documents or other evidence taken by the Inspector if they attended your workplace.

Comcare has a range of publications and fact sheets to help explain your responsibilities and provide guidance to make your workplace safer. The *Compliance and Enforcement Policy* provides guidance as to how Comcare approaches regulation. To access these, visit our website.

REVIEW OF DECISIONS

Where a Decision Maker Review is unsatisfactory, the recipient of the report should seek independent legal advice on review rights.

PRIVACY STATEMENT

Your privacy is important to us. We will only collect, use or disclose personal information in accordance with the *Privacy Act 1988* (Cth) and if it is reasonably necessary for, or directly related to, one or more of our functions, powers and/or activities. These include functions and activities under the *Safety, Rehabilitation and Compensation Act 1988* (Cth), the WHS Act, the *Seafarer's Rehabilitation and Compensation Act 1992* (Cth), and the *Asbestos-related Claims (Management of Commonwealth Liabilities) Act 2005* (Cth). If Comcare does not collect personal information from you, for the purposes of its legislated functions or related functions, we may not be able to respond appropriately.

Comcare is the Commonwealth agency authorised by the WHS Act to collect personal information relevant to the exercise of functions and powers under the WHS Act, *Work Health and Safety Regulations 2011* and the administration and evaluation of Comcare's WHS programs. Any personal information collected in these forms will be used for those purposes.

In exercising our functions and powers, we may disclose personal information, subject to confidentiality of information provisions under the WHS Act, to the following bodies and agencies, including but not limited to:

- Comcare's internal and external legal advisers
- the Safety, Rehabilitation and Compensation Commission
- a court or tribunal
- state or territory work health and safety regulatory agencies
- personnel engaged by Comcare to conduct research related activities
- enforcement agencies or bodies
- state and territory Coroners
- Commonwealth, state or territory industry regulators
- any other person assisting Comcare in the performance of its functions or exercise of its powers, including contractors and consultants
- any other person where there is an obligation under law to do so (for example but not limited to, responding to the direction of a court to produce documentation).

For further information on how Comcare handles personal information, please read our Privacy Policy on our website. To request a change to your personal information or to make a complaint, please phone or email us at privacy@comcare.gov.au.

www.comcare.gov.au | 1300 366 979

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Jordan Crabbe

From: Mark Cossins
Sent: Thursday, 14 December 2017 2:37 PM
To: Lisa Daffen
Subject: FW: Sharing of Inspector Report Inspector Report MC00002372 ANSTO - Lucas Heights NSW [SEC=UNCLASSIFIED] CRM:0006300186
Attachments: Concise Investigation Report GRC3273 rev1 FINAL (2).pdf; Concise Investigation Report 21 Sept.pdf; 2017-11-16 - Final Inspector Report #1- MC00002372 - Australian Nuclear Science and Technology Organisation.pdf

Security Classification:
UNCLASSIFIED

UNCLASSIFIED

Lisa,

Attached are the amended ANSTO report (GRC3273), original ANSTO report and my Inspector Report.

As discussed, I would appreciate your review in light of the request below.

Thank you
Regards

Mark Cossins BA MSc (OHS & Env Mgmt)
Senior Inspector
Regional Operations NSW | Regulatory Operations Group
T 02 8218 3736 | M s47F | E cossins.mark@comcare.gov.au
A GPO Box 1993, Canberra, ACT 2601

Australian Government
Comcare

Inspector Appointed under Work Health and Safety Act 2011

From: LEVY, Shelley [mailto:sll@ansto.gov.au]
Sent: Tuesday, 12 December 2017 4:26 PM
To: Mark Cossins
Cc: BERGHOFER, Paula
Subject: RE: Sharing of Inspector Report Inspector Report MC00002372 ANSTO - Lucas Heights NSW [SEC=UNCLASSIFIED]

Hello Mark

As we discussed on the phone, ANSTO would like to resubmit our minor amendments to the internal investigation conducted for this event.

Please find attached here.

A summary of our amendments:

- Overview – a review of the anticipated dose exposure
- Contributory Causes 4, 5 and 6 have been reworded to remove any perceived implication that the operator was to blame for this event.
  Please note that the original wording was not intended or written to imply that the operator was to blame, however s4 perceived it as such, and so the wording has been amended.

We would appreciate an amended Inspectors Report to reflect the amendments here. ANSTO is comfortable with you sharing your amended Inspectors report with ARPANSA. We have also been working closely with ARPANSA on the review and actions arising from this event.

We are just finalising one of our actions in response to your original inspectors report and still anticipate providing a response and update on action plans within the specified timeline of 20 December 2017.

Please feel free to contact me as per the details below.

Kind Regards
Shelley

Shelley Levy
Leader, WHS Systems/Acting Manager WHS
People Culture Safety and Security

Australian Nuclear Science and Technology Organisation

Tel +61 2 9717 3757
Mobile s47F
Email sll@ansto.gov.au
Web www.ansto.gov.au

From: Mark Cossins [mailto:Cossins.Mark@comcare.gov.au]
Sent: Monday, 27 November 2017 12:11 PM
To: LEVY, Shelley
Subject: Sharing of Inspector Report Inspector Report MC00002372 ANSTO - Lucas Heights NSW [SEC=UNCLASSIFIED]

UNCLASSIFIED

Shelley,

RE: MC00002372 ANSTO- Worker exposed to radioactive MO 99 - Superficial Burn - Lucas Heights NSW

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Inspector Appointed under Work Health and Safety Act 2011

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Australian Government
Comcare

INSPECTOR REPORT

COMCARE REFERENCE	MC000002372	**Report No.**	#1
PCBU DETAILS	**Name**	Australian Nuclear Science and Technology Organisation	
	Address	Locked Bag 2001 KIRRAWEE NSW 2232	
	ABN	47956969590	
REPORT ISSUED TO	**Name**	Shelley Levy	
	Position	Leader WHS Systems	
COPY OF REPORT GIVEN TO	**Name**	Ralph Blake	
	Position	Manager WHS	
RELEVANT WORKPLACE/S OR WORKSITE	**Name**	Building s33 (ANSTO Health Facility)	
	Address	New Illawarra Rd LUCAS HEIGHTS NSW 2234	
	Date	22 August 2017	
OTHER PERSONS ATTENDING WITH INSPECTOR	**Name**	NA	
	Position	NA	

PURPOSE OF INSPECTION

1. At approximately 07:00am on 22 August 2017, Australian Nuclear Science and Technology Organisation (ANSTO) Quality Control (QC) Analyst, working in the ANSTO Health Facility, received a radiation skin dose following the uncontrolled spillage of Molybdenum 99 (Mo-99) during a vial de-capping procedure (the incident).
2. The purpose of this compliance monitoring activity under the WHS Act to seek assurance that ANSTO:
    a. Responded appropriately to this incident;
    b. Took reasonable and practicable steps to remedy any ongoing risks;
    c. Identified and implemented appropriate corrective actions to prevent a recurrence; and
3. This compliance and monitoring activity also seeks to clarify the reasoning for the delay in notification.

OUTCOMES

4. From my observations and discussions with ANSTO representatives, and a review of the documentation provided I make the following recommendations:
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    ii. ANSTO are to ensure risk assessments are reviewed:
        - at regular intervals proportional to the severity of the assessed risk;
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- following incidents.

iii. ANSTO are to provide evidence of implementation of the above recommendations to Comcare by 20 December 2017.

5. Apart from the above recommendations, I am satisfied that ANSTO has undertaken a detailed investigation to identify relevant contributory factors to the incident; and actions as outlined are reasonable in the circumstance and adequately address any safety concerns identified to prevent a recurrence.

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6. ANSTO first contacted Comcare in relation to the incident on 11 September 2017 to discuss notifying the incident. The incident was not initially notified to Comcare as ANSTO assessed the incident as not notifiable, based on the initial presentation of the injury and the criteria for a Serious Personal Injury.

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ANSTO Recommendations

26. The ANSTO Investigation Report makes the following recommendations to prevent a recurrence:

    i. The faulty de-capper to be repaired or replaced (complete);

    ii. Long cuff gloves to be used as primary gloves for all QC Analysts; standard gloves are to be placed over the long cuff gloves and changed frequently (complete);

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testing (complete);

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ix. Review other quality control processes to identify if similar lead pot size issues exist (complete);

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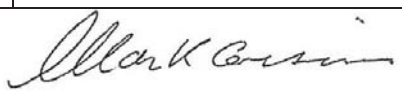
xxii. Review the potential for automation of sampling processes in QC activities within ANSTO to eliminate the potential for personal contamination with high specific activity radionuclides.

POWER EXERCISED (if any)

Section of Act	Nature of Inspector action/decision
None	Not exercised

COMPLIANCE STATUS OF PREVIOUSLY ISSUED NOTICES (if any)

Notice	Description	Status
None	None	None

REPORT ISSUED BY	**Inspector:**	Mark Cossins	**Phone:**	02 8218 3736
	Email:	cossins.mark@comcare.gov.au	**Region:**	NSW
INSPECTOR'S SIGNATURE	**Signature:** 		**Date:** 15/11/2017	

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Your privacy is important to us. We will only collect, use or disclose personal information in accordance with the *Privacy Act 1988* (Cth) and if it is reasonably necessary for, or directly related to, one or more of our functions, powers and/or activities. These include functions and activities under the *Safety, Rehabilitation and Compensation Act 1988* (Cth), the WHS Act, the *Seafarer's Rehabilitation and Compensation Act 1992* (Cth), and the *Asbestos-related Claims (Management of Commonwealth Liabilities) Act 2005* (Cth). If Comcare does not collect personal information from you, for the purposes of its legislated functions or related functions, we may not be able to respond appropriately.

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- a court or tribunal
- state or territory work health and safety regulatory agencies
- personnel engaged by Comcare to conduct research related activities
- enforcement agencies or bodies
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- Commonwealth, state or territory industry regulators
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www.comcare.gov.au | 1300 366 979

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Jordan Crabbe

From: LEVY, Shelley <sll@ansto.gov.au>
Sent: Thursday, 16 November 2017 9:50 AM
To: Mark Cossins
Cc: RPB
Subject: RE: Inspector Report MC00002372 ANSTO - Lucas Heights NSW CRM:0006300124 [DLM=For-Official-Use-Only]

Good Morning Mark

Thankyou for sending your report through.

We will review and put together an action plan to address your recommendations.

Kind Regards
Shelley

From: Mark Cossins [mailto:Cossins.Mark@comcare.gov.au]
Sent: Thursday, 16 November 2017 9:30 AM
To: LEVY, Shelley
Cc: BLAKE, Ralph
Subject: Inspector Report MC00002372 ANSTO - Lucas Heights NSW [DLM=For-Official-Use-Only] CRM:0006300124

For Official Use Only

Shelley,

RE: MC00002372 ANSTO- Worker exposed to radioactive MO 99 - Superficial Burn - Lucas Heights NSW

Attached is the Inspector Report for the above Comcare Monitoring and Compliance activity.

