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Title: RCT Continuing Training: Item Removal

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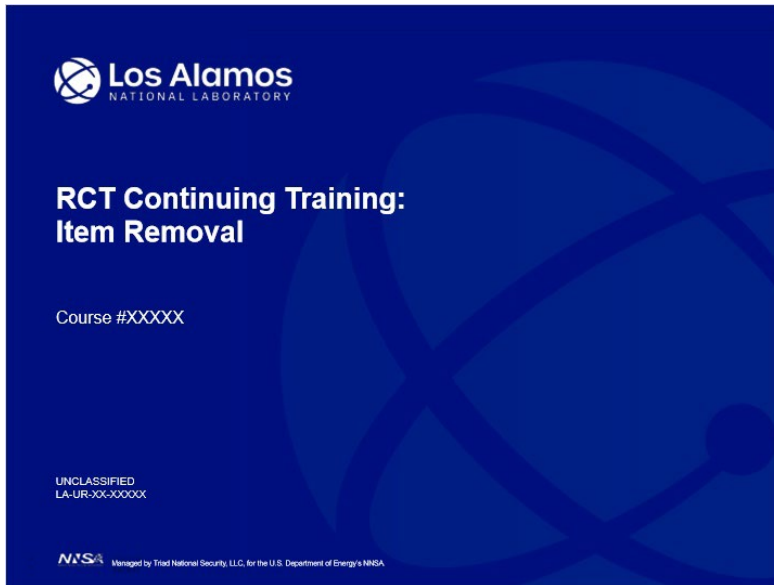


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RCT Continuing Training Item Release 1

1. RCT Continuing Training Item Removal

1.1 Item Removal Training



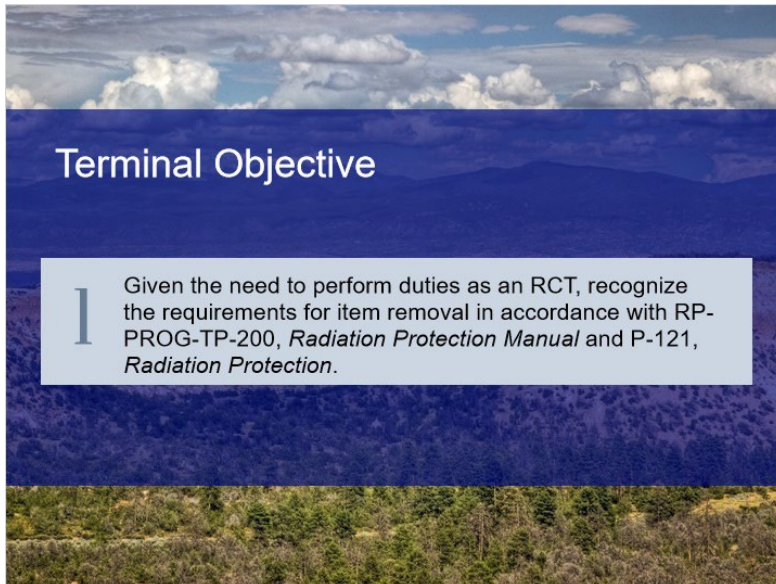
Notes:

1.2 WELCOME LAYOUT

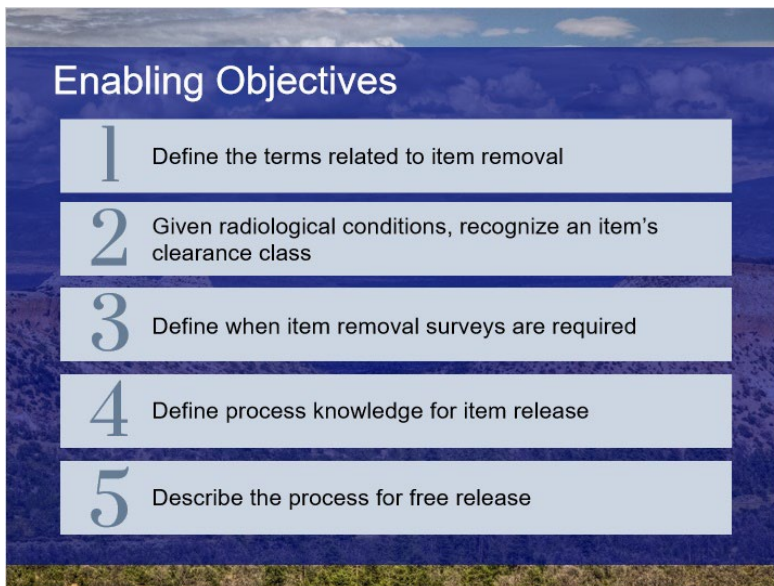


Notes:

