LA-UR-23-30793

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Title:	RCT Continuing Training: Item Release and RAM Control
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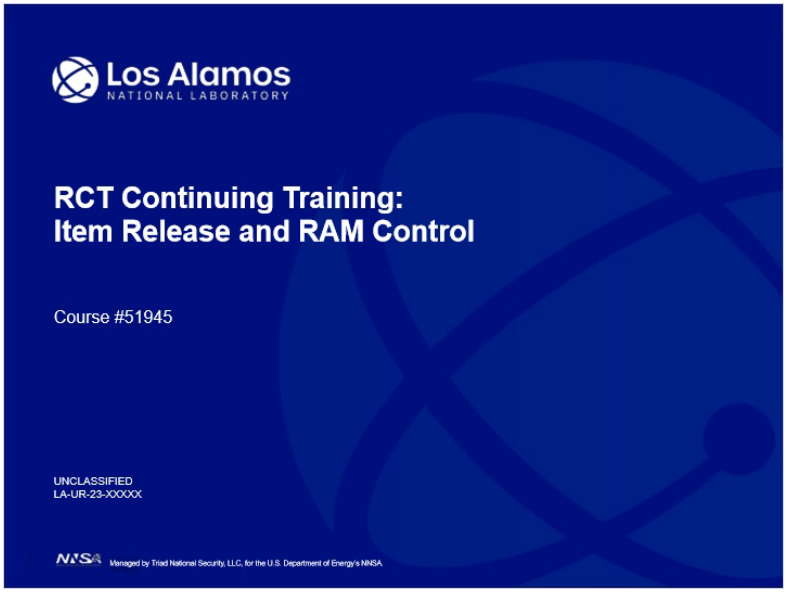
Intended for:	Web
Issued:	2023-09-21

RCT Continuing Training:

Item Release and RAM Control

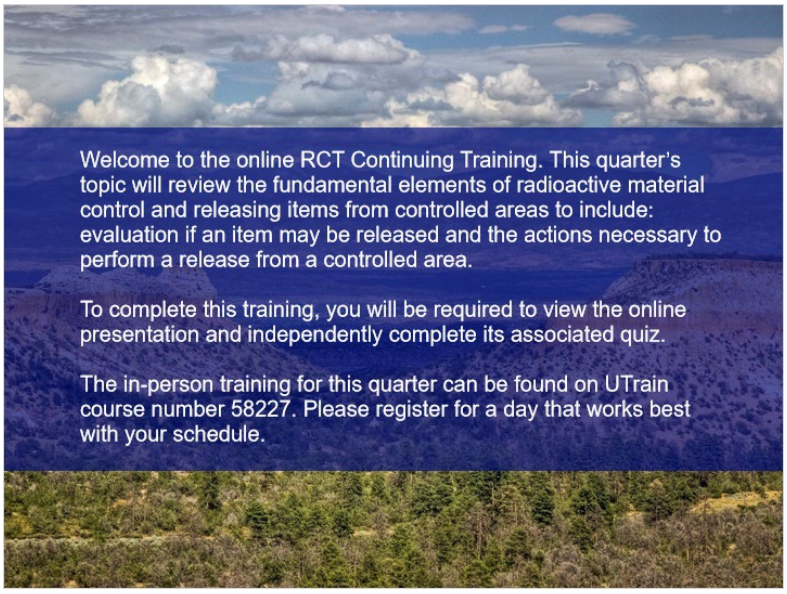
1. RCT Continuing Training Item Removal

1.1 Item Removal Training



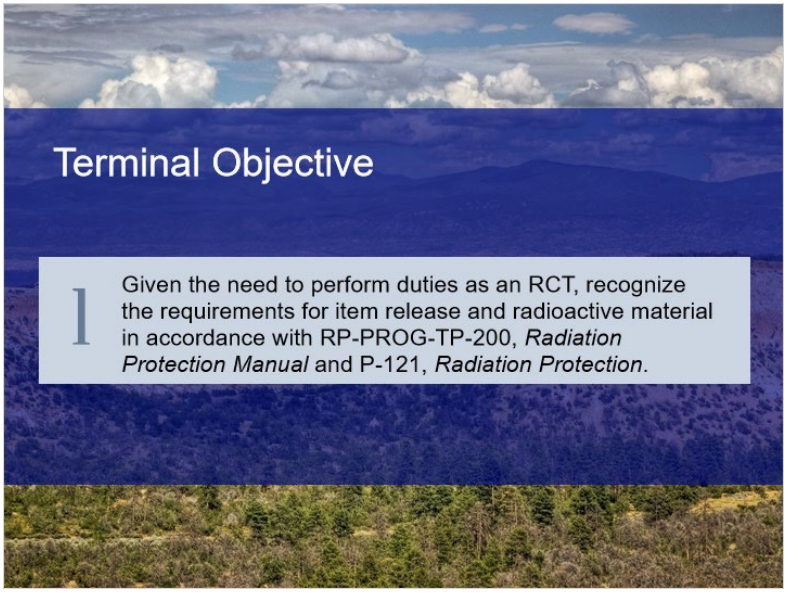
Notes:

1.2 WELCOME LAYOUT

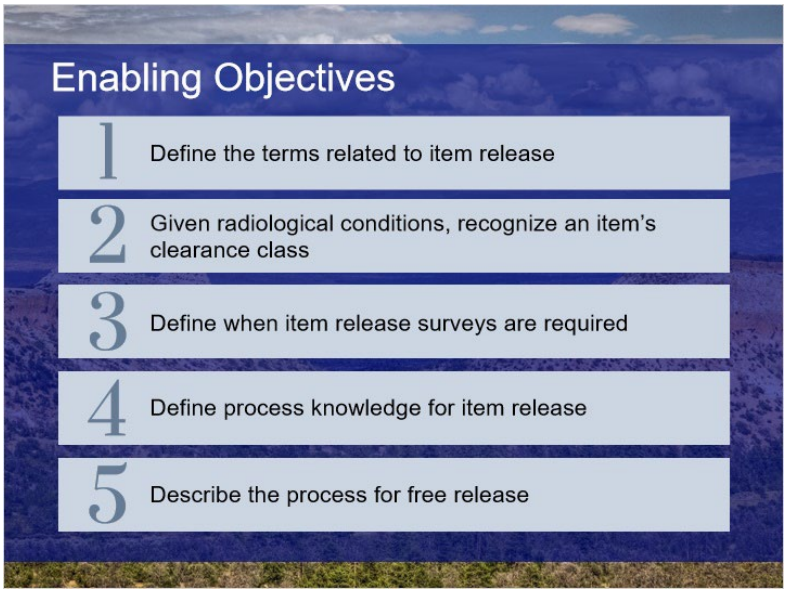


Notes:

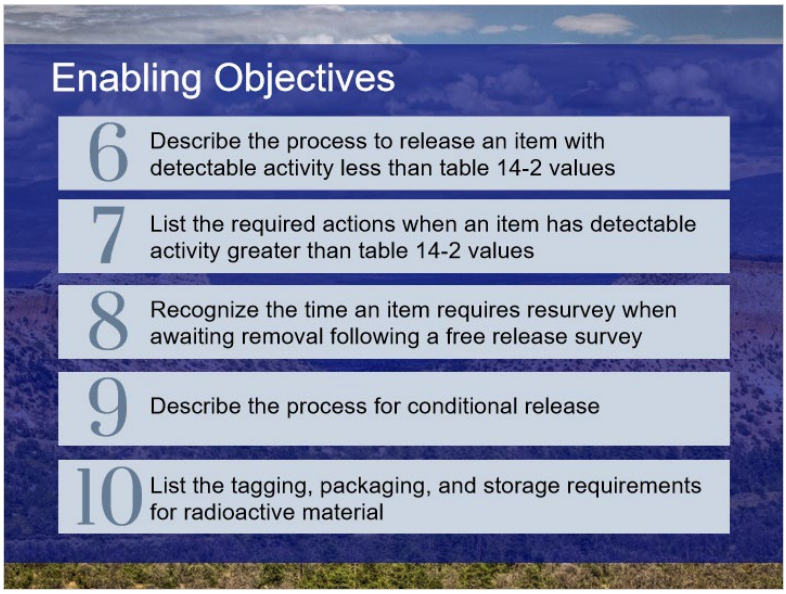
1.3 Terminal Objective



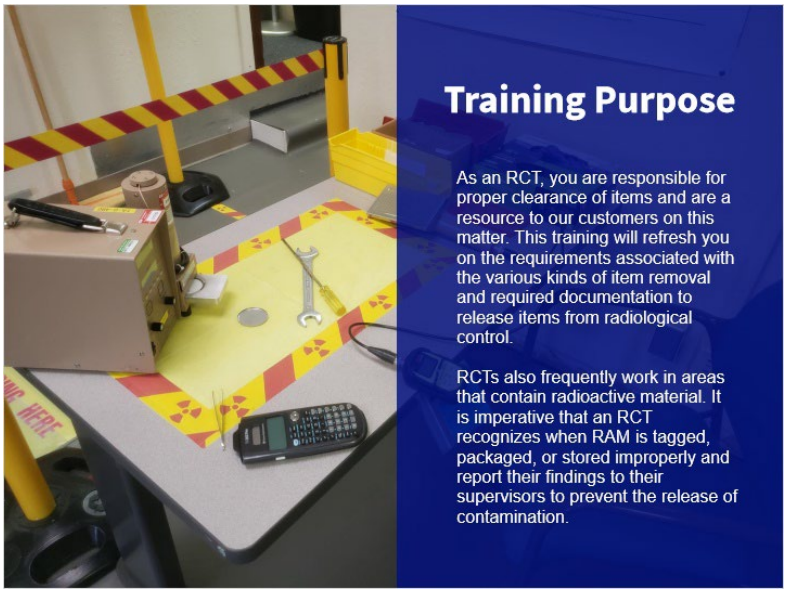
1.4 Enabling Objectives



1.5 Enabling Objectives Continued



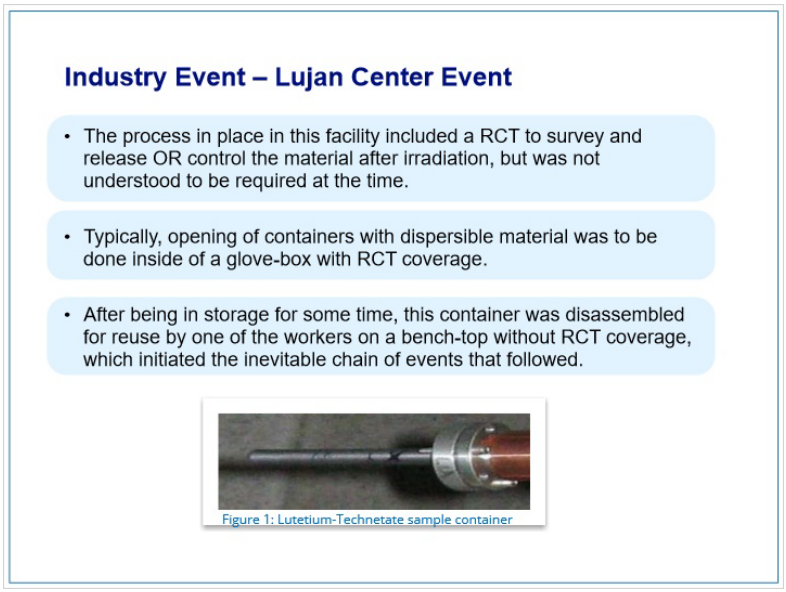
1.6 Training Purpose



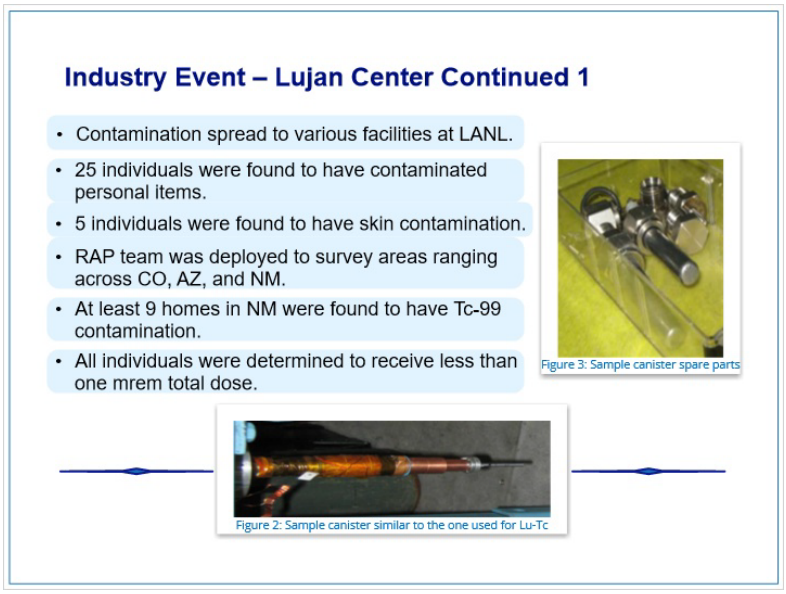
Notes:

1.7 Lujan Center 1

1.8 Lujan Center 2



1.9 Lujan Center 3

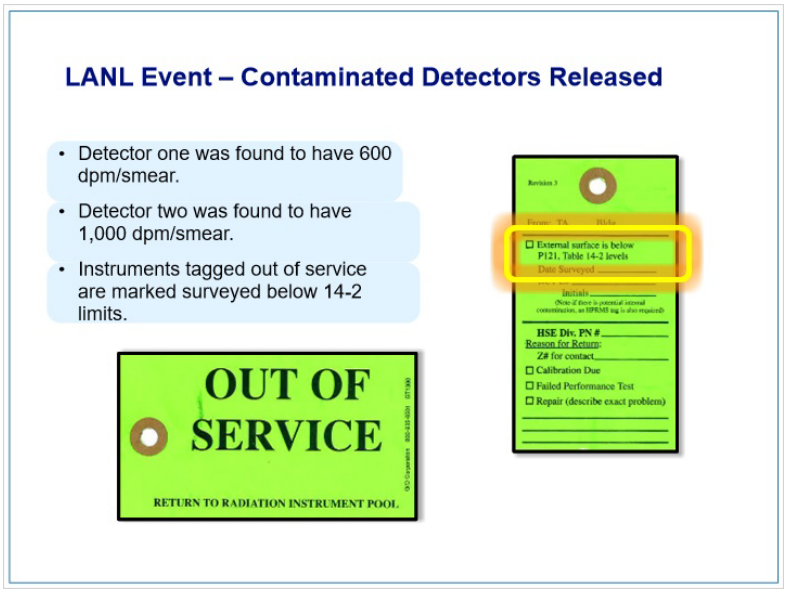


1.10 Lujan Center 4

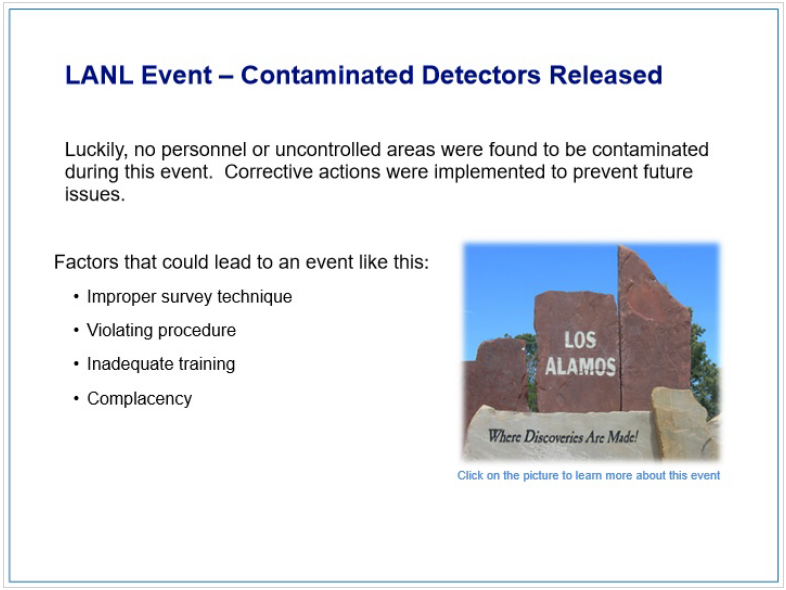
Notes:

1.11 LANL Event 1

1.12 LANL Event 2

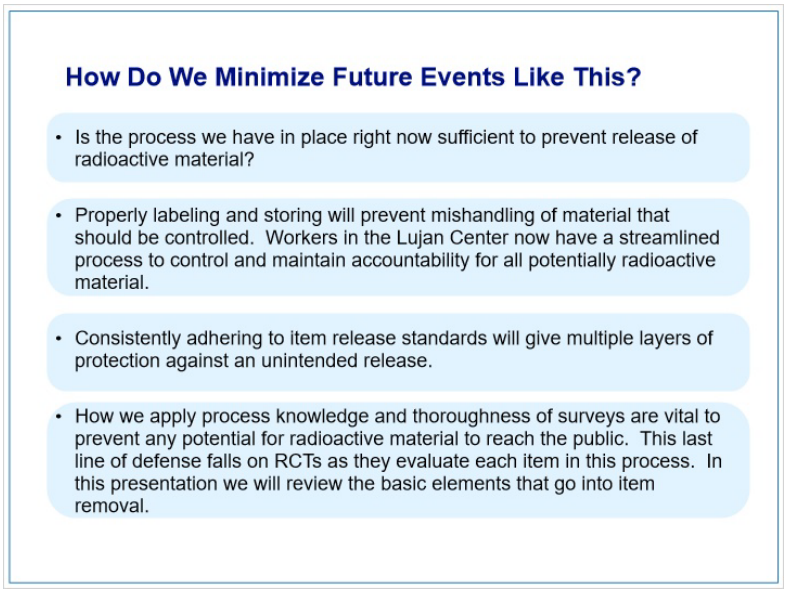


1.13 LANL Event 3



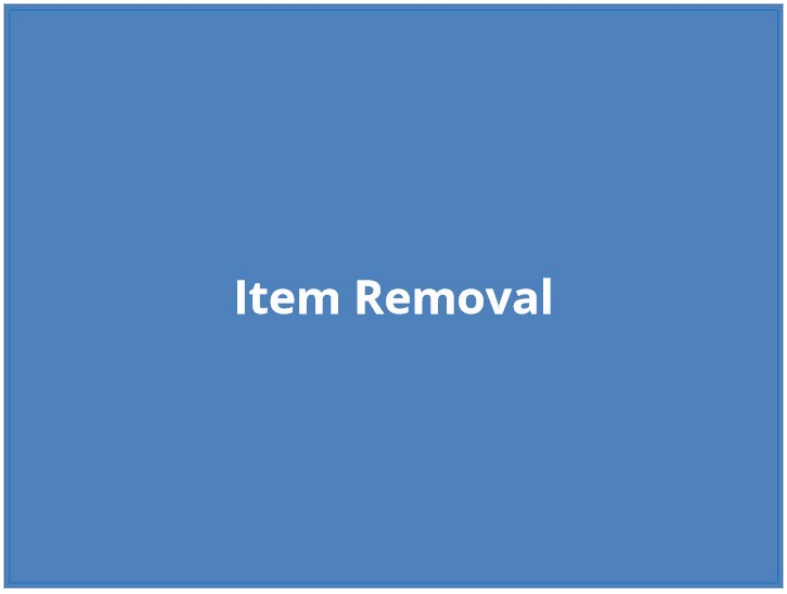
Notes:

1.14 How Future Events Are Minimized

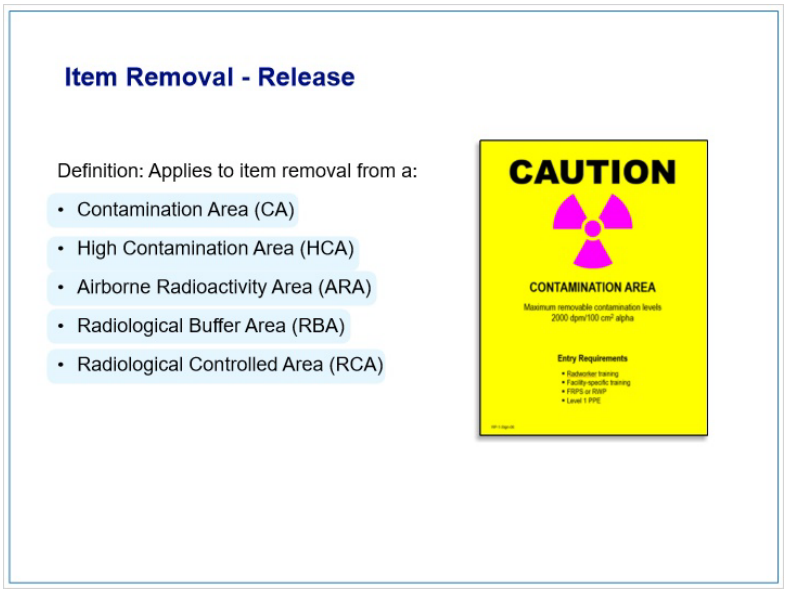


Notes:

1.15 Item Removal Terms



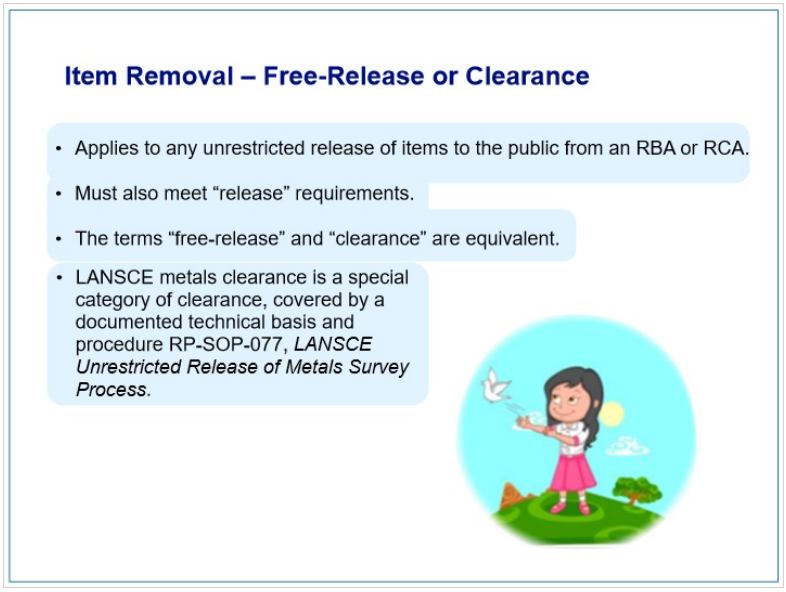
1.16 Release Definition



Notes:

EO1: Describe the terms related to item removal

1.17 Free-Release Definition



Notes:

EO1: Describe the terms related to item removal

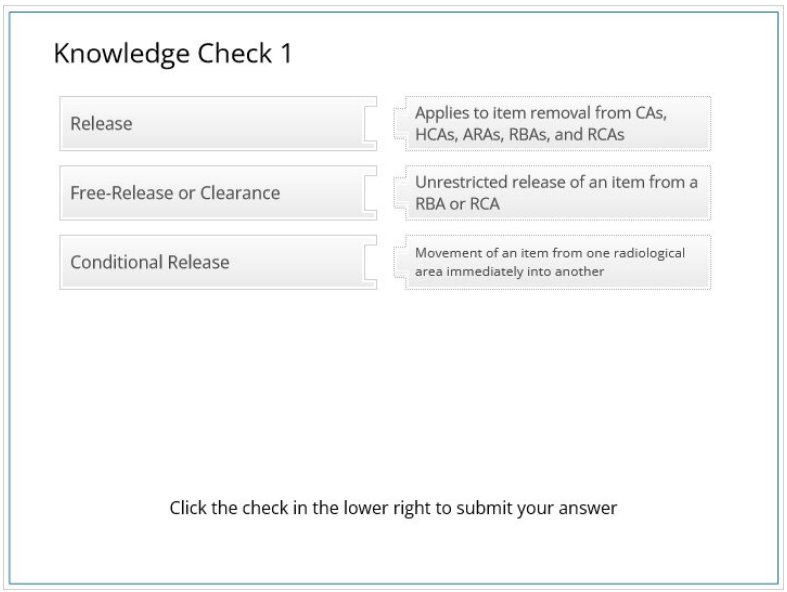
1.18 Conditional Release Definition

Notes:

EO1: Describe the terms related to item removal

1.19 Knowledge Check 1

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



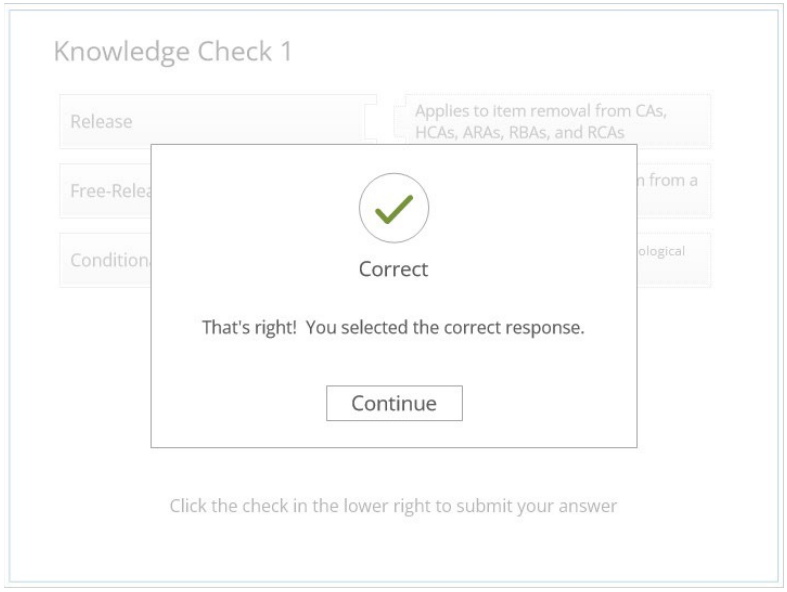
Correct	Choice
Release	Applies to item removal from CAs, HCAs, ARAs, RBAs, and RCAs
Free-Release or Clearance	Unrestricted release of an item from a RBA or RCA
Conditional Release	Movement of an item from one radiological area immediately into another

Feedback when correct:

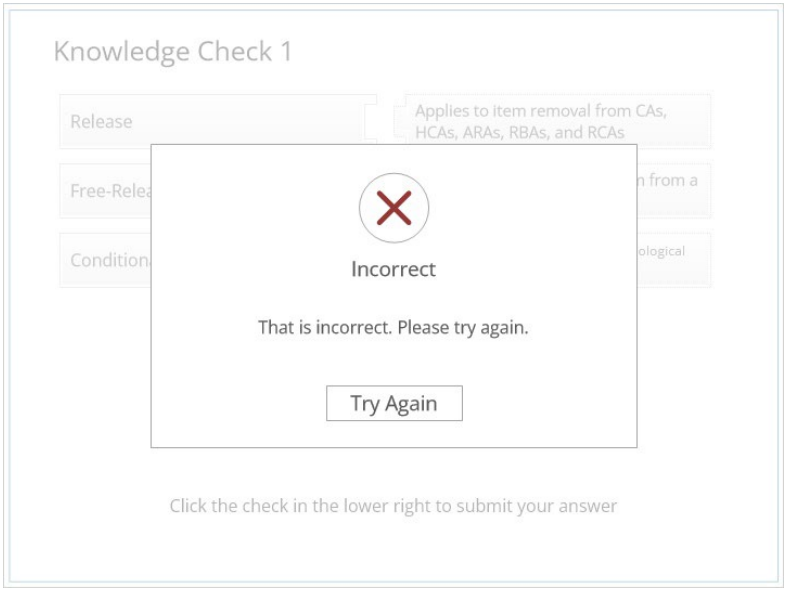
That's right! You selected the correct response.