Please note the Inspector recommendations in the report. If you have any questions or concerns, please contact me.

Thank you
Regards

Mark Cossins BA MSc (OHS & Env Mgmt)
Acting Assistant Director
Regional Operations NSW | Regulatory Operations Group
T 02 8218 3736 | M s47F | E cossins.mark@comcare.gov.au
A GPO Box 1993, Canberra, ACT 2601

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Inspector Appointed under Work Health and Safety Act 2011

about how we handle personal information, please visit www.comcare.gov.au/privacy or contact us on 1300 366 979 and request a copy of our Privacy Policy.

Jordan Crabbe

From: Mark Cossins
Sent: Thursday, 16 November 2017 9:30 AM
To: 'LEVY, Shelley'
Cc: RPB
Subject: HPE CM: Inspector Report MC00002372 ANSTO - Lucas Heights NSW [DLM=For-Official-Use-Only] CRM:0006300124
Attachments: Inspector Report #1- MC00002372 - Australian Nuclear Science and Technology Organisation.pdf

Security Classification:
For Official Use Only

For Official Use Only

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RE: MC00002372 ANSTO- Worker exposed to radioactive MO 99 - Superficial Burn - Lucas Heights NSW

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A GPO Box 1993, Canberra, ACT 2601

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Inspector Appointed under Work Health and Safety Act 2011

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INSPECTOR REPORT

COMCARE REFERENCE	MC000002372		**Report No.**	#1
PCBU DETAILS	**Name**	Australian Nuclear Science and Technology Organisation		
	Address	Locked Bag 2001 KIRRAWEE NSW 2232		
	ABN	47956969590		
REPORT ISSUED TO	**Name**	Shelley Levy		
	Position	Leader WHS Systems		
COPY OF REPORT GIVEN TO	**Name**	Ralph Blake		
	Position	Manager WHS		
RELEVANT WORKPLACE/S OR WORKSITE	**Name**	Building s33 (ANSTO Health Facility)		
	Address	New Illawarra Rd LUCAS HEIGHTS NSW 2234		
	Date	22 August 2017		
OTHER PERSONS ATTENDING WITH INSPECTOR	**Name**	NA		
	Position	NA		

PURPOSE OF INSPECTION

1. At approximately 07:00am on 22 August 2017, Australian Nuclear Science and Technology Organisation (ANSTO) Quality Control (QC) Analyst, working in the ANSTO Health Facility, received a radiation skin dose following the uncontrolled spillage of Molybdenum 99 (Mo-99) during a vial de-capping procedure (the incident).
2. The purpose of this compliance monitoring activity under the WHS Act to seek assurance that ANSTO:
    a. Responded appropriately to this incident;
    b. Took reasonable and practicable steps to remedy any ongoing risks;
    c. Identified and implemented appropriate corrective actions to prevent a recurrence; and
3. This compliance and monitoring activity also seeks to clarify the reasoning for the delay in notification.

OUTCOMES

4. From my observations and discussions with ANSTO representatives, and a review of the documentation provided I make the following recommendations:
    i. ANSTO are to review organisational awareness and training in relation to the notification of Dangerous Incidents;
    ii. ANSTO are to ensure risk assessments are reviewed:
        - at regular intervals proportional to the severity of the assessed risk;
        - whenever there is a change to process, procedure and/or equipment; and

- following incidents.

iii. ANSTO are to provide evidence of implementation of the above recommendations to Comcare by 20 December 2017.

5. Apart from the above recommendations, I am satisfied that ANSTO has undertaken a detailed investigation to identify relevant contributory factors to the incident; and actions as outlined are reasonable in the circumstance and adequately address any safety concerns identified to prevent a recurrence.

ACTIONS AND OBSERVATIONS

6. ANSTO first contacted Comcare in relation to the incident on 11 September 2017 to discuss notifying the incident. The incident was not initially notified to Comcare as ANSTO assessed the incident as not notifiable, based on the initial presentation of the injury and the criteria for a Serious Personal Injury.

7. The incident was formally notified to Comcare on 19 October 2017. ANSTO notified the incident to Comcare as a Serious Personal Injury based on worsening presentation of the injury to the QC analyst; and information provided by medical specialists.

8. The Inspector notes that this incident falls within the definition of a dangerous incident as stated in s37 of the WHS Act 2011. The incident exposed a worker to a serious risk to their health and safety which emanated from an immediate exposure to an uncontrolled spillage of a substance.

9. The written notification to Comcare states the incident was notified to Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) as required.

10. On 02 November 2017, I requested a copy of the ANSTO Incident Investigation Report into the incident. On 09 November 2017, I received a copy of ANSTO Concise Investigation Report *Radiation Exposure to Hands of Mo-99 QC Analyst from Glove Contamination.*

11. The ANSTO Investigation Report states, on 08 September 2017, the QC Analyst's injuries were observed as skin reddening and some evidence of blistering on the third knuckle of more than one finger on each hand. The timing of the symptoms, 15 days after the incident, is consistent with mild forms of radiation dermatitis.

12. The investigation determined the QC Analyst received a significant radiation dose to the skin within a short time (approximately 20 seconds).

13. A retrospective dose assessment provided a probable equivalent skin dose of ~850 mSv ± 250 millisieverts (mSv) and a potential equivalent dose of up to 3320 mSv ± 985 mSv in the first 25.5 hours of exposure; both values are in excess of the annual regulatory dose limit of 500mSv.

14. The ANSTO report considered the likelihood of Acute Radiation Syndrome to be extremely unlikely based on the localised nature of the radiation exposure. The effective radiation dose is estimated to be equivalent to a whole body dose of ~8.5 mSv ± 2.5 mSv which is below the regulatory limit of 20 mSv per year averaged over 5 years; and below the 50 mSv in any single year.

15. The investigation found the QC Analyst had completed training in the dispensing of Mo-99 and was deemed competent to perform testing. Although the analyst had experience in analytical testing laboratories, their experience with working with radioactive materials only extended to s47F when they commenced working with ANSTO.

16. The glove removal technique used by the analyst at the time of the incident was

considered as a possible contributing factor to the spread of contamination.

17. The investigation found the de-capping equipment used during the vial de-capping procedure required maintenance or replacement prior to the incident; however, it appears to have been accepted as adequate for the task.

18. The design of the 25mm lead pot which housed the Mo-99 vial required the use of forceps to grip the neck of the vial to hold it above the rim of the pot to enable de-capping. The investigation report describes this manoeuvre as 'difficult'.

19. The technique for gripping the vial by the neck was included in training. The investigation found the analyst had gripped the vial by the body rather than the neck at the time of the incident.

20. The ANSTO investigation found the radioactive content of the Mo-99 sample was greater than what was required to undertake quality control testing.

21. Long cuff gloves normally used for quality control had recently not been used due to a lack of supply. The report states the use of long cuff gloves would likely have reduced the risk of skin contamination during glove removal following the spill.

22. The investigation found the Systems Safety & Reliability (SSR) Risk Assessment for the quality control process assessed the risk of injury as 'High' based on a 'Major' consequence with a likelihood of 'Likely'. The ANSTO Risk Analysis Matrix requires the following action where a risk is assessed as 'High":

    - *Report the situation immediately to the relevant Executive / General Manager advising them to withdraw from the risk, or control the risk source to achieve a tolerable level of risk (ensuring close scrutiny until the controls are implemented);*
    - *Report this risk also to the Senior Manager, GRC & Assurance.*

23. The investigator did not find any documentary evidence which showed the risk had been discussed with, or accepted by, the senior management of ANSTO Health.

24. The ANSTO Report states the SSR carried out the risk assessment for the Quality Control process in Building s33 in December 2015. The report does not provide evidence to indicate the risk assessment was reviewed following a change to the personal protective equipment (gloves) described at Paragraph 21; nor at any time between the initial assessment of the process and the incident, a period of 21 months.

25. The investigation found there was anecdotal evidence of previous occasions where vials had been dropped during similar de-capping procedures; however, these did not result in spillage. Reporting of these 'near hit' instances may have led to improvements in procedures to reduce the risks associated with radioactive vial handling.

ANSTO Recommendations

26. The ANSTO Investigation Report makes the following recommendations to prevent a recurrence:

    i. The faulty de-capper to be repaired or replaced (complete);

    ii. Long cuff gloves to be used as primary gloves for all QC Analysts; standard gloves are to be placed over the long cuff gloves and changed frequently (complete);

    iii. Retrain analysts on vial handling technique when using forceps (complete);

    iv. Reduce Mo-99 radioactive content to the minimum required for single

testing (complete);

v. Consideration of dilution of bulk Mo-99 samples to reduce radiation risk to analysts (in progress);

vi. Substitute 25mm lead pot with 19mm lead pot to reduce vial handling difficulty (complete);

vii. Consider substitution of straight forceps with shaped forceps to provide improved grip of the vial neck (in progress);

viii. Consider substitution of manual de-capper with a remotely operated de-capper (in progress);

ix. Review other quality control processes to identify if similar lead pot size issues exist (complete);

x. ANSTO Health and Mo-99 QC to consult with SSR and recommend changes where the potential dose is unreasonable and update changes in the SSR Risk Assessments for the QC Process;

xi. Re-train analysts in glove change techniques to ensure reduced risk of contamination;

xii. Refresher training in QC testing, including de-capping, dispensing and sampling provided to QC Analysts on a regular basis;

xiii. Post pictorial aids for correct de-capping and dispensing techniques adjacent to the facilities these operations take place;

xiv. Regular awareness training on potential consequences and responses to personal contamination for analysts;

xv. Review the Radiation Protection Services (RPS) Personal Contamination Form;

xvi. QC Analysts to wear extremity dosimeters on the fingers rather the wrist to provide accurate reflection of radiation exposure on the fingers, especially in the instance of glove contamination;

xvii. Review maintenance response on items such as the de-capper to investigate why it was not repaired / replaced promptly;

xviii. ANSTO Health toolbox talks and training should include enhanced awareness of localised high radiation hazards from glove contamination when working with high specific activity materials;

xix. Refresher training on incident reporting, especially 'near hits';

xx. Review of process and controls for identified high risk activities;

xxi. Identified safety related "High" or "Very High" risks (after mitigations) should be escalated to the responsible senior managers (GM and above). Justification to accept "High" risk to be documented in the GRC system; and

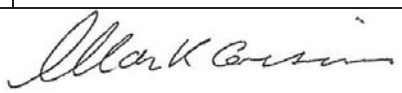
xxii. Review the potential for automation of sampling processes in QC activities within ANSTO to eliminate the potential for personal contamination with high specific activity radionuclides.