1.3 Terminal Objective



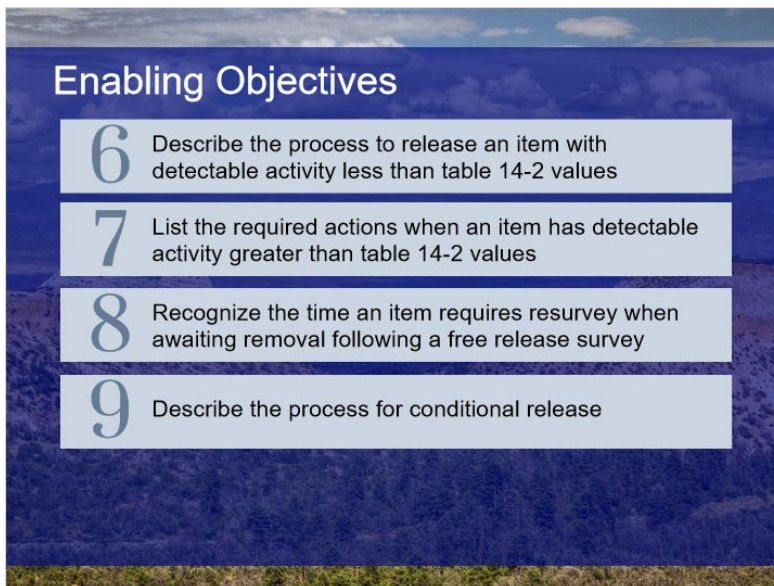
1.4 Enabling Objectives



Enabling Objectives

- 1 Define the terms related to item removal
- 2 Given radiological conditions, recognize an item's clearance class
- 3 Define when item removal surveys are required
- 4 Define process knowledge for item release
- 5 Describe the process for free release

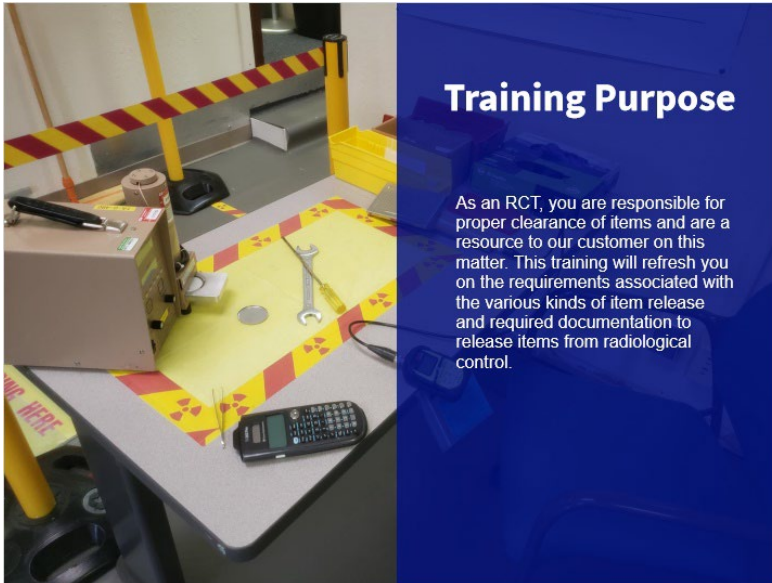
1.5 Enabling Objectives Continued



Enabling Objectives

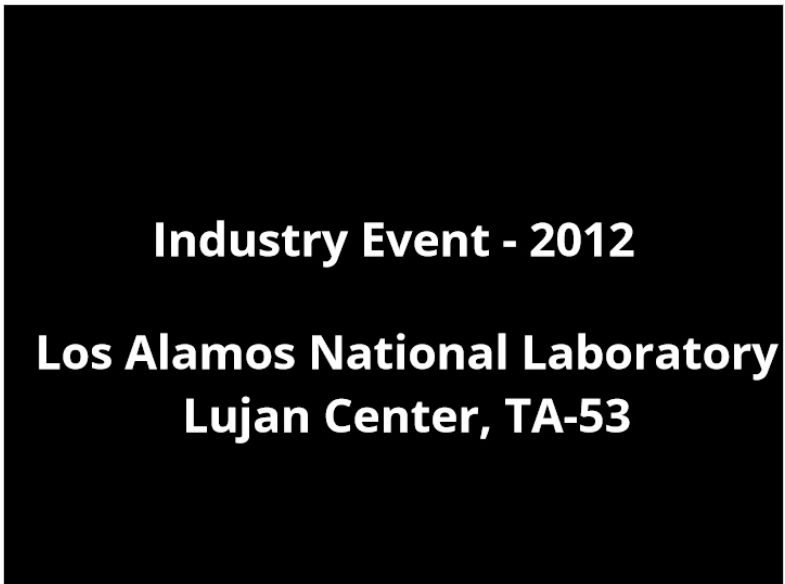
- 6 Describe the process to release an item with detectable activity less than table 14-2 values
- 7 List the required actions when an item has detectable activity greater than table 14-2 values
- 8 Recognize the time an item requires resurvey when awaiting removal following a free release survey
- 9 Describe the process for conditional release

1.6 Training Purpose



Notes:

1.7 Lujan Center 1



1.8 Lujan Center 2

Industry Event – Lujan Center Event

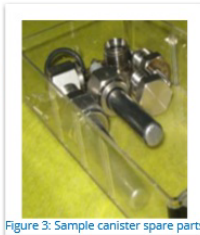
- The process in place in this facility included a RCT to survey and release OR control the material after irradiation, but was not understood to be required at the time.
- Typically, opening of containers with dispersible material was to be done inside of a glove-box with RCT coverage.
- After being in storage for some time, this container was disassembled for reuse by one of the workers on a bench-top without RCT coverage, which initiated the inevitable chain of events that followed.