Notes:

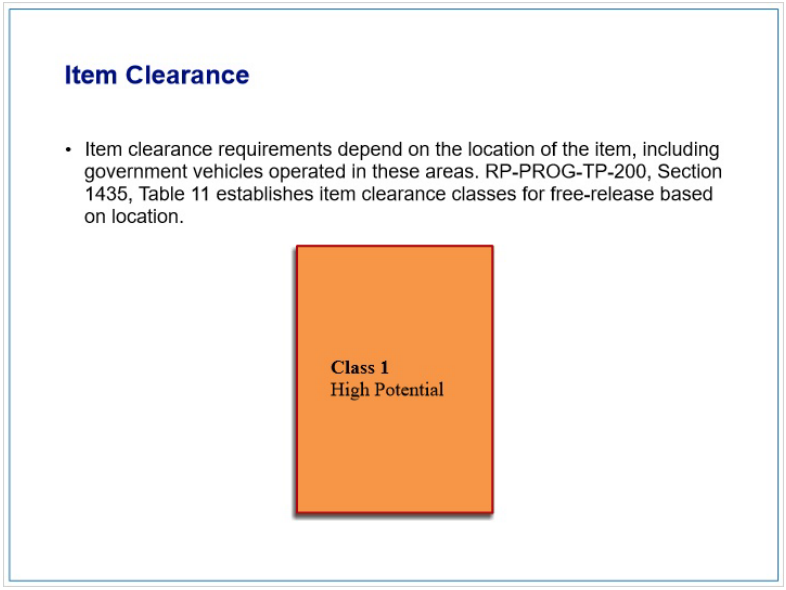
Correct (Slide Layer)



Try Again (Slide Layer)



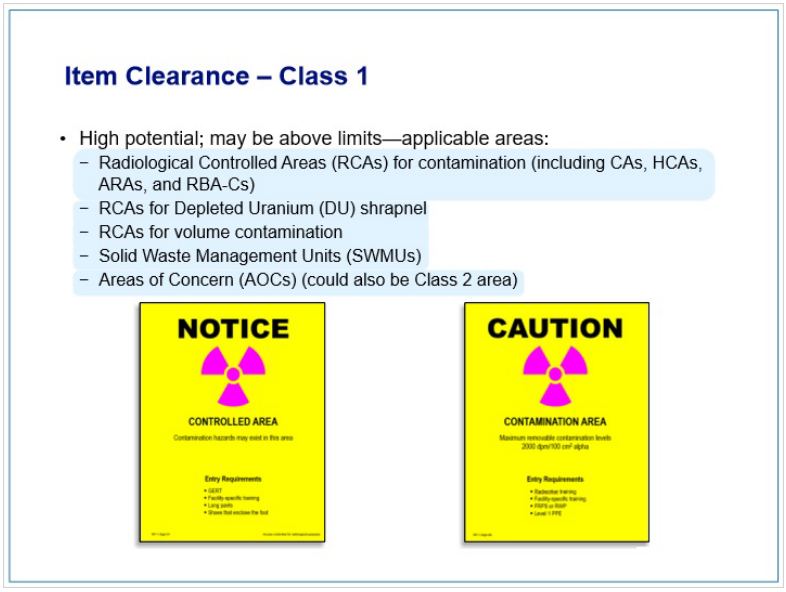
1.20 Item Clearance Classes



Notes:

EO2: Given radiological conditions determine the item clearance class

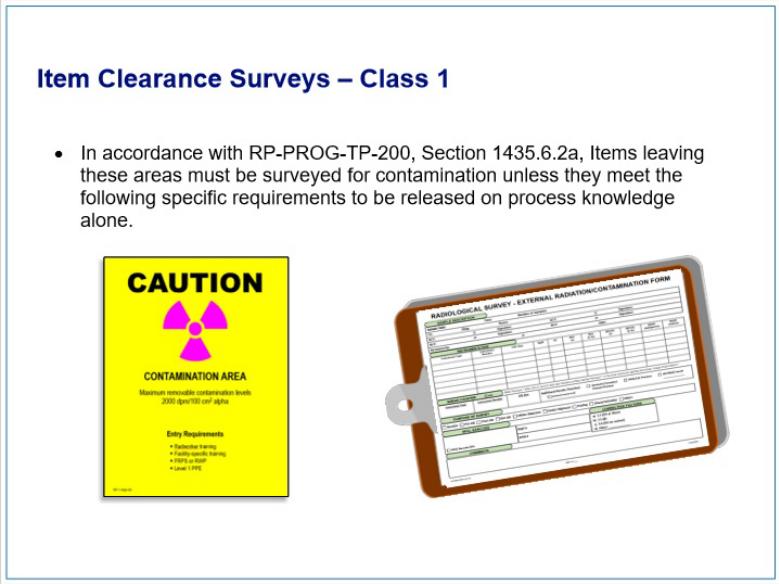
1.21 Class 1



Notes:

EO2: Given radiological conditions determine the item clearance class

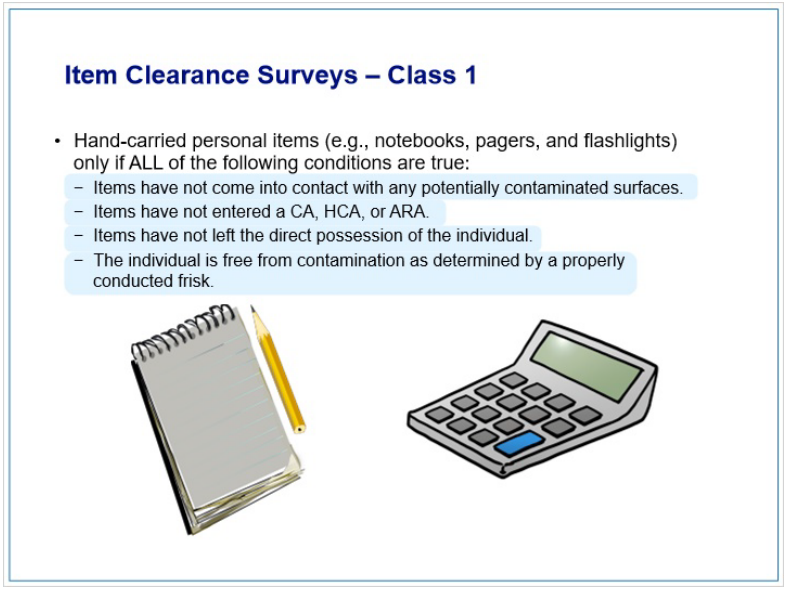
1.22 Class 1 Surveys



Notes:

EO3: Identify when item removal surveys are required

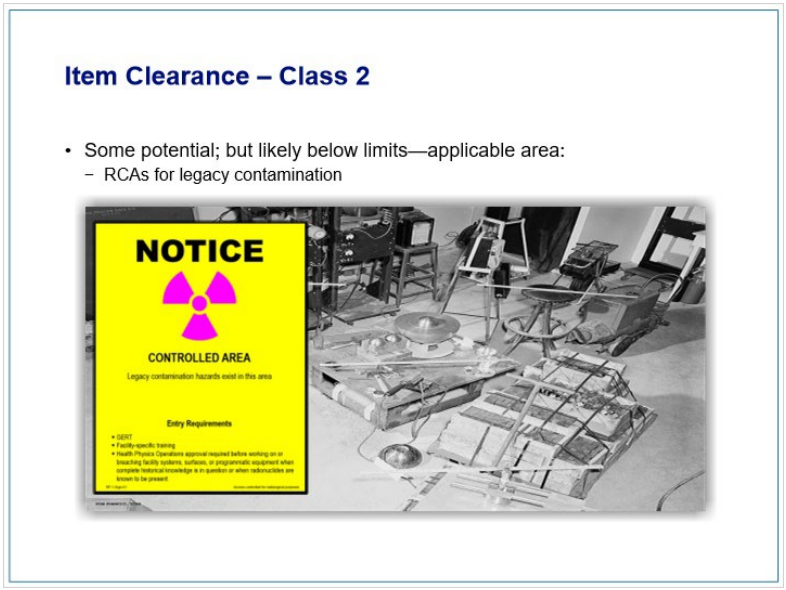
1.23 Class 1 Surveys Continued



Notes:

EO3: Identify when item removal surveys are required

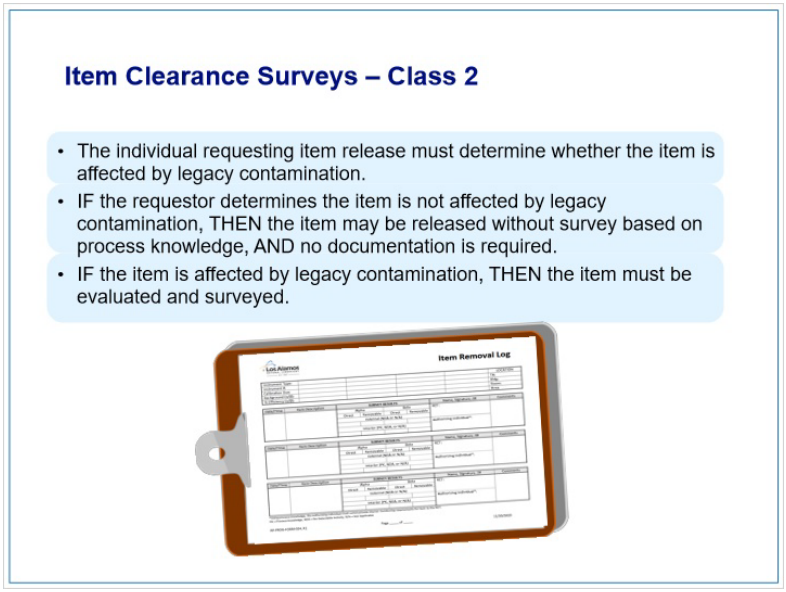
1.24 Class 2



Notes:

EO2: Given radiological conditions determine the item clearance class

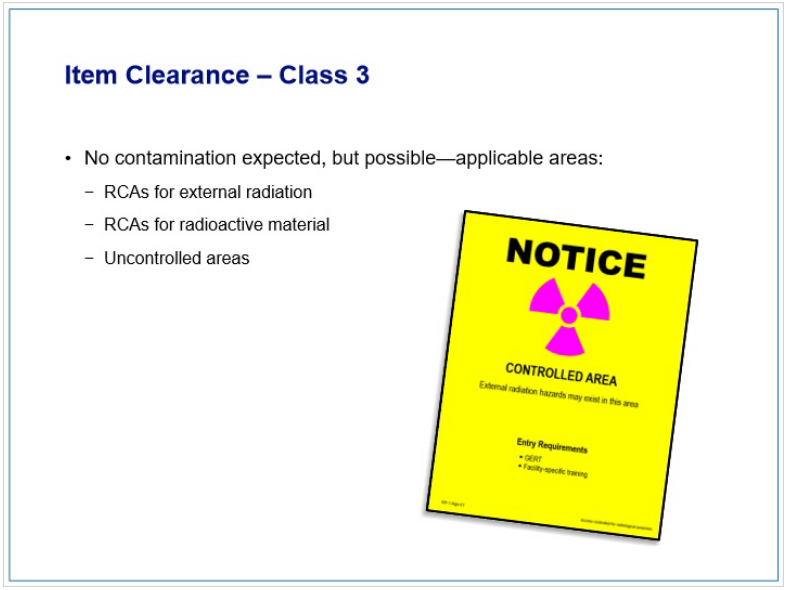
1.25 Class 2 Surveys



Notes:

EO3: Identify when item removal surveys are required

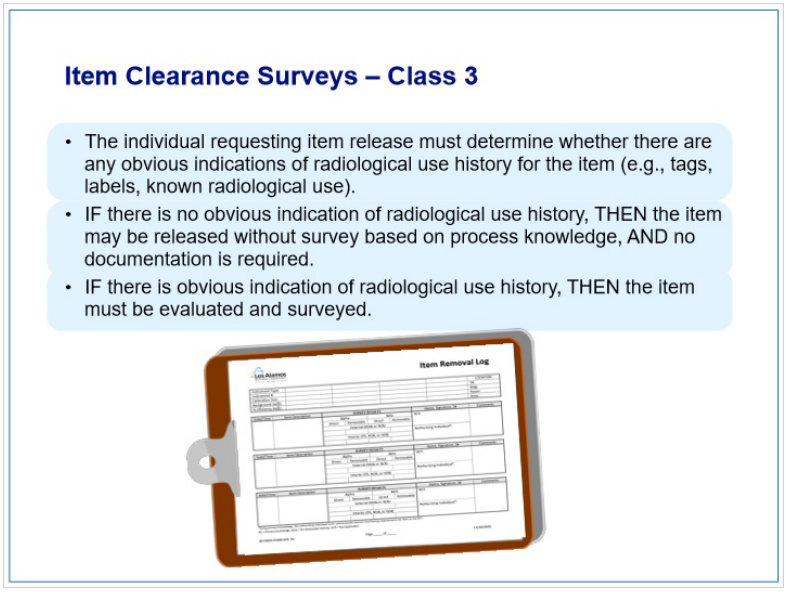
1.26 Class 3



Notes:

EO2: Given radiological conditions determine the item clearance class

1.27 Class 3 Surveys

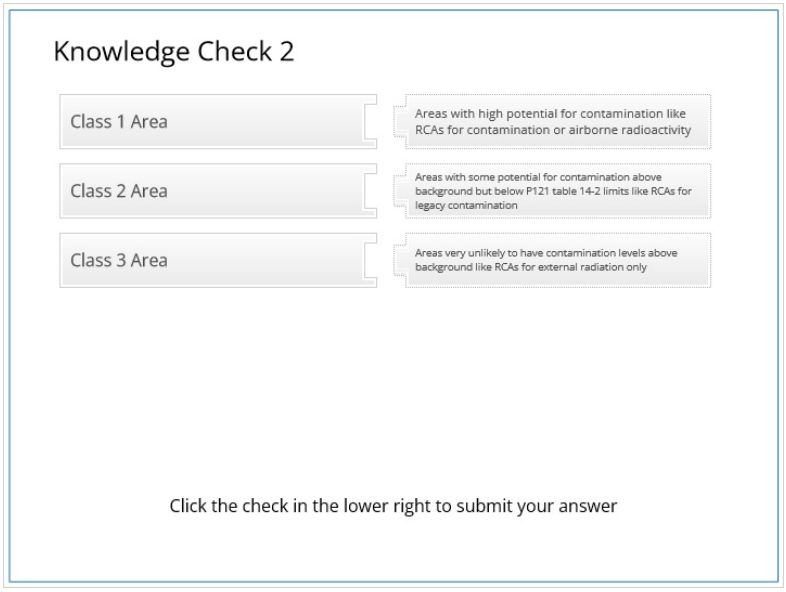


Notes:

EO3: Identify when item removal surveys are required

1.28 Knowledge Check 2

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

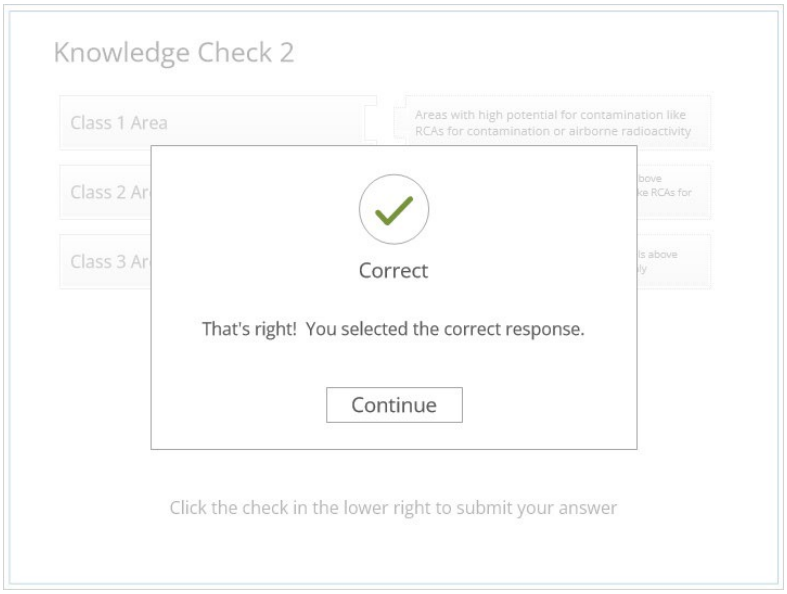


Correct	Choice
Class 1 Area	Areas with high potential for contamination like RCAs for contamination or airborne radioactivity
Class 2 Area	Areas with some potential for contamination above background but below P121 table 14-2 limits like RCAs for legacy contamination
Class 3 Area	Areas very unlikely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

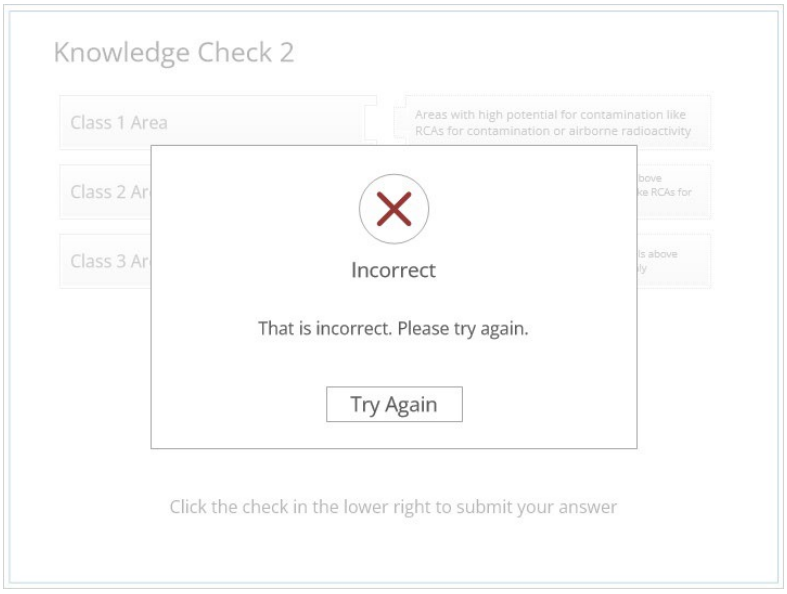
Feedback when correct:

That's right! You selected the correct response.