POWER EXERCISED (if any)

Section of Act	Nature of Inspector action/decision
None	Not exercised

COMPLIANCE STATUS OF PREVIOUSLY ISSUED NOTICES (if any)

Notice	Description	Status
None	None	None

REPORT ISSUED BY	**Inspector:**	Mark Cossins	**Phone:**	02 8218 3736
	Email:	cossins.mark@comcare.gov.au	**Region:**	NSW
INSPECTOR'S SIGNATURE	**Signature:** 		**Date:** 15/11/2017	

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NEED HELP?

Contact the Inspector to discuss any aspect of this Inspector Report. The Inspector should be contacted if you wish to view photographs, documents or other evidence taken by the Inspector if they attended your workplace.

Comcare has a range of publications and fact sheets to help explain your responsibilities and provide guidance to make your workplace safer. The *Compliance and Enforcement Policy* provides guidance as to how Comcare approaches regulation. To access these, visit our website.

REVIEW OF DECISIONS

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Jordan Crabbe

From: Brett Gardiner
Sent: Thursday, 16 November 2017 9:05 AM
To: Mark Cossins
Subject: Approved - 2017-11-16 - Final Inspector Report #1- MC00002372 - Australian Nuclear Science and Technology Organisation [DLM=For-Official-Use-Only] CRM:0006000529
Attachments: 2017-11-16 - Final Inspector Report #1- MC00002372 - Australian Nuclear Science and Technology Organisation.docm

Security Classification:
For Official Use Only

For Official Use Only

Approved no changes.

regards

Brett Gardiner
Assistant Director
Regional Operations NSW
Regulatory Operations Group
Inspector Appointed under *Work Health and Safety Act 2011*
Level 30, 477 Pitt Street, Sydney, NSW 2000
P 02 82183709 M s47F
E brett.gardiner@comcare.gov.au
Comcare
GPO Box 1993, Canberra, ACT 2601
1300 366 979 www.comcare.gov.au

From: Mark Cossins
Sent: Wednesday, 15 November 2017 12:13 PM
To: Brett Gardiner
Subject: Draft Inspector Report #1- MC00002372 - Australian Nuclear Science and Technology Organisation [DLM=For-Official-Use-Only] CRM:0006300121

For Official Use Only

Brett,

The Inspector Report for MC00002372 ANSTO- Worker exposed to radioactive MO 99 - Superficial Burn - Lucas Heights NSW is attached for your review/approval.

Thank you
Regards

Mark Cossins BA MSc (OHS & Env Mgmt)
Acting Assistant Director
Regional Operations NSW | Regulatory Operations Group
T 02 8218 3736 | M s47F |E cossins.mark@comcare.gov.au
A GPO Box 1993, Canberra, ACT 2601

Australian Government
Comcare

Inspector Appointed under Work Health and Safety Act 2011

Australian Government
Comcare

INSPECTOR REPORT

COMCARE REFERENCE	MC000002372		**Report No.**	#1
PCBU DETAILS	**Name**	Australian Nuclear Science and Technology Organisation		
	Address	Locked Bag 2001 KIRRAWEE NSW 2232		
	ABN	47956969590		
REPORT ISSUED TO	**Name**	Shelley Levy		
	Position	Leader WHS Systems		
COPY OF REPORT GIVEN TO	**Name**	NA		
	Position	NA		
RELEVANT WORKPLACE/S OR WORKSITE	**Name**	Building s33 (ANSTO Health Facility)		
	Address	New Illawarra Rd LUCAS HEIGHTS NSW 2234		
	Date	22 August 2017		
OTHER PERSONS ATTENDING WITH INSPECTOR	**Name**	NA		
	Position	NA		

PURPOSE OF INSPECTION

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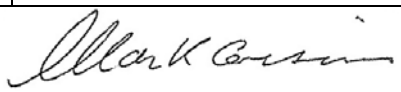
POWER EXERCISED (if any)

Section of Act	Nature of Inspector action/decision
None	Not exercised

COMPLIANCE STATUS OF PREVIOUSLY ISSUED NOTICES (if any)

Notice	Description	Status
None	None	None

REPORT ISSUED BY	**Inspector:**	Mark Cossins	**Phone:**	02 8218 3736
	Email:	cossixx.xxxx@xxxxxxx.xxx.xx	**Region:**	NSW
INSPECTOR'S SIGNATURE	**Signature:** 		**Date:** 15/11/2017	

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Comcare does not accept liability for any errors or omissions or for any loss or damage suffered by you or any person which arises from your reliance on this report or for any breach by you of your obligations under the WHS Act. Where a Comcare Inspector has inspected a particular workplace is not a representation by Comcare that the particular workplace is in any way free of hazards.

NEED HELP?

Contact the Inspector to discuss any aspect of this Inspector Report. The Inspector should be contacted if you wish to view photographs, documents or other evidence taken by the Inspector if they attended your workplace.

Comcare has a range of publications and fact sheets to help explain your responsibilities and provide guidance to make your workplace safer. The *Compliance and Enforcement Policy* provides guidance as to how Comcare approaches regulation. To access these, visit our website.

REVIEW OF DECISIONS

Where a Decision Maker Review is unsatisfactory, the recipient of the report should seek independent legal advice on review rights.

PRIVACY STATEMENT

Your privacy is important to us. We will only collect, use or disclose personal information in accordance with the *Privacy Act 1988* (Cth) and if it is reasonably necessary for, or directly related to, one or more of our functions, powers and/or activities. These include functions and activities under the *Safety, Rehabilitation and Compensation Act 1988* (Cth), the WHS Act, the *Seafarer's Rehabilitation and Compensation Act 1992* (Cth), and the *Asbestos-related Claims (Management of Commonwealth Liabilities) Act 2005* (Cth). If Comcare does not collect personal information from you, for the purposes of its legislated functions or related functions, we may not be able to respond appropriately.

Comcare is the Commonwealth agency authorised by the WHS Act to collect personal information relevant to the exercise of functions and powers under the WHS Act, *Work Health and Safety Regulations 2011* and the administration and evaluation of Comcare's WHS programs. Any personal information collected in these forms will be used for those purposes.

In exercising our functions and powers, we may disclose personal information, subject to confidentiality of information provisions under the WHS Act, to the following bodies and agencies, including but not limited to:

- Comcare's internal and external legal advisers
- the Safety, Rehabilitation and Compensation Commission
- a court or tribunal
- state or territory work health and safety regulatory agencies
- personnel engaged by Comcare to conduct research related activities
- enforcement agencies or bodies
- state and territory Coroners
- Commonwealth, state or territory industry regulators
- any other person assisting Comcare in the performance of its functions or exercise of its powers, including contractors and consultants
- any other person where there is an obligation under law to do so (for example but not limited to, responding to the direction of a court to produce documentation).

For further information on how Comcare handles personal information, please read our Privacy Policy on our website. To request a change to your personal information or to make a complaint, please phone or email us at privacy@comcare.gov.au.

www.comcare.gov.au | 1300 366 979

Jordan Crabbe

From: Mark Cossins
Sent: Wednesday, 15 November 2017 12:13 PM
To: Brett Gardiner
Subject: Draft Inspector Report #1- MC00002372 - Australian Nuclear Science and Technology Organisation [DLM=For-Official-Use-Only] CRM:0006300121
Attachments: Draft Inspector Report #1- MC00002372 - Australian Nuclear Science and Technology Organisation.docm

Security Classification:
For Official Use Only

For Official Use Only

Brett,

The Inspector Report for MC00002372 ANSTO- Worker exposed to radioactive MO 99 - Superficial Burn - Lucas Heights NSW is attached for your review/approval.

Thank you
Regards

Mark Cossins BA MSc (OHS & Env Mgmt)
Acting Assistant Director
Regional Operations NSW | Regulatory Operations Group
T 02 8218 3736 | M s47F | E cossins.mark@comcare.gov.au
A GPO Box 1993, Canberra, ACT 2601

Australian Government
Comcare

Inspector Appointed under Work Health and Safety Act 2011

Australian Government
Comcare

INSPECTOR REPORT

COMCARE REFERENCE	MC000002372		**Report No.**	#1
PCBU DETAILS	**Name**	Australian Nuclear Science and Technology Organisation		
	Address	Locked Bag 2001 KIRRAWEE NSW 2232		
	ABN	47956969590		
REPORT ISSUED TO	**Name**	Shelley Levy		
	Position	Leader WHS Systems		
COPY OF REPORT GIVEN TO	**Name**	NA		
	Position	NA		
RELEVANT WORKPLACE/S OR WORKSITE	**Name**	Building s33 (ANSTO Health Facility)		
	Address	New Illawarra Rd LUCAS HEIGHTS NSW 2234		
	Date	22 August 2017		
OTHER PERSONS ATTENDING WITH INSPECTOR	**Name**	NA		
	Position	NA		

PURPOSE OF INSPECTION

1. At approximately 07:00am on 22 August 2017, Australian Nuclear Science and Technology Organisation (ANSTO) Quality Control (QC) Analyst, working in the ANSTO Health Facility, received a radiation skin dose following the uncontrolled spillage of Molybdenum 99 (Mo-99) during a vial de-capping procedure (the incident).
2. The purpose of this compliance monitoring activity under the WHS Act to seek assurance that ANSTO:
    a. Responded appropriately to this incident;
    b. Took reasonable and practicable steps to remedy any ongoing risks;
    c. Identified and implemented appropriate corrective actions to prevent a recurrence; and
3. This compliance and monitoring activity also seeks to clarify the reasoning for the delay in notification.

OUTCOMES

4. From my observations and discussions with ANSTO representatives, and a review of the documentation provided I make the following recommendations:
    i. ANSTO are to review organisational awareness and training in relation to the notification of Dangerous Incidents;
    ii. ANSTO are to ensure risk assessments are reviewed:
        - at regular intervals proportional to the severity of the assessed risk;
        - whenever there is a change to process, procedure and/or equipment; and

- following incidents.

iii. ANSTO are to provide evidence of implementation of the above recommendations to Comcare by 20 December 2017.

5. Apart from the above recommendations, I am satisfied that ANSTO has undertaken a detailed investigation to identify relevant contributory factors to the incident; and actions as outlined are reasonable in the circumstance and adequately address any safety concerns identified to prevent a recurrence.

ACTIONS AND OBSERVATIONS

6. ANSTO first contacted Comcare in relation to the incident on 11 September 2017 to discuss notifying the incident. The incident was not initially notified to Comcare as ANSTO assessed the incident as not notifiable, based on the initial presentation of the injury and the criteria for a Serious Personal Injury.

7. The incident was formally notified to Comcare on 19 October 2017. ANSTO notified the incident to Comcare as a Serious Personal Injury based on worsening presentation of the injury to the QC analyst; and information provided by medical specialists.