1.9 Lujan Center 3

Industry Event – Lujan Center Continued 1

- Contamination spread to various facilities at LANL.
- 25 individuals were found to have contaminated personal items.
- 5 individuals were found to have skin contamination.
- RAP team was deployed to survey areas ranging across CO, AZ, and NM.
- At least 9 homes in NM were found to have Tc-99 contamination.
- All individuals were determined to receive less than one mrem total dose.



1.10 Lujan Center 4

Industry Event – Lujan Center Event

- The federal investigation concluded with twenty-nine total contributing factors to this event. We can take a look at these to understand and compare to the processes we have in place today.

- A few major contributors were:

- Inadequate storing and labeling of material.
- Informal and inconsistent established work controls.
- Culture where deviation from procedures normalized.



[Click on the picture to learn more about this event](#)

Notes:

1.11 Lujan Center 5

Industry Event – Lujan Center Event

- Is the process we have in place right now sufficient to prevent release of radioactive material?
- Properly labeling and storing will prevent mishandling of material that should be controlled. Workers in the Lujan Center now have a streamlined process to control and maintain accountability for all potentially radioactive material.
- Consistently adhering to item release standards will give multiple layers of protection against an unintended release.
- How we apply process knowledge and thoroughness of surveys are vital to prevent any potential for radioactive material to reach the public. This last line of defense falls on RCTs as they evaluate each item in this process. In this presentation we will review the basic elements that go into item removal.

Notes:

1.12 LANL Event 1



1.13 LANL Event 2

LANL Event – Contaminated Detectors Released

- Detector one was found to have 600 dpm/smear.
- Detector two was found to have 1,000 dpm/smear.
- Instruments tagged out of service are marked surveyed below 14-2 limits.

OUT OF SERVICE
RETURN TO RADIATION INSTRUMENT POOL

External surface is below P121, Table 14-2 levels
Date Surveyed _____

HSE Div. FN # _____
Reason for Return: _____
Z# for contact: _____
☐ Calibration Due
☐ Failed Performance Test
☐ Repair (describe exact problem) _____

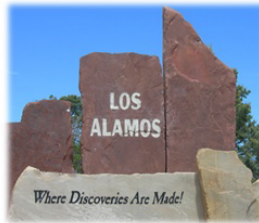
1.14 LANL Event 3

LANL Event – Contaminated Detectors Released

Luckily, no personnel or uncontrolled areas were found to be contaminated during this event. Corrective actions were implemented to prevent future issues.

Factors that could lead to an event like this:

- Improper survey technique
- Violating procedure
- Inadequate training
- Complacency



[Click on the picture to learn more about this event](#)

Notes:

1.15 Item Removal Terms

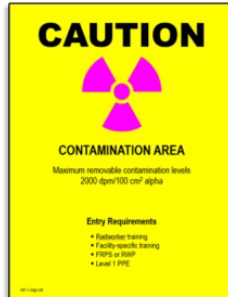
Item Removal

1.16 Release Definition

Item Removal - Release

Definition: Applies to item removal from a:

- Contamination Area (CA)
- High Contamination Area (HCA)
- Airborne Radioactivity Area (ARA)
- Radiological Buffer Area (RBA)
- Radiological Controlled Area (RCA)



Notes:

EO1: Describe the terms related to item removal

1.17 Free-Release Definition

Item Removal – Free-Release or Clearance

- Applies to any unrestricted release of items to the public from an RBA or RCA.
- Must also meet "release" requirements.
- The terms "free-release" and "clearance" are equivalent.
- LANSCE metals clearance is a special category of clearance, covered by a documented technical basis and procedure RP-SOP-077, *LANSCE Unrestricted Release of Metals Survey Process*.



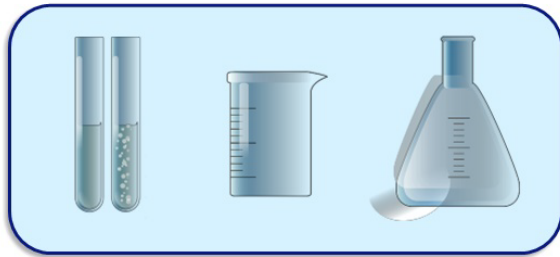
Notes:

EO1: Describe the terms related to item removal

1.18 Conditional Release Definition

Item Removal – Conditional Release

- Applies to movement on-site from one radiological area for immediate placement into another radiological area.



Notes:

EO1: Describe the terms related to item removal

1.19 Knowledge Check 1

(Matching Drag-and-Drop, 10 points, unlimited attempts permitted)