Correct (Slide Layer)

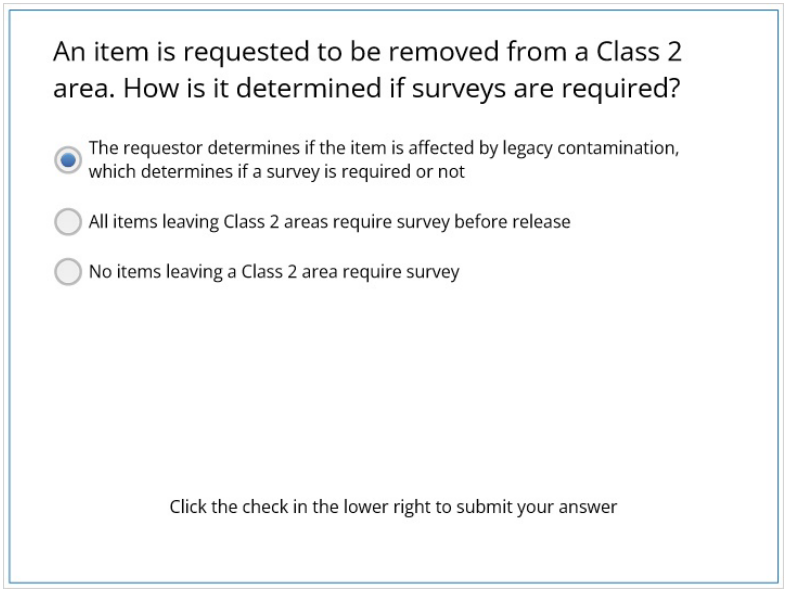


Try Again (Slide Layer)



1.29 Knowledge Check 3

(Multiple Choice, 10 points, unlimited attempts permitted)

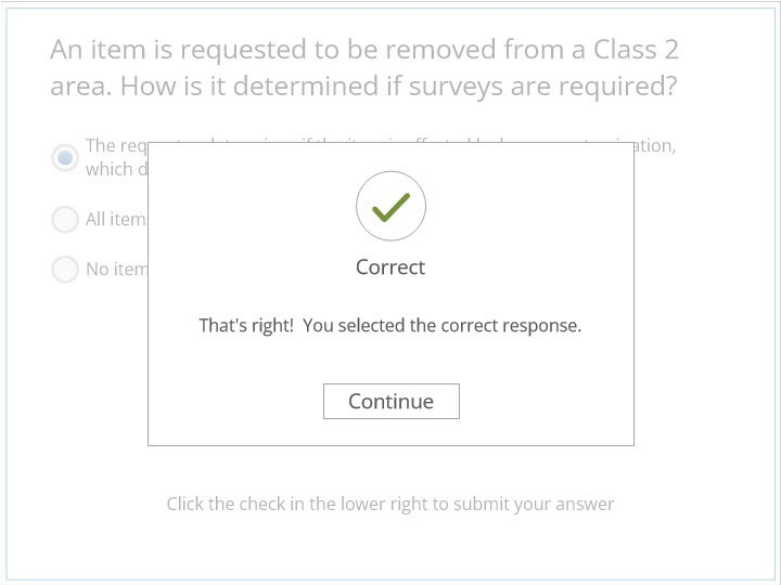


Correct	Choice
X	The requestor determines if the item is affected by legacy contamination, which determines if a survey is required or not
	All items leaving Class 2 areas require survey before release
	No items leaving a Class 2 area require survey

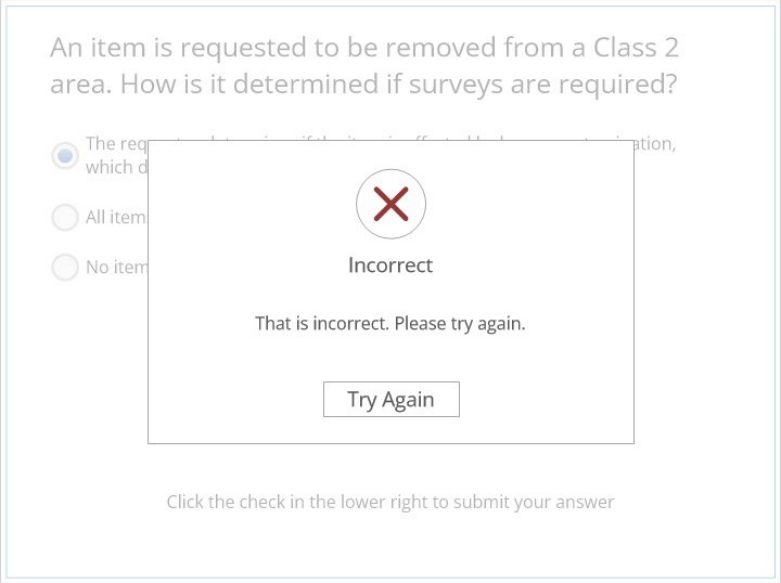
Feedback when correct:

That's right! You selected the correct response.

Correct (Slide Layer)

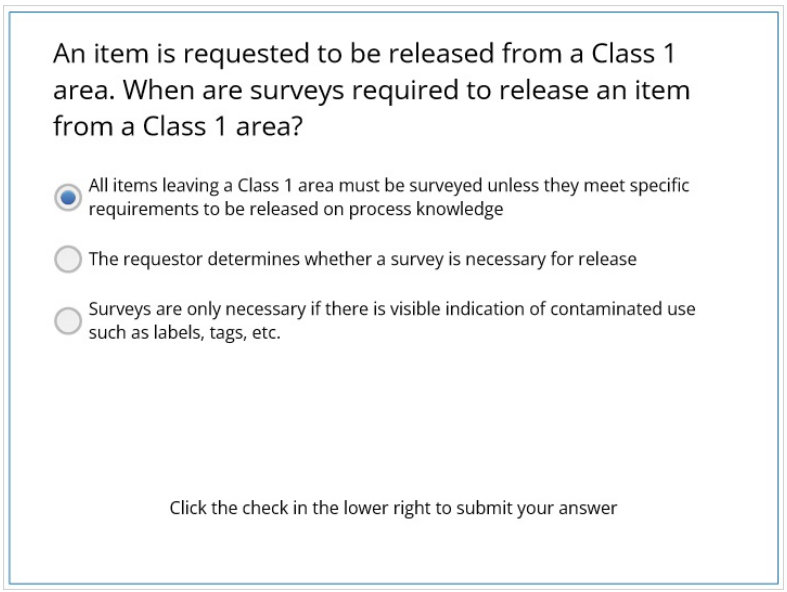


Try Again (Slide Layer)



1.30 Knowledge Check 4

(Multiple Choice, 10 points, unlimited attempts permitted)

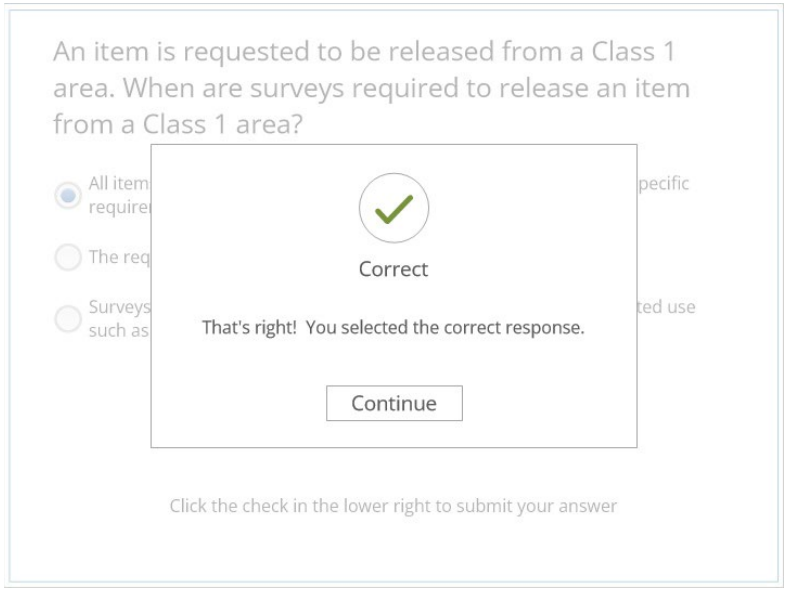


Correct	Choice
X	All items leaving a Class 1 area must be surveyed unless they meet specific requirements to be released on process knowledge
	The requestor determines whether a survey is necessary for release
	Surveys are only necessary if there is visible indication of contaminated use such as labels,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