8. The Inspector notes that this incident falls within the definition of a dangerous incident as stated in s37 of the WHS Act 2011. The incident exposed a worker to a serious risk to their health and safety which emanated from an immediate exposure to an uncontrolled spillage of a substance.

9. The written notification to Comcare states the incident was notified to Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) as required.

10. On 02 November 2017, I requested a copy of the ANSTO Incident Investigation Report into the incident. On 09 November 2017, I received a copy of ANSTO Concise Investigation Report *Radiation Exposure to Hands of Mo-99 QC Analyst from Glove Contamination.*

11. The ANSTO Investigation Report states, on 08 September 2017, the QC Analyst's injuries were observed as skin reddening and some evidence of blistering on the third knuckle of more than one finger on each hand. The timing of the symptoms, 15 days after the incident, is consistent with mild forms of radiation dermatitis.

12. The investigation determined the QC Analyst received a significant radiation dose to the skin within a short time (approximately 20 seconds).

13. A retrospective dose assessment provided a probable equivalent skin dose of ~850 mSv ± 250 millisieverts (mSv) and a potential equivalent dose of up to 3320 mSv ± 985 mSv in the first 25.5 hours of exposure; both values are in excess of the annual regulatory dose limit of 500mSv.

14. The ANSTO report considered the likelihood of Acute Radiation Syndrome to be extremely unlikely based on the localised nature of the radiation exposure. The effective radiation dose is estimated to be equivalent to a whole body dose of ~8.5 mSv ± 2.5 mSv which is below the regulatory limit of 20 mSv per year averaged over 5 years; and below the 50 mSv in any single year.

15. The investigation found the QC Analyst had completed training in the dispensing of Mo-99 and was deemed competent to perform testing. Although the analyst had experience in analytical testing laboratories, their experience with working with radioactive materials only extended to s47F when they commenced working with ANSTO.

16. The glove removal technique used by the analyst at the time of the incident was

considered as a possible contributing factor to the spread of contamination.

17. The investigation found the de-capping equipment used during the vial de-capping procedure required maintenance or replacement prior to the incident; however, it appears to have been accepted as adequate for the task.

18. The design of the 25mm lead pot which housed the Mo-99 vial required the use of forceps to grip the neck of the vial to hold it above the rim of the pot to enable de-capping. The investigation report describes this manoeuvre as 'difficult'.

19. The technique for gripping the vial by the neck was included in training. The investigation found the analyst had gripped the vial by the body rather than the neck at the time of the incident.

20. The ANSTO investigation found the radioactive content of the Mo-99 sample was greater than what was required to undertake quality control testing.

21. Long cuff gloves normally used for quality control had recently not been used due to a lack of supply. The report states the use of long cuff gloves would likely have reduced the risk of skin contamination during glove removal following the spill.

22. The investigation found the Systems Safety & Reliability (SSR) Risk Assessment for the quality control process assessed the risk of injury as 'High' based on a 'Major' consequence with a likelihood of 'Likely'. The ANSTO Risk Analysis Matrix requires the following action where a risk is assessed as 'High":

- *Report the situation immediately to the relevant Executive / General Manager advising them to withdraw from the risk, or control the risk source to achieve a tolerable level of risk (ensuring close scrutiny until the controls are implemented);*
- *Report this risk also to the Senior Manager, GRC & Assurance.*

23. The investigator did not find any documentary evidence which showed the risk had been discussed with, or accepted by, the senior management of ANSTO Health.

24. The ANSTO Report states the SSR carried out the risk assessment for the Quality Control process in Building s33 in December 2015. The report does not provide evidence to indicate the risk assessment was reviewed following a change to the personal protective equipment (gloves) described at Paragraph 19; nor at any time between the initial assessment of the process and the incident, a period of 21 months.

25. The investigation found there was anecdotal evidence of previous occasions where vials had been dropped during similar de-capping procedures; however, these did not result in spillage. Reporting of these 'near hit' instances may have led to improvements in procedures to reduce the risks associated with radioactive vial handling.

ANSTO Recommendations

26. The ANSTO Investigation Report makes the following recommendations to prevent a recurrence:

i. The faulty de-capper to be repaired or replaced (complete);

ii. Long cuff gloves to be used as primary gloves for all QC Analysts; standard gloves are to be placed over the long cuff gloves and changed frequently (complete);

iii. Retrain analysts on vial handling technique when using forceps (complete);

iv. Reduce Mo-99 radioactive content to the minimum required for single

testing (complete);

v. Consideration of dilution of bulk Mo-99 samples to reduce radiation risk to analysts (in progress);

vi. Substitute 25mm lead pot with 19mm lead pot to reduce vial handling difficulty (complete);

vii. Consider substitution of straight forceps with shaped forceps to provide improved grip of the vial neck (in progress);

viii. Consider substitution of manual de-capper with a remotely operated de-capper (in progress);

ix. Review other quality control processes to identify if similar lead pot size issues exist (complete);

x. ANSTO Health and Mo-99 QC to consult with SSR and recommend changes where the potential dose is unreasonable and update changes in the SSR Risk Assessments for the QC Process;

xi. Re-train analysts in glove change techniques to ensure reduced risk of contamination;

xii. Refresher training in QC testing, including de-capping, dispensing and sampling provided to QC Analysts on a regular basis;

xiii. Post pictorial aids for correct de-capping and dispensing techniques adjacent to the facilities these operations take place;

xiv. Regular awareness training on potential consequences and responses to personal contamination for analysts;

xv. Review the Radiation Protection Services (RPS) Personal Contamination Form;

xvi. QC Analysts to wear extremity dosimeters on the fingers rather the wrist to provide accurate reflection of radiation exposure on the fingers, especially in the instance of glove contamination;

xvii. Review maintenance response on items such as the de-capper to investigate why it was not repaired / replaced promptly;

xviii. ANSTO Health toolbox talks and training should include enhanced awareness of localised high radiation hazards from glove contamination when working with high specific activity materials;

xix. Refresher training on incident reporting, especially ‘near hits’;

xx. Review of process and controls for identified high risk activities;

xxi. Identified safety related “High” or “Very High” risks (after mitigations) should be escalated to the responsible senior managers (GM and above). Justification to accept “High” risk to be documented in the GRC system; and

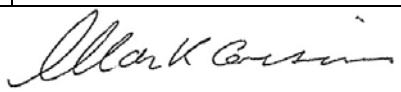
xxii. Review the potential for automation of sampling processes in QC activities within ANSTO to eliminate the potential for personal contamination with high specific activity radionuclides.

POWER EXERCISED (if any)

Section of Act	Nature of Inspector action/decision
None	Not exercised

COMPLIANCE STATUS OF PREVIOUSLY ISSUED NOTICES (if any)

Notice	Description	Status
None	None	None

REPORT ISSUED BY	**Inspector:**	Mark Cossins	**Phone:**	02 8218 3736
	Email:	cossixx.xxxx@xxxxxxx.xxx.xx	**Region:**	NSW
INSPECTOR'S SIGNATURE	**Signature:** 		**Date:** 15/11/2017	

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www.comcare.gov.au | 1300 366 979

Jordan Crabbe

From: LEVY, Shelley <sll@ansto.gov.au>
Sent: Thursday, 9 November 2017 11:01 AM
To: Mark Cossins
Cc: RPB
Subject: RE: MC00002372 ANSTO - Comcare Inspectorate Activity Commencing CRM:0005400167 [DLM=Sensitive]
Attachments: Concise Investigation Report 21 Sept.pdf

Good Morning Mark

Please see attached for our internal concise investigation report into this event.

Should you wish to discuss any of the circumstances or potential health effects with our Radiation Protection Advisers, please feel free to contact me as per the details below.

We have also provided a copy of this report to our radiation protection regulatory ARPANSA.

Many thanks and kind regards
Shelley Levy

Shelley Levy
Leader WHS Systems
People Culture Safety & Security

Australian Nuclear Science and Technology Organisation

Tel +61 2 9717 3757
Mobile s47F
Email sll@ansto.gov.au
Web www.ansto.gov.au

From: Mark Cossins [mailto:Cossins.Mark@comcare.gov.au]
Sent: Monday, 6 November 2017 11:15 AM
To: LEVY, Shelley
Cc: BLAKE, Ralph
Subject: FW: MC00002372 ANSTO - Comcare Inspectorate Activity Commencing CRM:0005400167 [DLM=Sensitive]

Sensitive

Shelley,

RE: MC00002372 ANSTO -Worker exposed to radioactive MO 99 - Superficial Burn - Lucas Heights NSW - 22 Aug 2017

I sent the below to Ralph but have since been informed that he is off work at present.

I request a copy of the ANSTO Incident Investigation Report once it is complete and cleared for release, please.

Please contact me if you have any questions.

Thank you
Regards

Mark Cossins BA MSc (OHS & Env Mgmt)
Acting Assistant Director
Regional Operations NSW | Regulatory Operations Group
T 02 8218 3736 | M s47F | E cossins.mark@comcare.gov.au
A GPO Box 1993, Canberra, ACT 2601

Inspector Appointed under Work Health and Safety Act 2011

From: Mark Cossins
Sent: Thursday, 2 November 2017 9:59 AM
To: RPB
Subject: RE: MC00002372 ANSTO - Comcare Inspectorate Activity Commencing CRM:0005400167 [DLM=Sensitive]

Sensitive

Ralph,

RE: MC00002372 ANSTO -Worker exposed to radioactive MO 99 - Superficial Burn - Lucas Heights NSW

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Inspector Appointed under Work Health and Safety Act 2011

From: Notify
Sent: Monday, 23 October 2017 4:21 PM
To: RPB
Cc: Mark Cossins
Subject: MC00002372 - Comcare Inspectorate Activity Commencing CRM:0005400167 [DLM=Sensitive]

Good afternoon Ralph

Comcare Reference Number: MC00002372 ANSTO -Worker exposed to radioactive MO 99 - Superficial Burn - Lucas Heights NSW incident date 8 Aug 2017

This email is to advise you that Comcare has completed an initial assessment of the matter referred to above and reported by you on 20.10.17. A Comcare Inspector will be in contact with you within 7 business days to discuss the next steps.

Regards

Nigel Docker

Assistant Director

Regional Operations NSW

Regulatory Operations Group

Inspector Appointed under Work Health and Safety Act 2011

P 0249151602 M s47F

E docker.nigel@comcare.gov.au

Comcare

GPO Box 1993, Canberra, ACT 2601

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Jordan Crabbe

From: LEVY, Shelley <sll@ansto.gov.au>
Sent: Monday, 6 November 2017 11:17 AM
To: Mark Cossins
Cc: RPB
Subject: RE: MC00002372 ANSTO - Comcare Inspectorate Activity Commencing CRM:0005400167 [DLM=Sensitive]

Good Morning Mark

I will make sure that we make that available to you as it becomes available.

My details are below, please feel free to contact me if you need anything for this matter.