Knowledge Check 1

Release

Applies to item removal from CAs, HCAs, ARAs, RBAs, and RCAs

Free-Release or Clearance

Unrestricted release of an item from a RBA or RCA

Conditional Release

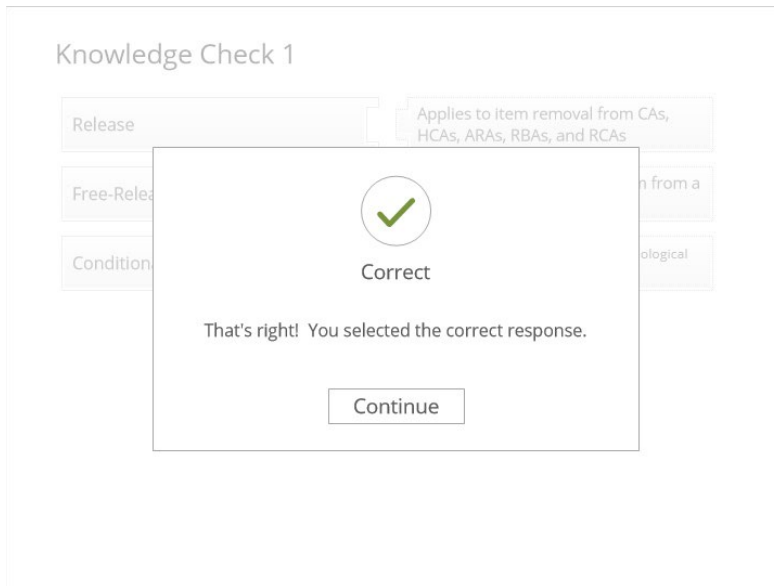
Movement of an item from one radiological area immediately into another

Correct	Choice
Release	Applies to item removal from CAs, HCAs, ARAs, RBAs, and RCAs
Free-Release or Clearance	Unrestricted release of an item from a RBA or RCA
Conditional Release	Movement of an item from one radiological area immediately into another

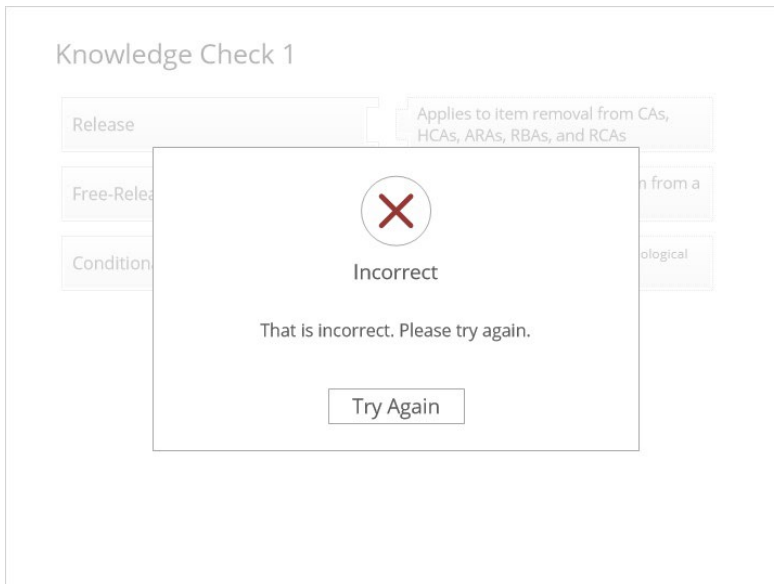
Feedback when correct:

That's right! You selected the correct response.

Correct (Slide Layer)



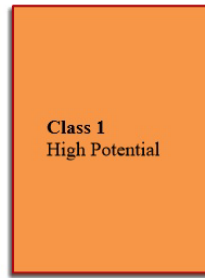
Try Again (Slide Layer)



1.20 Item Clearance Classes

Item Clearance

- Item clearance requirements depend on the location of the item, including government vehicles operated in these areas. RP-PROG-TP-200, Section 1435, Table 11 establishes item clearance classes for free-release based on location.



Notes:

EO2: Given radiological conditions determine the item clearance class

1.21 Class 1

Item Clearance – Class 1

- High potential; may be above limits—applicable areas:
 - Radiological Controlled Areas (RCAs) for contamination (including CAs, HCAs, ARAs, and RBA-Cs)
 - RCAs for Depleted Uranium (DU) shrapnel
 - RCAs for volume contamination
 - Solid Waste Management Units (SWMUs)
 - Areas of Concern (AOCs) (could also be Class 2 area)



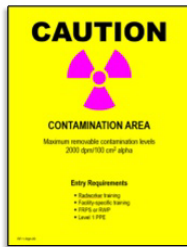
Notes:

EO2: Given radiological conditions determine the item clearance class

1.22 Class 1 Surveys

Item Clearance Surveys – Class 1

- In accordance with RP-PROG-TP-200, Section 1435.6.2a, Items leaving these areas must be surveyed for contamination unless they meet the following specific requirements to be released on process knowledge alone.



Notes:

EO3: Identify when item removal surveys are required

1.23 Class 1 Surveys Continued

Item Clearance Surveys – Class 1

- Hand-carried personal items (e.g., notebooks, pagers, and flashlights) only if ALL of the following conditions are true:
 - Items have not come into contact with any potentially contaminated surfaces.
 - Items have not entered a CA, HCA, or ARA.
 - Items have not left the direct possession of the individual.
 - The individual is free from contamination as determined by a properly conducted frisk.



Notes:

EO3: Identify when item removal surveys are required

1.24 Class 2

Item Clearance – Class 2

- Some potential; but likely below limits—applicable area:
 - RCAs for legacy contamination



Notes:

EO2: Given radiological conditions determine the item clearance class

1.25 Class 2 Surveys

Item Clearance Surveys – Class 2

- The individual requesting item release must determine whether the item is affected by legacy contamination.
- IF the requestor determines the item is not affected by legacy contamination, THEN the item may be released without survey based on process knowledge, AND no documentation is required.
- IF the item is affected by legacy contamination, THEN the item must be evaluated and surveyed.