Kind Regards
Shelley

From: Mark Cossins [mailto:Cossins.Mark@comcare.gov.au]
Sent: Monday, 6 November 2017 11:15 AM
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Cc: BLAKE, Ralph
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Nigel Docker

Assistant Director

Regional Operations NSW

Regulatory Operations Group

Inspector Appointed under Work Health and Safety Act 2011

P 0249151602 M s47F

E docker.nigel@comcare.gov.au

Comcare

GPO Box 1993, Canberra, ACT 2601

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Jordan Crabbe

From: Mark Cossins
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Subject: FW: MC00002372 ANSTO - Comcare Inspectorate Activity Commencing CRM:0005400167 [DLM=Sensitive]

Security Classification:
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Assistant Director

Regional Operations NSW

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Inspector Appointed under Work Health and Safety Act 2011

P 0249151602 M s47F

E docker.nigel@comcare.gov.au

Comcare

GPO Box 1993, Canberra, ACT 2601

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Jordan Crabbe

From: Beverley Smith
Sent: Thursday, 2 November 2017 11:08 AM
To: Mark Cossins
Subject: 2017-11-02 Approved Inspection Plan #1 - MC00002372 - Australian Nuclear Science and Technology Organisation [DLM=For-Official-Use-Only] CRM:0005500005
Attachments: 2017-11-02 Approved Inspection Plan #1 - MC00002372 - Australian Nuclear Science and Technology Organisation.docx

Security Classification:
For Official Use Only

For Official Use Only

Hi Mark

Approved Inspector Plan.

Regards

Bev Smith
Director | Regional Operations NSW | Regulatory Operations Group | Comcare
P 02 8218 3726 | M s47F
E xxxxxxxx.xxxxx@xxxxxxx.xxx.xx

Scheme Management and Regulation Division
Comcare
GPO Box 1993, Canberra, ACT 2601
1300 366 979 | www.comcare.gov.au

INSPECTION PLAN

MC ID	MC00002372	
PCBU	Australian Nuclear Science and Technology Org	
LEAD INSPECTOR	Mark Cossins	
SUMMARY OF THE MATTER	Type of Notification / WHS Concern	Dangerous Incident
	Workplace Location	LUCAS HEIGHTS, NSW, 2234
	Brief Description of the Matter	ANSTO- Worker exposed to radioactive MO 99 - Superficial Burn - Lucas Heights NSW

SCOPE
Focus on the matter at hand and what is needed to assess compliance against Act and relevant Regulations.

The purpose of this compliance monitoring activity under the WHS Act to seek assurance that ANSTO:

a. Responded appropriately to this incident;
b. Took reasonable and practicable steps to remedy any ongoing risks; and
c. Identified and implemented appropriate corrective actions to prevent a recurrence.

The activity also seeks to
d. clarify the reasoning for the delay in notification

ACTIONS TAKEN TO DATE
What actions taken so far by Comcare, PCBU or other parties involved.

Inspector has made contact with ANSTO POC to request a copy of the Incident Investigation Report.

Further action such as recommendations will be dependent upon the report findings/outcomes.

RESOURCES REQUIRED
What is needed, people, equipment, vehicle, PPE

1 x Inspector for desktop Inspection

TIMEFRAMES
Milestones to achieve, duration expected to complete inspection

Expect to be completed before the 45 Day Milestone

RISKS
Risk assessments required for travel/site visit. Media/union interest? Reputational risks?

Regulatory compliance risks associated with not taking action to investigate this incident; additionally, action is required to ensure incident reporting is compliant with legislative requirements.

ESTIMATED COSTS
Travel, SME, transcription etc.

Minimal

APPROVER NAME	Beverley Smith	**APPROVAL DATE**	2/11/17
APPROVER COMMENTS			

Jordan Crabbe

From: Mark Cossins
Sent: Thursday, 2 November 2017 10:14 AM
To: Beverley Smith
Subject: Inspection Plan #1 - MC00002372 - Australian Nuclear Science and Technology Organisation [SEC=UNCLASSIFIED] CRM:0006300086
Attachments: Inspection Plan #1 - MC00002372 - Australian Nuclear Science and Technology Organisation.docx

Security Classification:
UNCLASSIFIED

UNCLASSIFIED

Bev,

Attached Inspection plan for your review/approval.

Thank you
Regards

Mark Cossins BA MSc (OHS & Env Mgmt)
Acting Assistant Director
Regional Operations NSW | Regulatory Operations Group
T 02 8218 3736 | M s47F | E cossins.mark@comcare.gov.au
A GPO Box 1993, Canberra, ACT 2601

Australian Government
Comcare

Inspector Appointed under Work Health and Safety Act 2011

INSPECTION PLAN

MC ID	MC00002372	
PCBU	Australian Nuclear Science and Technology Org	
LEAD INSPECTOR	Mark Cossins	
SUMMARY OF THE MATTER	Type of Notification / WHS Concern	Dangerous Incident
	Workplace Location	LUCAS HEIGHTS, NSW, 2234
	Brief Description of the Matter	ANSTO- Worker exposed to radioactive MO 99 - Superficial Burn - Lucas Heights NSW

SCOPE
Focus on the matter at hand and what is needed to assess compliance against Act and relevant Regulations.

The purpose of this compliance monitoring activity under the WHS Act to seek assurance that ANSTO:

a. Responded appropriately to this incident;
b. Took reasonable and practicable steps to remedy any ongoing risks; and
c. Identified and implemented appropriate corrective actions to prevent a recurrence.

The activity also seeks to
d. clarify the reasoning for the delay in notification

ACTIONS TAKEN TO DATE
What actions taken so far by Comcare, PCBU or other parties involved.

Inspector has made contact with ANSTO POC to request a copy of the Incident Investigation Report.

Further action such as recommendations will be dependent upon the report findings/outcomes.

RESOURCES REQUIRED
What is needed, people, equipment, vehicle, PPE

1 x Inspector for desktop Inspection

TIMEFRAMES
Milestones to achieve, duration expected to complete inspection

Expect to be completed before the 45 Day Milestone

RISKS
Risk assessments required for travel/site visit. Media/union interest? Reputational risks?

Regulatory compliance risks associated with not taking action to investigate this incident; additionally, action is required to ensure incident reporting is compliant with legislative requirements.

ESTIMATED COSTS
Travel, SME, transcription etc.

Minimal

APPROVER NAME		**APPROVAL DATE**	
APPROVER COMMENTS			

Australian Government
Comcare

INSPECTOR REPORT

COMCARE REFERENCE	MC000002372		**Report No.**	#1
PCBU DETAILS	**Name**	Australian Nuclear Science and Technology Organisation		
	Address	Locked Bag 2001 KIRRAWEE NSW 2232		
	ABN	47956969590		
REPORT ISSUED TO	**Name**	Shelley Levy		
	Position	Leader WHS Systems		
COPY OF REPORT GIVEN TO	**Name**	NA		
	Position	NA		
RELEVANT WORKPLACE/S OR WORKSITE	**Name**	Building s33 (ANSTO Health Facility)		
	Address	New Illawarra Rd LUCAS HEIGHTS NSW 2234		
	Date	22 August 2017		
OTHER PERSONS ATTENDING WITH INSPECTOR	**Name**	NA		
	Position	NA		

PURPOSE OF INSPECTION

1. At approximately 07:00am on 22 August 2017, Australian Nuclear Science and Technology Organisation (ANSTO) Quality Control (QC) Analyst, working in the ANSTO Health Facility, received a radiation skin dose following the uncontrolled spillage of Molybdenum 99 (Mo-99) during a vial de-capping procedure (the incident).
2. The purpose of this compliance monitoring activity under the WHS Act to seek assurance that ANSTO:
    a. Responded appropriately to this incident;
    b. Took reasonable and practicable steps to remedy any ongoing risks;
    c. Identified and implemented appropriate corrective actions to prevent a recurrence; and
3. This compliance and monitoring activity also seeks to clarify the reasoning for the delay in notification.

OUTCOMES

4. From my observations and discussions with ANSTO representatives, and a review of the documentation provided I make the following recommendations:
    i. ANSTO are to review organisational awareness and training in relation to the notification of Dangerous Incidents;
    ii. ANSTO are to ensure risk assessments are reviewed:
        - at regular intervals proportional to the severity of the assessed risk;
        - whenever there is a change to process, procedure and/or equipment; and

- following incidents.

iii. ANSTO are to provide evidence of implementation of the above recommendations to Comcare by 20 December 2017.

5. Apart from the above recommendations, I am satisfied that ANSTO has undertaken a detailed investigation to identify relevant contributory factors to the incident; and actions as outlined are reasonable in the circumstance and adequately address any safety concerns identified to prevent a recurrence.

ACTIONS AND OBSERVATIONS

6. ANSTO first contacted Comcare in relation to the incident on 11 September 2017 to discuss notifying the incident. The incident was not initially notified to Comcare as ANSTO assessed the incident as not notifiable, based on the initial presentation of the injury and the criteria for a Serious Personal Injury.

7. The incident was formally notified to Comcare on 19 October 2017. ANSTO notified the incident to Comcare as a Serious Personal Injury based on worsening presentation of the injury to the QC analyst; and information provided by medical specialists.

8. The Inspector notes that this incident falls within the definition of a dangerous incident as stated in s37 of the WHS Act 2011. The incident exposed a worker to a serious risk to their health and safety which emanated from an immediate exposure to an uncontrolled spillage of a substance.

9. The written notification to Comcare states the incident was notified to Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) as required.

10. On 02 November 2017, I requested a copy of the ANSTO Incident Investigation Report into the incident. On 09 November 2017, I received a copy of ANSTO Concise Investigation Report *Radiation Exposure to Hands of Mo-99 QC Analyst from Glove Contamination.*

11. The ANSTO Investigation Report states, on 08 September 2017, the QC Analyst's injuries were observed as skin reddening and some evidence of blistering on the third knuckle of more than one finger on each hand. The timing of the symptoms, 15 days after the incident, is consistent with mild forms of radiation dermatitis.

12. The investigation determined the QC Analyst received a significant radiation dose to the skin within a short time (approximately 20 seconds).

13. A retrospective dose assessment provided a probable equivalent skin dose of ~850 mSv ± 250 millisieverts (mSv) and a potential equivalent dose of up to 3320 mSv ± 985 mSv in the first 25.5 hours of exposure; both values are in excess of the annual regulatory dose limit of 500mSv.

14. The ANSTO report considered the likelihood of Acute Radiation Syndrome to be extremely unlikely based on the localised nature of the radiation exposure. The effective radiation dose is estimated to be equivalent to a whole body dose of ~8.5 mSv ± 2.5 mSv which is below the regulatory limit of 20 mSv per year averaged over 5 years; and below the 50 mSv in any single year.