Notes:

EO3: Identify when item removal surveys are required

1.26 Class 3

Item Clearance – Class 3

- No contamination expected, but possible—applicable areas:
 - RCAs for external radiation
 - RCAs for radioactive material
 - Uncontrolled areas



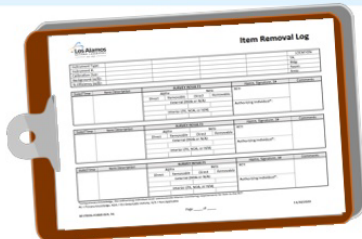
Notes:

EO2: Given radiological conditions determine the item clearance class

1.27 Class 3 Surveys

Item Clearance Surveys – Class 3

- The individual requesting item release must determine whether there are any obvious indications of radiological use history for the item (e.g., tags, labels, known radiological use).
- IF there is no obvious indication of radiological use history, THEN the item may be released without survey based on process knowledge, AND no documentation is required.
- IF there is obvious indication of radiological use history, THEN the item must be evaluated and surveyed.



Notes:

EO3: Identify when item removal surveys are required

1.28 Knowledge Check 2

(Matching Drag-and-Drop, 10 points, unlimited attempts permitted)

Knowledge Check 2

Class 1 Area

Class 2 Area

Class 3 Area

Areas with high potential for contamination like RCAs for contamination or airborne radioactivity

Areas with some potential for contamination above background but below P121 table 14-2 limits like RCAs for legacy contamination

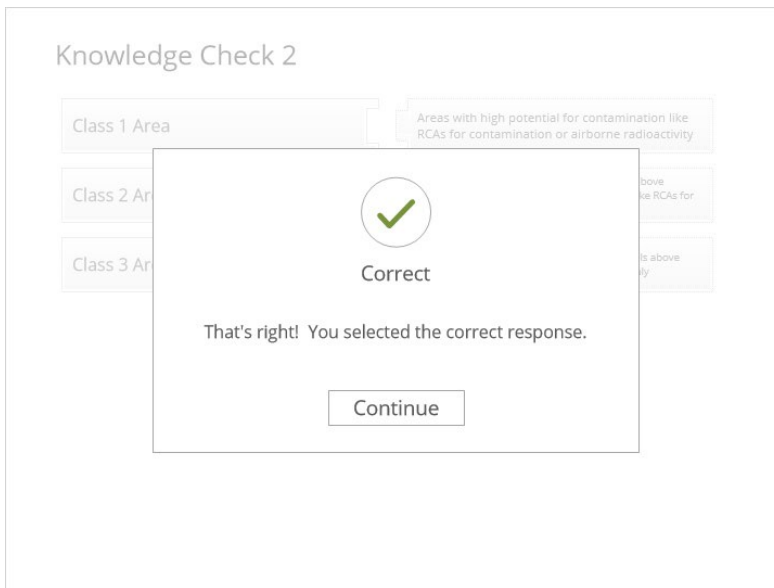
Areas very unlikely to have contamination levels above background like RCAs for external radiation only

Correct	Choice
Class 1 Area	Areas with high potential for contamination like RCAs for contamination or airborne radioactivity
Class 2 Area	Areas with some potential for contamination above background but below P121 table 14-2 limits like RCAs for legacy contamination
Class 3 Area	Areas very unlikely to have contamination levels above background like RCAs for external radiation only

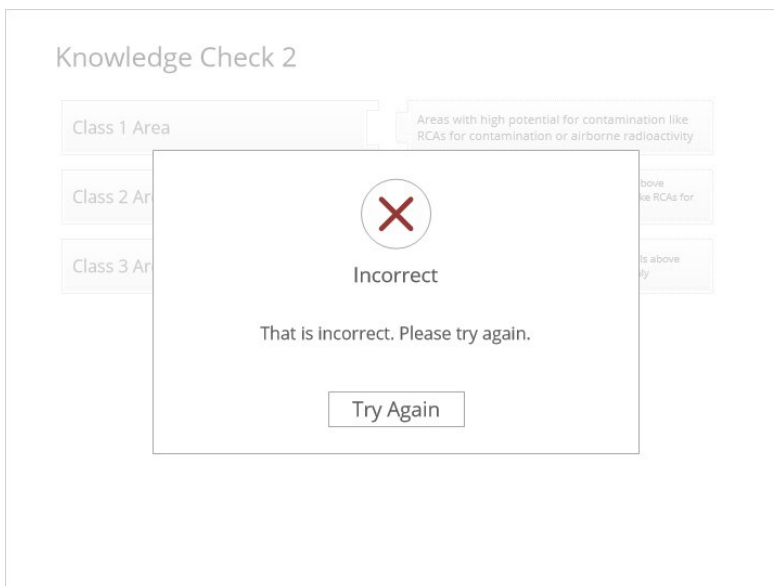
Feedback when correct:

That's right! You selected the correct response.

Correct (Slide Layer)



Try Again (Slide Layer)



1.29 Knowledge Check 3

(Multiple Choice, 10 points, unlimited attempts permitted)

An item is requested to be removed from a Class 2 area. How is it determined if surveys are required?

- ☒ The requestor determines if the item is affected by legacy contamination, which determines if a survey is required or not
- ☐ All items leaving Class 2 areas require survey before release
- ☐ No items leaving a Class 2 area require survey

Correct	Choice
X	The requestor determines if the item is affected by legacy contamination, which determines if a survey is required or not
	All items leaving Class 2 areas require survey before release
	No items leaving a Class 2 area require survey

Feedback when correct:

That's right! You selected the correct response.

Correct (Slide Layer)

An item is requested to be removed from a Class 2 area. How is it determined if surveys are required?

☒ The request is for a Class 2 item, which is a Class 2 item, and the item is a Class 2 item.

☐ All items are Class 2 items.

☐ No item is a Class 2 item.



Correct

That's right! You selected the correct response.

Continue

Try Again (Slide Layer)

An item is requested to be removed from a Class 2 area. How is it determined if surveys are required?

☒ The request is for a Class 2 item, which is a Class 2 item, and the item is a Class 2 item.

☐ All items are Class 2 items.

☐ No item is a Class 2 item.



Incorrect

That is incorrect. Please try again.

Try Again

1.30 Knowledge Check 4

(Multiple Choice, 10 points, unlimited attempts permitted)

An item is requested to be released from a Class 1 area. When are surveys required to release an item from a Class 1 area?

- ☒ All items leaving a Class 1 area must be surveyed unless they meet specific requirements to be released on process knowledge
- ☐ The requestor determines whether a survey is necessary for release
- ☐ Surveys are only necessary if there is visible indication of contaminated use such as labels, tags, etc.

Correct	Choice
X	All items leaving a Class 1 area must be surveyed unless they meet specific requirements to be released on process knowledge
	The requestor determines whether a survey is necessary for release
	Surveys are only necessary if there is visible indication of contaminated use such as labels, tags, etc.

Feedback when correct:

That's right! You selected the correct response.

Correct (Slide Layer)

An item is requested to be released from a Class 1 area. When are surveys required to release an item from a Class 1 area?

- ☒ All items require specific
- ☐ The request requires specific
- ☐ Surveys are required for all items



Correct

That's right! You selected the correct response.

Continue

Try Again (Slide Layer)

An item is requested to be released from a Class 1 area. When are surveys required to release an item from a Class 1 area?

- ☒ All items require specific
- ☐ The request requires specific
- ☐ Surveys are required for all items



Incorrect

That is incorrect. Please try again.

Try Again

1.31 Process Knowledge

Process Knowledge

- IF the requestor uses process knowledge for item clearance, then you must consider operational records and operating history, including the use of any radioactive materials or radiation generating devices.
- IF process knowledge is used as the sole basis for item clearance, THEN process knowledge must determine the following:
 - Whether the item was ever used for activities or in areas that could have caused internal or external contamination.
 - Whether previously contaminated items were decontaminated, met release limits, and were protected from re-contamination.
- IF process knowledge cannot demonstrate that the items are NOT contaminated, THEN surveys must be conducted.

Notes:

EO4: Describe the use of process knowledge for item release

1.32 Item Release Review

Item Clearance

- Let's take a minute to review the major steps that makeup the item removal process from the perspective of an RCT.



1.33 RP-PROG-FORM-024



Item Removal Log

Instrument Type:					LOCATION
Instrument #:					TA:
Calibration Due:					Bldg:
Background (a/B):					Room:
% Efficiency (a/B):					Area:

Date/Time	Item Description	SURVEY RESULTS				Name, Signature, Z#	Comments
		Alpha		Beta			
		Direct	Removable	Direct	Removable	RCT:	
		External (NDA or N/A)				Authorizing Individual*:	
		Interior (PK, NDA, or N/A)					

Date/Time	Item Description	SURVEY RESULTS				Name, Signature, Z#	Comments
		Alpha		Beta			
		Direct	Removable	Direct	Removable	RCT:	
		External (NDA or N/A)				Authorizing Individual*:	
		Interior (PK, NDA, or N/A)					

Date/Time	Item Description	SURVEY RESULTS				Name, Signature, Z#	Comments
		Alpha		Beta			
		Direct	Removable	Direct	Removable	RCT:	
		External (NDA or N/A)				Authorizing Individual*:	
		Interior (PK, NDA, or N/A)					

*Using process knowledge, the authorizing individual must communicate interior monitoring requirements for item to the RCT.
 PK = Process Knowledge, NDA = No Detectable Activity, N/A = Not Applicable

RP-PROG-FORM-024, R1
Page ____ of ____
11/20/2020

1.34 Item Release Video

Item Removal Demonstration

Let's observe the required actions for an RCT during this item release demonstration. An RCT has been requested to survey several tools for detectable and removable contamination levels or above removal from a Radiological Controlled Area. The nuclide of concern here is uranium.

Notes:

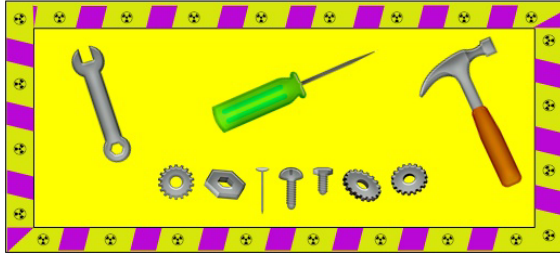
EO5: Explain the process for free release when given an item release scenario

1.35 Item Release with Detectable Activity

Item release Below Table 14-2

RP-PROG-TP-200, Section 1435 states that, If any item with detectable activity is to be released, then a deployed RP lead and the requestor must concur on both of the following:

- Release limits have been met.
- Reasonable measures to decontaminate the items have been applied.