15. The investigation found the QC Analyst had completed training in the dispensing of Mo-99 and was deemed competent to perform testing. Although the analyst had experience in analytical testing laboratories, their experience with working with radioactive materials only extended to s47F when they commenced working with ANSTO.

16. The glove removal technique used by the analyst at the time of the incident was

considered as a possible contributing factor to the spread of contamination.

17. The investigation found the de-capping equipment used during the vial de-capping procedure required maintenance or replacement prior to the incident; however, it appears to have been accepted as adequate for the task.

18. The design of the 25mm lead pot which housed the Mo-99 vial required the use of forceps to grip the neck of the vial to hold it above the rim of the pot to enable de-capping. The investigation report describes this manoeuvre as 'difficult'.

19. The technique for gripping the vial by the neck was included in training. The investigation found the analyst had gripped the vial by the body rather than the neck at the time of the incident.

20. The ANSTO investigation found the radioactive content of the Mo-99 sample was greater than what was required to undertake quality control testing.

21. Long cuff gloves normally used for quality control had recently not been used due to a lack of supply. The report states the use of long cuff gloves would likely have reduced the risk of skin contamination during glove removal following the spill.

22. The investigation found the Systems Safety & Reliability (SSR) Risk Assessment for the quality control process assessed the risk of injury as 'High' based on a 'Major' consequence with a likelihood of 'Likely'. The ANSTO Risk Analysis Matrix requires the following action where a risk is assessed as 'High":

    - *Report the situation immediately to the relevant Executive / General Manager advising them to withdraw from the risk, or control the risk source to achieve a tolerable level of risk (ensuring close scrutiny until the controls are implemented);*
    - *Report this risk also to the Senior Manager, GRC & Assurance.*

23. The investigator did not find any documentary evidence which showed the risk had been discussed with, or accepted by, the senior management of ANSTO Health.

24. The ANSTO Report states the SSR carried out the risk assessment for the Quality Control process in Building s33 in December 2015. The report does not provide evidence to indicate the risk assessment was reviewed following a change to the personal protective equipment (gloves) described at Paragraph 19; nor at any time between the initial assessment of the process and the incident, a period of 21 months.

25. The investigation found there was anecdotal evidence of previous occasions where vials had been dropped during similar de-capping procedures; however, these did not result in spillage. Reporting of these 'near hit' instances may have led to improvements in procedures to reduce the risks associated with radioactive vial handling.

ANSTO Recommendations

26. The ANSTO Investigation Report makes the following recommendations to prevent a recurrence:

    i. The faulty de-capper to be repaired or replaced (complete);

    ii. Long cuff gloves to be used as primary gloves for all QC Analysts; standard gloves are to be placed over the long cuff gloves and changed frequently (complete);

    iii. Retrain analysts on vial handling technique when using forceps (complete);

    iv. Reduce Mo-99 radioactive content to the minimum required for single

testing (complete);

v. Consideration of dilution of bulk Mo-99 samples to reduce radiation risk to analysts (in progress);

vi. Substitute 25mm lead pot with 19mm lead pot to reduce vial handling difficulty (complete);

vii. Consider substitution of straight forceps with shaped forceps to provide improved grip of the vial neck (in progress);

viii. Consider substitution of manual de-capper with a remotely operated de-capper (in progress);

ix. Review other quality control processes to identify if similar lead pot size issues exist (complete);

x. ANSTO Health and Mo-99 QC to consult with SSR and recommend changes where the potential dose is unreasonable and update changes in the SSR Risk Assessments for the QC Process;

xi. Re-train analysts in glove change techniques to ensure reduced risk of contamination;

xii. Refresher training in QC testing, including de-capping, dispensing and sampling provided to QC Analysts on a regular basis;

xiii. Post pictorial aids for correct de-capping and dispensing techniques adjacent to the facilities these operations take place;

xiv. Regular awareness training on potential consequences and responses to personal contamination for analysts;

xv. Review the Radiation Protection Services (RPS) Personal Contamination Form;

xvi. QC Analysts to wear extremity dosimeters on the fingers rather the wrist to provide accurate reflection of radiation exposure on the fingers, especially in the instance of glove contamination;

xvii. Review maintenance response on items such as the de-capper to investigate why it was not repaired / replaced promptly;

xviii. ANSTO Health toolbox talks and training should include enhanced awareness of localised high radiation hazards from glove contamination when working with high specific activity materials;

xix. Refresher training on incident reporting, especially ‘near hits’;

xx. Review of process and controls for identified high risk activities;

xxi. Identified safety related “High” or “Very High” risks (after mitigations) should be escalated to the responsible senior managers (GM and above). Justification to accept “High” risk to be documented in the GRC system; and

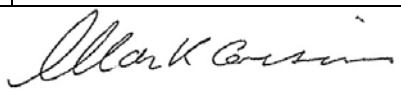
xxii. Review the potential for automation of sampling processes in QC activities within ANSTO to eliminate the potential for personal contamination with high specific activity radionuclides.

POWER EXERCISED (if any)

Section of Act	Nature of Inspector action/decision
None	Not exercised

COMPLIANCE STATUS OF PREVIOUSLY ISSUED NOTICES (if any)

Notice	Description	Status
None	None	None

REPORT ISSUED BY	**Inspector:**	Mark Cossins	**Phone:**	02 8218 3736
	Email:	cossixx.xxxx@xxxxxxx.xxx.xx	**Region:**	NSW
INSPECTOR'S SIGNATURE	**Signature:** 		**Date:** 15/11/2017	

DISCLAIMER

This report contains information that may assist you take steps in regards to your obligations under the WHS Act. You must refer to the *Work Health and Safety Act 2011* (Cth) (**WHS Act**) and *Work Health and Safety Regulations 2011* (Cth) (**WHS Regulations**) to understand your duties and obligations. Comcare's external website contains hyperlinks to WHS Act legislation.

Comcare does not accept liability for any errors or omissions or for any loss or damage suffered by you or any person which arises from your reliance on this report or for any breach by you of your obligations under the WHS Act. Where a Comcare Inspector has inspected a particular workplace is not a representation by Comcare that the particular workplace is in any way free of hazards.

NEED HELP?

Contact the Inspector to discuss any aspect of this Inspector Report. The Inspector should be contacted if you wish to view photographs, documents or other evidence taken by the Inspector if they attended your workplace.

Comcare has a range of publications and fact sheets to help explain your responsibilities and provide guidance to make your workplace safer. The *Compliance and Enforcement Policy* provides guidance as to how Comcare approaches regulation. To access these, visit our website.

REVIEW OF DECISIONS

Where a Decision Maker Review is unsatisfactory, the recipient of the report should seek independent legal advice on review rights.

PRIVACY STATEMENT

Your privacy is important to us. We will only collect, use or disclose personal information in accordance with the *Privacy Act 1988* (Cth) and if it is reasonably necessary for, or directly related to, one or more of our functions, powers and/or activities. These include functions and activities under the *Safety, Rehabilitation and Compensation Act 1988* (Cth), the WHS Act, the *Seafarer's Rehabilitation and Compensation Act 1992* (Cth), and the *Asbestos-related Claims (Management of Commonwealth Liabilities) Act 2005* (Cth). If Comcare does not collect personal information from you, for the purposes of its legislated functions or related functions, we may not be able to respond appropriately.

Comcare is the Commonwealth agency authorised by the WHS Act to collect personal information relevant to the exercise of functions and powers under the WHS Act, *Work Health and Safety Regulations 2011* and the administration and evaluation of Comcare's WHS programs. Any personal information collected in these forms will be used for those purposes.

In exercising our functions and powers, we may disclose personal information, subject to confidentiality of information provisions under the WHS Act, to the following bodies and agencies, including but not limited to:

- Comcare's internal and external legal advisers
- the Safety, Rehabilitation and Compensation Commission
- a court or tribunal
- state or territory work health and safety regulatory agencies
- personnel engaged by Comcare to conduct research related activities
- enforcement agencies or bodies
- state and territory Coroners
- Commonwealth, state or territory industry regulators
- any other person assisting Comcare in the performance of its functions or exercise of its powers, including contractors and consultants
- any other person where there is an obligation under law to do so (for example but not limited to, responding to the direction of a court to produce documentation).

For further information on how Comcare handles personal information, please read our Privacy Policy on our website. To request a change to your personal information or to make a complaint, please phone or email us at privacy@comcare.gov.au.

www.comcare.gov.au | 1300 366 979

Jordan Crabbe

From: RPB
Sent: Friday, 20 October 2017 5:12 PM
To: Notify
Cc: robert b; BARRINS, Venessa; THIERING, Russell
Subject: ANSTO Reportable Event Notification NOT00002372 [DLM=For-Official-Use-Only]
Attachments: Comcare Notification - ANSTO NOT00002372 Skin Dose 22082017.pdf

Categories: Carolyn Quick

Good Afternoon Comcare,

As requested, please find attached the written notification of an event that occurred at Lucas Heights on 22 August 2017 where a Quality Control Analyst received a radiation exposure which has required monitoring and management.

If you require further information or have any questions please call.

Regards,

Ralph Blake
Manager, Work Health & Safety
People Culture Safety & Security

Australian Nuclear Science and Technology Organisation

Tel +61 2 9717 3771
Mobile s47F
Email rpb@ansto.gov.au
Web www.ansto.gov.au

Australian Government
Comcare

Notification of an incident

This notification form is approved by Comcare for the purposes of section 38(5) of the *Work Health and Safety Act 2011* (Cth).

Management of an individual's privacy

This form seeks to collect information—including personal information—for the purpose of administering and enforcing the WHS Act and the Work Health and Safety Regulations 2011 (Cth) (WHS Regulations).

Comcare is authorised by law to collect personal information under section 38 of the WHS Act where it is reasonably necessary to do so when administering and enforcing the Act and Regulations. Information on how Comcare manages an individual's privacy is available at http://www.comcare.gov.au/about_us/privacy.

Instructions

The red numbers in the form indicate the relevant section in the attached 'Guidance and examples'. All questions marked with an asterisk (*) are mandatory.

For further guidance refer to Comcare's *Guide to work health and safety incident notification.*

The duty to notify is held at all times by the person conducting the business or undertaking. (1)

Notifications can be given to Comcare by fax on 1300 305 916.

1. Details of the person conducting the business or undertaking (PCBU) which gave rise to the incident

* Agency/department/authority/company	
* Australian Business Number (ABN) (2)	47 956 969
* Australian Company Number (ACN) (2)	47 956 969
* Street address	New Illawarra Road
* Town/suburb	Lucas Heights
* State	NSW
* Postcode	2234

Person with management or control (PWMC) of the workplace where the incident occurred (2a)

* ☒ As above ☐ Other

If you have selected 'other' please complete the following

* Agency/department/authority/company	
* Australian Business Number (ABN) (2)	
* Australian Company Number (ACN) (2)	
* Street address	
* Town/suburb	
* State	
* Postcode	

2. Previous notification of this incident

Has this incident been notified to Comcare previously, by telephone or in writing (fax or email)?