Notes:

EO6: Review the process to release an item with detectable activity less than table 14-2 values

1.36 Items Above 14-2 Limits

Items Above Table 14-2 Limits

Items with contamination levels above P121 table 14-2 limits cannot be released unless the item is decontaminated and proven to be below table 14-2 limits by survey.



Notes:

- EO7: List the information to include on an HPRMS tag when detectable activity is greater than table 14-2 values

1.37 Removing Items After Survey

Removing Items After Survey

IF not released promptly after surveys, THEN the Deployed RP Lead (DRPL) must be consulted to ensure that appropriate controls are implemented.



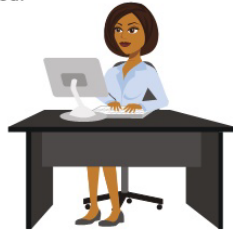
Notes:

- EO9: Indicate the time an item requires resurvey when awaiting removal following a free release survey

1.38 Conditional Release

Conditional Release

- We know that if an item cannot be decontaminated below the limits of P121, Table 14-2, that it cannot be free-released. Some items may still have a useful purpose and should not be disposed of as radioactive waste. A conditional release allows you to move items like this between Radiological Controlled Areas, given that the proper monitoring and controls are exercised.



Notes:

EO10: Explain the process for conditional release when given a conditional release scenario

1.39 Knowledge Check 5

(Multiple Choice, 10 points, unlimited attempts permitted)

A worker has requested that you free-release a tool used in an RCA to control contamination. The tool has detectable contamination that is below P121 table 14-2 values. How should you proceed?

- ☐ Assume any contamination is radon or just a part of background and allow the worker to take the tool
- ☐ Control the tool as radioactive material and attach an HPRMS tag to the item
- ☒ Ensure the Deployed RP Lead and worker agree that release limits are met and reasonable measures to decon the tool have been applied before free-release
- ☐ Wipe the tool down with maslin, then free-release the tool

Correct	Choice
	Assume any contamination is radon or just a part of background and allow the worker to take the tool
	Control the tool as radioactive material and attach an HPRMS tag to the item
X	Ensure the Deployed RP Lead and worker agree that release limits are met and reasonable measures to decon the tool have been applied before free-release
	Wipe the tool down with maslin, then free-release the tool

Feedback when correct:

That's right! You selected the correct response.

Correct (Slide Layer)

A worker has requested that you free-release a tool used in an RCA to control contamination. The tool has detectable contamination that is below P121 table 14-2 values

☐ Assume any contamination is radon or just a part of background and allow the worker to take the tool
☐ Control the tool as radioactive material and attach an HPRMS tag to the item
☒ Ensure the Deployed RP Lead and worker agree that release limits are met and reasonable measures to decon the tool have been applied before free-release
☐ Wipe the tool down with maslin, then free-release the tool



Correct

That's right! You selected the correct response.

Continue

Try Again (Slide Layer)

A worker has requested that you free-release a tool used in an RCA to control contamination. The tool has detectable contamination that is below P121 table 14-2 values

☐ Assume worker is free to use the tool and allow the worker to leave the area

☐ Control the tool as radioactive material and attach an HPRMS tag since the item was used in an area controlled for contamination

☒ Ensure the tool is free of contamination and release the tool

☐ Wipe the tool with a wet paper towel and release the tool



Incorrect

That is incorrect. Please try again.

Try Again

1.40 Knowledge Check 6

(Multiple Choice, 10 points, unlimited attempts permitted)

Another tool is requested for free-release from an RCA for contamination. This tool has been smeared and direct surveyed to be found with no detectable contamination, and has no potential for internal contamination. How do you proceed?

☐ Hand the tool to the requestor with no further action

☒ Document survey results in RP-PROG-FORM-024, have the worker sign the form, and release the tool

☐ Control the tool as radioactive material and attach an HPRMS tag since the tool was used in an area controlled for contamination

☐ Request Deployed RP Lead for concurrence to release the tool

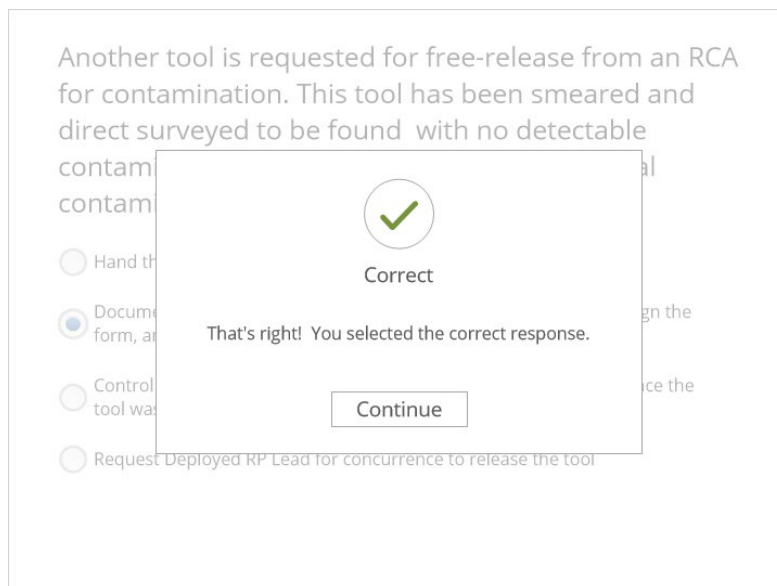
Correct	Choice
	Hand the tool to the requestor with no further action