☒ Yes ☐ No

If you have selected 'yes', please tick one of the following reasons for subsequent notification:

☒ Required by Comcare after previous telephone notification
☐ Requested by Comcare after previous written notification
☐ Additional information being notified
☐ Change to information previously notified
☐ Other

If 'other', what is the reason?

Method of first notification to Comcare

☒ Telephone ☐ In writing ☐ Other

Date first notified to Comcare: 13 September 2017

Comments—include Comcare reference number if known

22 August 2017 - Based on the initial presentation the injury did not meet the reporting criteria as a Comcare notifiable event. The event was reported to the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) as required. This was discussed with Comcare on 13 September 2017. Subsequent to the event the workers injury has been monitored on a daily basis by the ANSTO Health Centre.
19 October 2017 - Based on the current presentation and information provided by specialists the injury is now considered to be notifiable. This was discussed with Lisa Daffen and Comcare helpdesk.
Telephone notification made by Ralph Blake (WHS Manager) on 19 October 2017 at 11216hrs. NOT00002372. Site was released by Lisa Daffen 1221hrs.

3. Details of the incident

* Date of incident	22 August 2017
* Time of incident	0700hrs

* Type of incident (3)

☐ The death of a person
☒ A serious injury or illness of a person
☐ A dangerous incident

* Serious injury or illness type (if applicable) (4)

☐ Treatment as inpatient in a hospital
☐ Amputation of any part of body
☐ Serious head injury
☐ Serious eye injury
☒ Serious burn
☐ Separation of skin from underlying tissue (such as degloving or scalping)
☐ Spinal injury
☐ Loss of a bodily function
☐ Serious lacerations
☐ Medical treatment within 48 hours of exposure to a substance

Did the injury or illness require the person to have 'immediate' treatment?

☐ Yes ☒ No

* Dangerous incident type (if applicable) (5)

☐ An uncontrolled escape, spillage or leakage of a substance
☐ An uncontrolled implosion, explosion or fire
☐ An uncontrolled escape of gas or steam
☐ An uncontrolled escape of a pressurised substance
☐ Electric shock
☐ The fall or release from a height of any plant, substance or thing

- ☐ The collapse, overturning, failure or malfunction of, or damage to, any plant that is required to be authorised for use in accordance with the regulations
- ☐ The collapse or partial collapse of a structure
- ☐ The collapse or failure of an excavation or of any shoring supporting an excavation
- ☐ The inrush of water, mud or gas in workings, in an underground excavation or tunnel
- ☐ The interruption of the main system of ventilation in an underground excavation or tunnel

Was there a serious risk to a person's health and safety that was 'immediate or imminent'?

☐ Yes ☒ No

Did this incident occur at a major hazard facility? (6)

☐ Yes ☒ No

Where did the incident occur?

* Workplace known as (7)	Australian Nuclear Science and Technology Organisation
* Street address	New Illawarra Road
* Town/suburb	Lucas Heights
* State	NSW
* Postcode	2234
* Country	Australia

* Describe the exact location of the incident (8)

ANSTO Lucas Heights > Building s33 (ANSTO Health Facility) > Room s33 > Laboratory Fume Cupboard.

* Describe the sequence of events immediately leading up to the incident, including what, if anything, may have gone wrong (9)

ANSTO manufacture radiopharmaceuticals for the detection and treatment of cancer and are required to conduct Quality Control (QC) testing on these products.

At 7a.m. on 22nd August 2017 a QC analyst was working in the Quality Control laboratory of the building s33 facility. The task requires the operator to briefly raise a glass vial from a lead pot using tongs and decap the crimped seal of the vial. The operator was using the required Personal Protective Equipment(PPE) at the time of the event.

During the task the operator dropped the vial within the fume cabinet. The vial contained 4.5GBq of Molybdenum-99 (Mo-99) in a volume of 0.6ml of liquid which splashed onto the inside surfaces of the fume cabinet and onto the gloves of the analyst. The analyst quickly recovered the dropped vial from the floor of the fume cabinet and replaced it in its lead pot and then monitored their gloves. No droplets were visible on the gloves by the analyst. On finding both the outer gloves were contaminated, the analyst removed the outer pair of gloves, discarded them in the nearby shielded waste bin, and then monitored the inner gloves. On finding them also contaminated the analyst removed those and discarded them. The analyst then monitored their hands and discovered that both hands had radioactive contamination. The analyst walked to the nearest sink in the room and started washing and called for assistance from colleagues in the next room.

* What activity was being performed when the incident occurred? (10)

Quality Control testing and decapping the Mo-99 vial.

* What, if any, plant, vehicles, equipment, substances or things were involved in the incident? (11)

Fume cupboard, lead shield, vial, Mo-99 solution (Class 7, Radioactive material), vial decapper and tongs.

4. Details of persons who died or suffered serious injury or illness

Note: You must include the full names and details of all persons who died or suffered a serious injury or illness.

Person 1 s47F [redacted]

* Title

* First names

* Last name

* Date of birth

* Residential address

* Town/suburb

* State

* Postcode

* Occupation (if relevant) QA /QC Analyst

* Employer (if relevant) ANSTO

* Telephone number s47F [redacted]

* Email address (if known)

* Relationship to the PCBU(12)

- ☒ Employee
- ☐ Contractor/Self-employed
- ☐ Labour hire worker
- ☐ Group training apprentice or trainee
- ☐ Volunteer
- ☐ Member of the public
- ☐ Defence youth cadet
- ☐ Other

* Injury/illness details (13)

Radiation skin dose to the hands. No immediate symptoms were apparent apart from a slight reddening of the skin due to continued washing, abrasion and irritation. On assessment the injury has not met the criteria of a notifiable event. The injury has now progressed to a number of small blisters on both hands which are persistent.

Progression of the injury and decision to notify - The initial retrospective dose assessment relied on a number of assumptions regarding the amount of Mo-99 splashed onto the gloves and time of exposure and estimated a figure between 600mSv and 4.3Sv. Based on the information available at the time it was estimated the likely dose to the hands to be approximately 850mSv. At acute exposures above about 2Sv, observable tissue effects may occur, so daily medical observations were initiated. This revealed skin effects after about 2 weeks and further symptoms, consistent with radiation dermatitis. Consultation with a radiation oncologist indicates a potential exposure of around 10 Gy (10,000 mSv equivalent dose to the skin) based on the tissue reactions observed. Deterministic effects – ones that occur above a threshold radiation exposure – of this type are not uncommon as a side effect of radiation therapy. Further consultations with the radiation oncologist are needed to confirm the likely radiation exposure based on additional observations over time. The initial delay in reporting to Comcare was due to the uncertainty of the original dose estimate.

* Details of any treatment received or needed (14)

Initial first aid included intensive washing/scrubbing of the workers hands to remove radiological contamination, this was done under the guidance of Radiation Protection Services. The worker also attended the ANSTO Health Centre for review of a superficial abrasion on s47 [redacted] R) hand (dorsum), which was the result of the decontamination process. The Occupational Health Nurse applied a dressing to protect the area. Due to the estimated dose assessment, the Health centre was requested to initiate a daily skin monitoring program which included photographs and observation chart of the employees hands/skin integrity.

This commenced on 30/8/17. The ANSTO designated Occupational Physician was contacted by phone, and appointment made for 1 September, 2017. Subsequent referral were made to a Dermatologist (7 September) and a Radiation Oncologist (19 September). Ongoing appointments will continue as required.

* Where was the injured person taken for treatment?

No Immediate treatment was required. However a comprehensive health monitoring program which includes regular reviews with medical specialists has been implemented.

Person 2 (if applicable)

* Title	N/A
* First names	
* Last name	
* Date of birth	
* Residential address	
* Town/suburb	
* State	
* Postcode	
* Occupation (if relevant)	
* Employer (if relevant)	
* Telephone number	
* Email address (if known)	

* Relationship to the PCBU

- ☐ Employee
- ☐ Contractor/Self-employed
- ☐ Labour hire worker
- ☐ Group training apprentice or trainee
- ☐ Volunteer
- ☐ Member of the public
- ☐ Defence youth cadet
- ☐ Other

* Injury/illness details (15)

N/A

* Details of any treatment received or needed (16)

N/A

* Where was the injured person taken for treatment?

N/A

Additional injured persons (if applicable)

* Details of any other persons injured in the incident (17)

N/A

5. Details of workers involved in a dangerous incident (if not already named above)

Note: These persons may be contacted to provide additional information about this incident.

* First names	NA
* Last name	NA

* Role for the relevant work task giving rise to the incident	NA
* Employer (if not the PCBU)	NA
* Telephone number	NA.
* Email address (if known)	NA

Worker 2 (if applicable)

* First names	NA
* Last name	NA
* Role for the relevant work task giving rise to the incident	NA
* Employer (if not the PCBU)	NA.
* Telephone number	NA
* Email address (if known)	NA

6. Action taken or proposed to prevent a recurrence of a similar incident

* What action was taken immediately following the incident to prevent a recurrence of a similar incident—or to minimise any risk to health and safety that was present because of, or in the aftermath, of the incident? (18)

The area was assessed by Radiation Protection Services (RPS) and the area cleaned. Investigation was commenced. Immediate followup regarding the welfare of the worker.

* Describe any longer term action taken or proposed to prevent a recurrence (if known) (19)

Longer term actions include:
- ANSTO will conduct an internal investigation to determine the root cause of the event. (Complete)
- Working Group to be formed to consider process improvements.
- Corrective and preventive actions identified from the investigation will be reviewed by the WHS&E Executive and implemented.

7. Disturbance/preservation of incident site

The person with management or control of a workplace (PWMC) at which a notifiable incident has occurred must ensure, so far as is reasonably practicable, that the site where the incident occurred is not disturbed until an Inspector arrives at the site—or any earlier time that an Inspector directs (s39(1) of the WHS Act).

* Has the site where the incident occurred been disturbed?

☐ No ☒ Yes ☐ Don't know

If you have ticked 'no' proceed to section 8.
If you have ticked 'yes' or 'don't know' please answer the following question.

* Has a Comcare Inspector arrived at the site or authorised disturbance of the incident site? (20)

☐ Yes ☒ No ☐ Don't know

If you have ticked 'yes' please complete the following.

* Inspector's name	Lisa Daffen (via telephone notification to Comcare)
* Date authorised	19 October 2017
* Time authorised (if known)	1221hrs

If you have ticked 'no' please answer the following.

* Has the incident site been disturbed for one of the reasons set out in section 39(3) of the WHS Act?