X	Document survey results in RP-PROG-FORM-024, have the worker sign the form, and release the tool
	Control the tool as radioactive material and attach an HPRMS tag since the tool was used in an area controlled for contamination
	Request Deployed RP Lead for concurrence to release the tool

Feedback when correct:

That's right! You selected the correct response.

Correct (Slide Layer)



Try Again (Slide Layer)

Another tool is requested for free-release from an RCA for contamination. This tool has been smeared and direct surveyed to be found with no detectable contamination.

☐ Hand the tool to the worker for free-release.

☒ Document the tool's location, and the worker's name, and the tool's location.

☐ Control the tool was found with no detectable contamination.

☐ Request Deployed RP Lead for concurrence to release the tool.



Incorrect

That is incorrect. Please try again.

Try Again

1.41 Knowledge Check 7

(Multiple Choice, 10 points, unlimited attempts permitted)

A worker requests a contaminated calibration tool to be moved from one controlled area to another in the same building. Other than decontaminating, what other option is available to you?

☐ Move the tool very quickly to the other controlled area to minimize the chances any contamination falls off

☒ Use Conditional Release to package the tool, survey the package exterior to ensure no contamination is present, and escort the worker with the package to the new controlled area

☐ Traverse with the item through the basement or maintenance hallways, if possible, so any contamination that falls off will not deposit in a high traffic area

☐ If the other controlled area is close enough, toss the tool to a person who can receive it

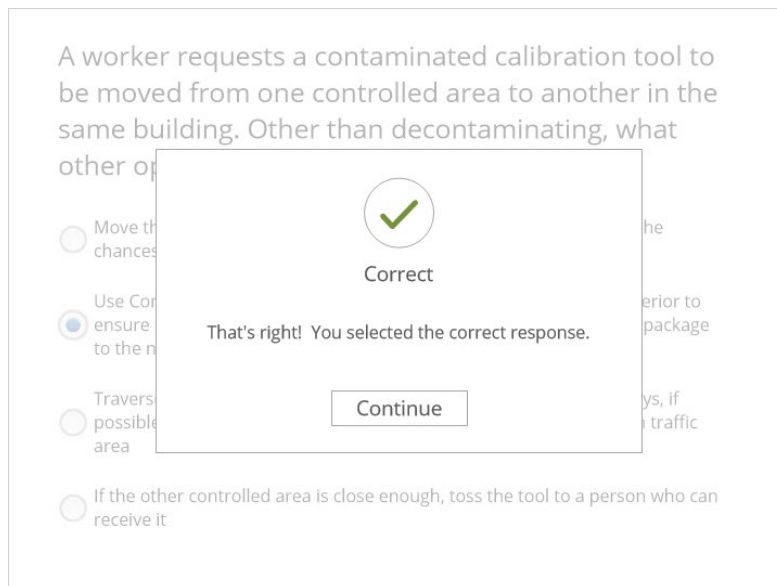
Correct	Choice
	Move the tool very quickly to the other controlled area to minimize the chances

	any contamination falls off
X	Use Conditional Release to package the tool, survey the package exterior to ensure no contamination is present, and escort the worker with the package to the new controlled area
	Traverse with the item through the basement or maintenance hallways, if possible, so any contamination that falls off will not deposit in a high traffic area
	If the other controlled area is close enough, toss the tool to a person who can receive it

Feedback when correct:

That's right! You selected the correct response.

Correct (Slide Layer)



Try Again (Slide Layer)

A worker requests a contaminated calibration tool to be moved from one controlled area to another in the same building. Other than decontaminating, what other options are available?

☐ Move the tool to a different controlled area to increase the chances of decontamination.

☒ Use Contamination Control Procedures to ensure the tool is decontaminated prior to package release.

☐ Traverse the tool through the controlled area, if possible, to avoid traffic.

☐ If the other controlled area is close enough, toss the tool to a person who can receive it.



Incorrect

That is incorrect. Please try again.

[Try Again](#)

1.42 Conclusion

Conclusion

Los Alamos National Laboratory is a uniquely important part of society on a national scale, and specifically the surrounding areas of Northern New Mexico. The release of potentially radioactive materials has a direct impact on the Laboratory's mission to protect the environment and the public. It is imperative that every RCT performing item release does so thoroughly, consistently, and documents the process accurately. The fundamental skills practiced in this activity are designed to protect you, your coworkers, the Lab, as well as everyone in our community from potential radiological hazards.



4/8/2021

1.43 End of Course

End of Course

Congratulations! You have successfully completed the Item Release Continuing Training. To receive credit, you must also complete the associated quiz. Click the EXIT COURSE button below to close this lesson.



EXIT COURSE