(20)
☒ Yes ☐ No ☐ Don't know

*Primary reason for disturbance (20a)

☐ To assist an injured person
☐ To remove a deceased person
☒ To make the site safe or to minimise the risk of a further notifiable incident
☐ Police investigation
☐ Inspector of the regulator has given permission

*How was the site disturbed? (20b)

Assess the area and level of contamination and clean up the spill using standard ANSTO procedures to prevent further contamination.

8. Details of person completing this form

*Title	Mr
*First name	Ralph
*Last name	Blake
*Position/designation	Manager WHS
* Telephone number	02 9717 3771 / Mob:- s47F
* Email address	rpb@ansto.gov.au

9. Contact person for further enquiries

☐ As above ☒ Other

If you have ticked 'other' please complete the following

*Title	Mr
*First name	Robert
*Last name	Blissett
*Position/designation	Group Executive, People Culture Safety & Security
* Telephone number	Ph:- 02 9717 3270 / Mob:- s47F
* Email address	robertb@ansto.gov.au

10. Person responsible for implementing longer term remedial action

☐ As in 8 above ☐ As in 9 above ☒ Other

If you have ticked 'other' please complete the following

*Title	Mr
*First name	Mark
*Last name	Moore
*Position/designation	General Manager, ANSTO Health.
* Telephone number	02 9717 3227 / s47F
* Email address	mmx@ansto.gov.au

Guidance and examples

1	**Who should complete this form?** The duty to notify is not transferable and is held at all times by the relevant person (entity) conducting a business or undertaking (PCBU). However, the way in which the PCBU discharges this duty may involve arranging for another entity or person to submit notifications on their behalf. For example, this could be: the person with management or control (PWMC) of the workplace the supervisor of the injured worker any other person with identified responsibility to notify. Any failure by that person or entity to submit a notification on behalf of the PCBU may result in the PCBU having liability for a breach of section 38 of the WHS Act.
2	**Australian Business Number (ABN)** The ABN is a unique 11-digit identifying number that businesses use when dealing with other businesses, the Australian Taxation Office and other government agencies. If you do not know your organisation's ABN number, you can search for it at: http://www.abr.business.gov.au/AdvancedSearch.aspx **Australian Company Number (ACN)** Under the *Corporations Act 2001*, every company in Australia has been issued with a unique, nine-digit number known as an Australian Company Number (ACN). The purpose of the ACN is to ensure adequate identification of companies for business transactions. It must be shown on a range of documents. If you do not know your organisation's ACN number, you can search for it at: http://www.search.asic.gov.au/gns001.html If your company has an ABN, you may use it with your company's name in place of the ACN, provided that the ABN includes your nine-digit ACN.
2a	**Person with management or control (PWMC)** **The person with management control of a workplace** refers to the person conducting a business or undertaking to the extent the business or undertaking involves the management or control of the workplace—in whole or in part (section 20(1) of the WHS Act).
3	**Type of incident** A single incident may result in multiple outcomes. For example, a crane collapse may result in a serious injury and also be a dangerous incident. The type of incident selected must relate to the most severe outcome. In this example, the type of incident would be serious injury. The WHS Act (section 35) defines notifiable incidents as: (a) the death of a person (b) a serious injury or illness of a person (c) a dangerous incident. Please refer to the WHS Act for definitions of serious injury or illness (section 36) and dangerous incident (section 37). For assistance with interpreting these terms please refer to Comcare's *Guide to work health and safety incident notification.*
4	**Serious injury or illness type** The dropdown box in the form contains the treatment and injury details specified in the WHS Act and Regulations for serious injury or illness. Select the one that most adequately represents the highest level of treatment and injury that resulted from the incident. Serious injury or illness is defined in section 36 of the WHS Act. The Regulations may also include or exclude other injuries or illnesses as serious injuries or illnesses, but do not currently do so.

5	**Dangerous incident type** The dropdown box in this form contains a list of events specified in the WHS Act and Regulations as dangerous incidents. Select the dangerous incident type that best represents the incident in terms of the risk to health and safety of workers and other persons. Dangerous incident is defined in the section 37 of the WHS Act as an incident in relation to a workplace that exposes a worker, or any other person, to a serious risk to health or safety emanating from an immediate or imminent exposure to certain events. The Regulations may also include or exclude other events as dangerous incidents, but do not currently do so. An accident may involve a number of incident types. For example, 'the collapse or partial collapse of a structure' may have lead to 'an uncontrolled escape, spillage or leakage of a substance'. In this case determine whether the health and safety of workers or other persons was more at risk from the collapse of the structure, or from exposure to the spilled substance, and record that incident type. If the risk is the same for each incident type, record the incident that occurred first.
6	**Did this incident occur at a major hazard facility?** Major hazard facilities (MHFs) are sites that have the potential to cause major accidents, where consequences may rival natural diasters in terms of loss of life, injury, damage to property and disruption of services. To be a MHF a facility must be: (a) determined by Comcare to be a MHF and/or licensed under Part 9 of the WHS Regulations (b) a facility at which chemicals listed in Schedule 15 of the Regulations are present, or likely to be present, in a quantity that exceeds the prescribed threshold quantities.
7	**Workplace known as** The general workplace where the incident occurred may have a name by which it is commonly known. For example: Robertson Army Barracks, HMAS Stirling, Melbourne Delivery Centre, National Gallery, Yulara Visitors Centre, Black Mountain Laboratories. A full street address must also be given in the relevant fields of the form.
8	**Describe the exact location of the incident** This is intended to provide accurate details of where the incident occurred, for example: • On the corner of Barry Drive and Baldwin Close at the traffic light situated across from the Caltex petrol station in Braddon ACT 2612. • Storage room across from the lift on the north side on Level 1, 14 Moore St Canberra ACT 2601. • Bridge pier number 206, adjacent to the southern office compound on South Road, 200 metres north of the intersection with Days Road Regency Park SA 5010.
9	**Describe the sequence of events immediately leading to the incident** Examples: • The crane operator was performing a pick and carry of a 6 tonne load with a mobile crane. After lifting the load, the operator was driving the suspended load to another area in the yard when the crane tipped over. • A contractor was conducting fault testing on an electrical cabinet when he touched a live socket and received an electric shock. • The worker was mixing cement using a machine called a paddle mixer. As the worker attempted to remove material from the open hatch, his fingers were caught by the rotating blades.
10	**What activity was being performed when the incident occurred?** Examples: • The worker was lifting and shifting drums manually. • The soldier was loading his rifle, following the safe operating procedure (SOP) for rifle loading. • The worker was driving through the traffic lights when a person walked in front of the truck.

11	**What, if any, plant, vehicles, equipment, substances or things were involved in the incident?** Section 5 of the WHS Act defines plant as including: (a) any machinery, equipment, appliance, container, implement and tool (b) and any component of any of those things (c) anything fitted or connected to any of those things. Substance is defined as 'any natural or artificial substance, whether in the form of a solid, liquid, gas or vapour'. Examples: • Company truck, 2 tonne, rego ABC–123 and 25kg drums (empty). • F88 Steyr automatic rifle. • Paint solvent—methyl ethyl ketone—and leather work gloves. • 20 tonne Linmac mobile crane, registration number 123–456.
12	**Relationship to the notifying entity** Select from the drop down list to show the relationship the injured person had to the entity that conducts the business or undertaking that gave rise to the incident.
13	**Provide injury/illness details** This should be as descriptive and precise as possible. Examples: • Suffered a broken left leg, sprain to the right ankle and a suspected broken rib. • Received minor laceration to front of head/temple and possible concussion. • Suffered an amputation of part of the little finger of left hand, severe laceration of the ring finger, and ligament and tendon damage to the left wrist.
14	**Details of any treatment received or needed** Examples: • Worker taken to hospital with breathing difficulties and was admitted for observation overnight. • Worker taken to hospital in an ambulance, treated in casualty where burns were dressed and worker was referred for skin grafts. • First aid administered by first aid officer on site. Ice pack applied. Worker taken to emergency dental practice to replace knocked out tooth.
15	**Provide injury/illness details (Person 2)** (Same as 13)
16	**Details of any treatment received or needed (Person 2)** (Same as 14)
17	**Details of any other persons injured in the incident** List each of the persons named on a different line, including details of their injuries and treatment received. Where possible include the relationship to the entity that conducts the business or undertaking that gave rise to the incident. Examples: • Joe Smith—member of the public, taken to hospital and an x-ray was taken confirming fracture of the left index finger. • Jane Brown—employee, could be suffering from concussion, went to her local GP who advised her to apply a cold compress and gave her two days off work.
18	**What action was taken immediately following the incident to prevent a recurrence?** List all immediate action that has been taken to prevent such an incident from occurring again. Example: The hydraulic lift was immediately returned to the loading dock and all employees were reminded to wear their personal protective gear (i.e. helmets) when in the loading zone.

19	**Describe any longer term action taken or proposed to prevent a recurrence** Describe what action will be undertaken, or is proposed, to prevent future recurrences. If remedial action has not yet been determined, describe the process to determine the remedial action. Examples: • An internal investigation will be undertaken to review the manual loading process and update it, if necessary. • Signs will be placed around the loading area reminding staff of their duty to wear appropriate safety gear at all time. • Check with the manufacturer and/or supplier that the guard for the power-take off shaft is the correct size and length for the drive shaft, and replace where necessary.
20	**Disturbance/preservation of incident site** Subsection 39(1) of the WHS Act sets out the requirement for the PWMC to ensure the site where an incident occurred is not disturbed until an Inspector arrives at the site—or any earlier time that an Inspector directs. For example, if the incident site is confined to a particular physical location within an office building, and no immediate risk to health and safety remains for people in other parts of that office, then the entire office would need to be isolated (preserved) until Comcare Inspectors advise otherwise. In terms of subsection 39(3) of the WHS Act, subsection (1) does not apply to any action: (a) to assist an injured person (b) to remove a deceased person (c) that is essential to make the site safe or to minimise the risk of a further notifiable incident (d) that is associated with a police investigation (e) for which an Inspector or the regulator has given permission.
20a	**Primary reason for disturbance** There may be more than one permitted reason for the site to be disturbed. For example, it may have been necessary to disturb an incident site to assist an injured person and to make the site safe. Choose from the list the reason that caused the most disturbances or, if equal, choose any one of the relevant reasons.
20b	**How was the site disturbed** Examples: • The crane that had tipped over was leaking fuel onto the ground. To prevent ignition of the fuel several loads of sand were spread on the fuel and around the crane. • Emergency services personnel cut into the cabin of the truck, removing the roof and the passenger side door, in order to gain access to the injured driver. Police removed several items, including a mobile phone, from the cabin. • Several pallets of stock were moved from the area to enable emergency vehicles to have access. The chemical spill was cleaned up to limit the spread of harmful fumes to neighbouring properties and prevent discharge into the nearby lake. All warehouse doors were opened to increase ventilation to the area.