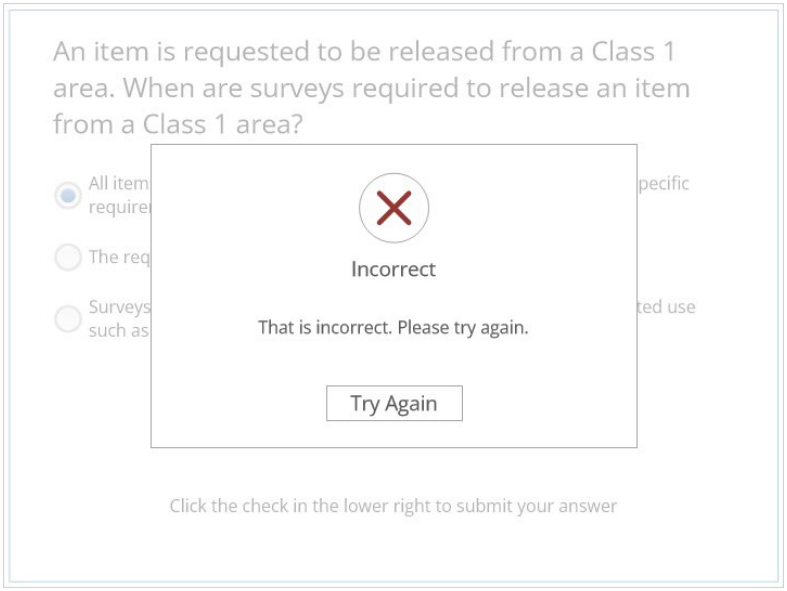
Feedback when correct:

That's right! You selected the correct response.

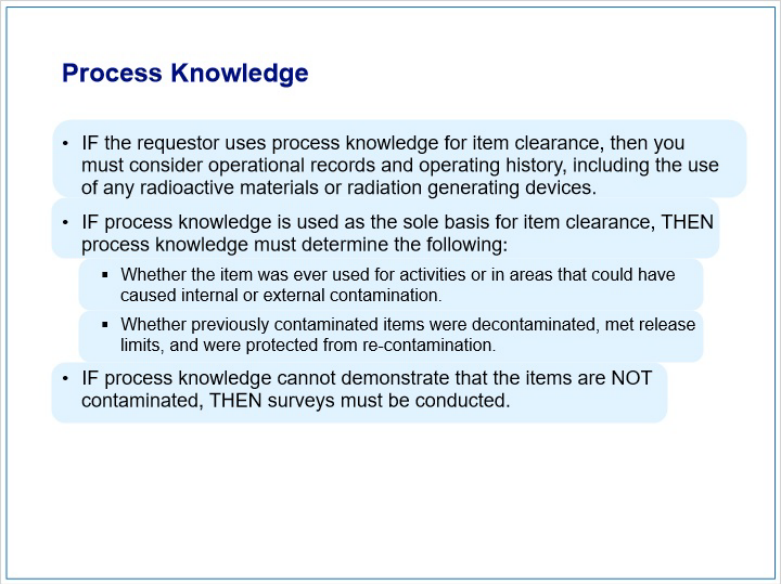
Correct (Slide Layer)



Try Again (Slide Layer)



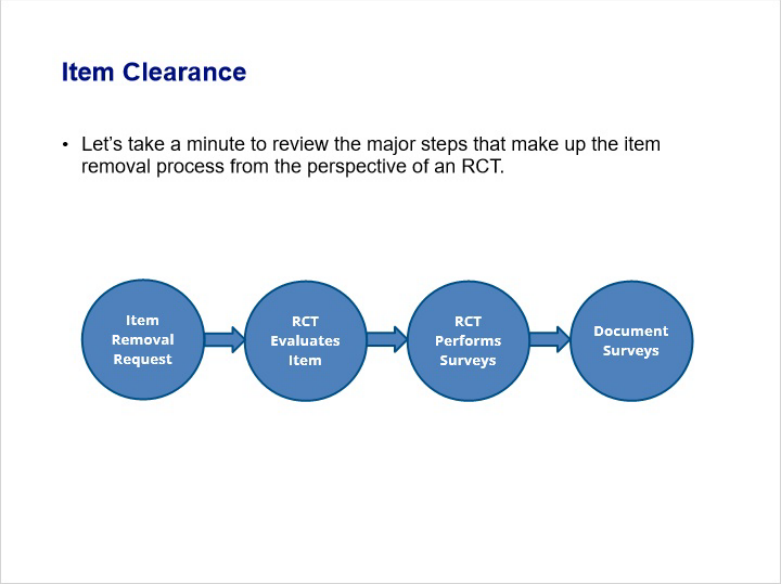
1.31 Process Knowledge



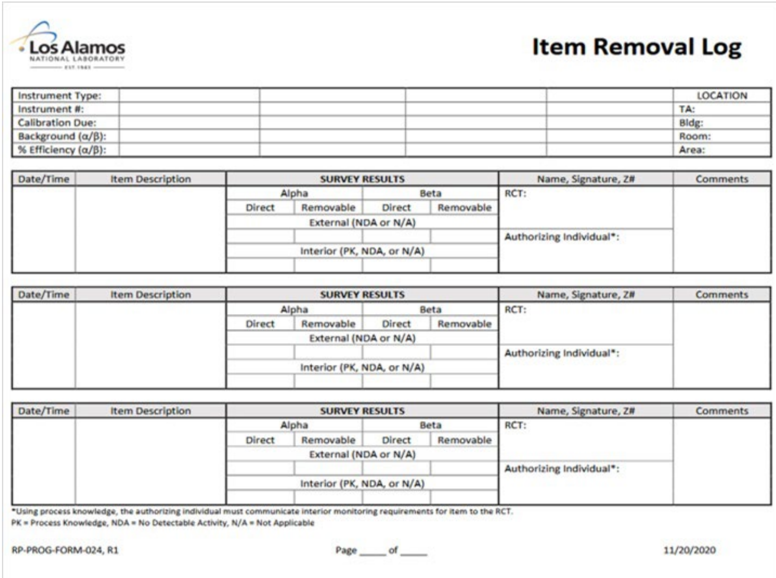
Notes:

EO4: Describe the use of process knowledge for item release

1.32 Item Release Review



1.33 RP-PROG-FORM-024



Los Alamos NATIONAL LABORATORY EST. 1943

Item Removal Log

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

Date/Time	Item Description	SURVEY RESULTS				Name, Signature, Z#	Comments
		Alpha		Beta		RCT:	
		Direct	Removable	Direct	Removable		
		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		RCT:	
		Direct	Removable	Direct	Removable		
		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		RCT:	
		Direct	Removable	Direct	Removable		
		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

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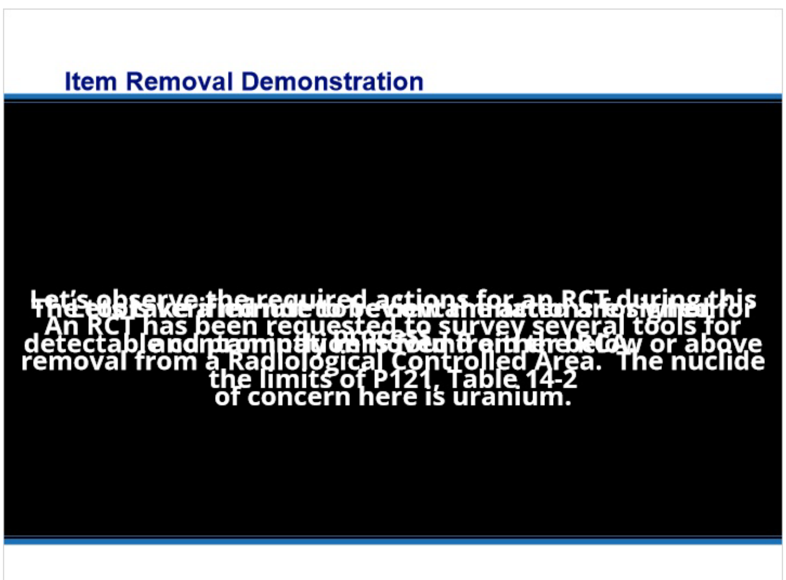
1.34 Item Release Video



Notes:

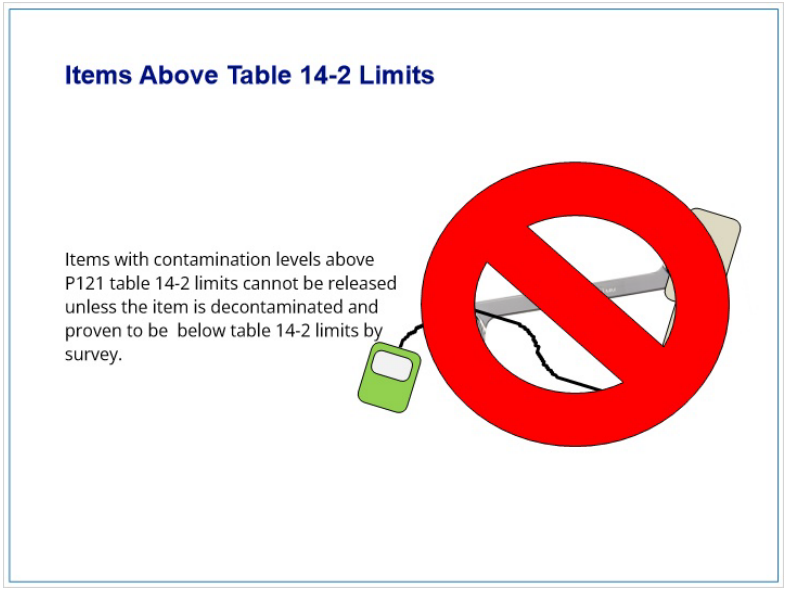
EO5: Explain the process for free release when given an item release scenario

1.35 Item Release with Detectable Activity

Notes:

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

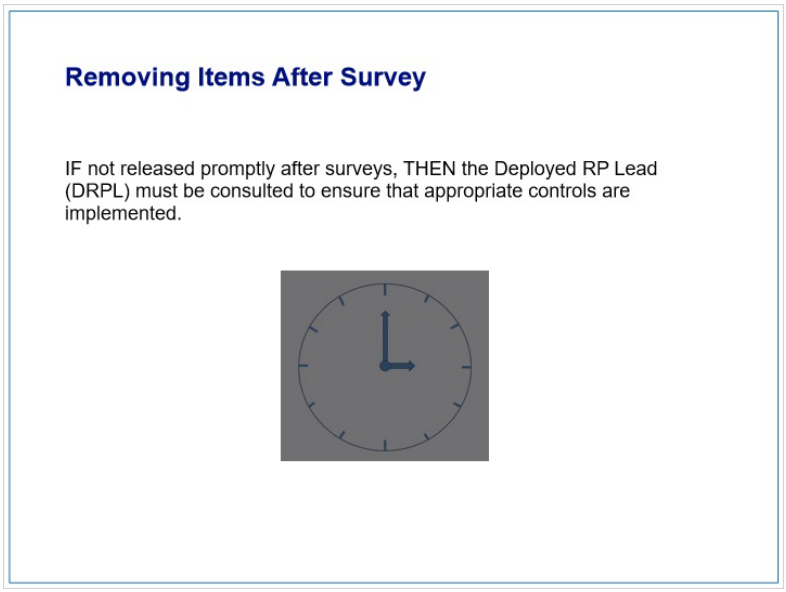
1.36 Items Above 14-2 Limits



Notes:

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

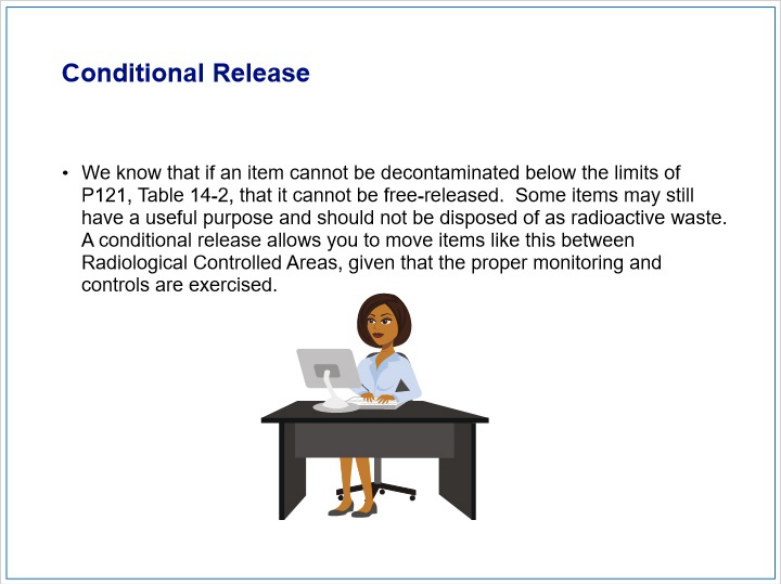
1.37 Removing Items After Survey



Notes:

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

1.38 Conditional Release

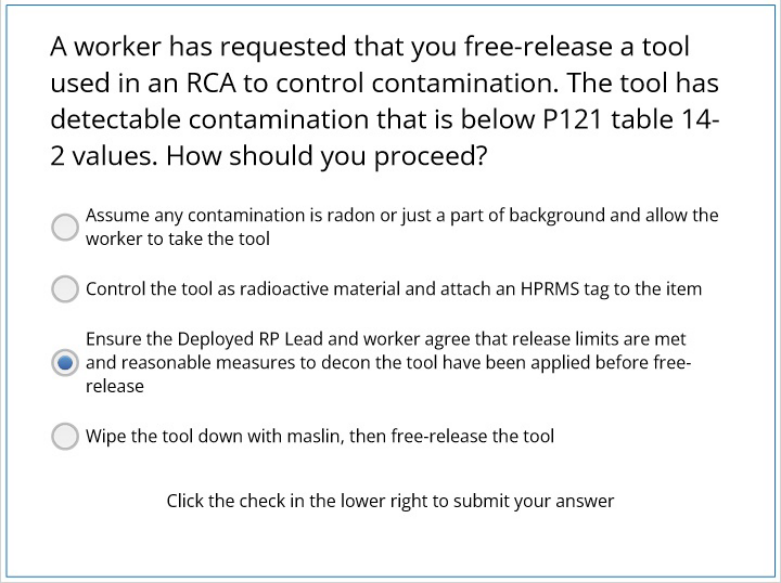


Notes:

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)

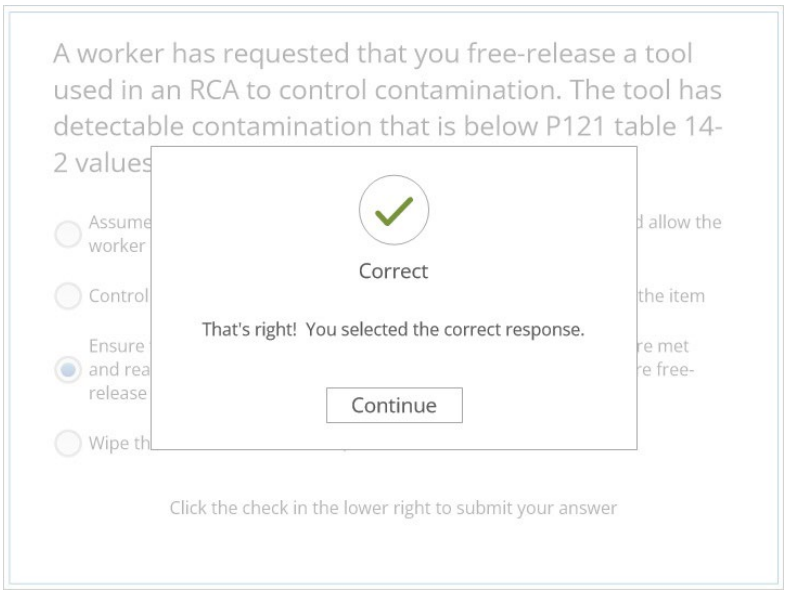


Correct	Choice
	Assume any contamination is radon or just a part of background and allow the worker to take the tool
	Control the tool as radioactive material and attach an HPRMS tag to the item
X	Ensure the Deployed RP Lead and worker agree that release limits are met and reasonable measures to decon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

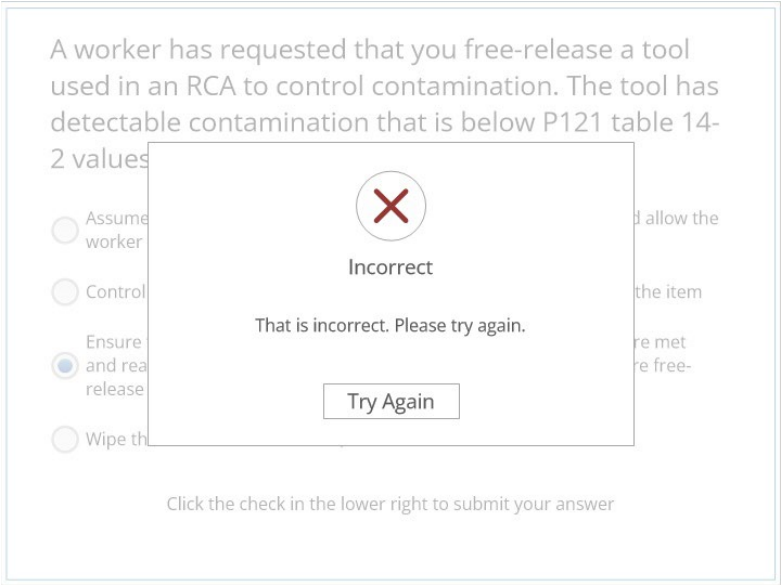
Feedback when correct:

That's right! You selected the correct response.

Correct (Slide Layer)

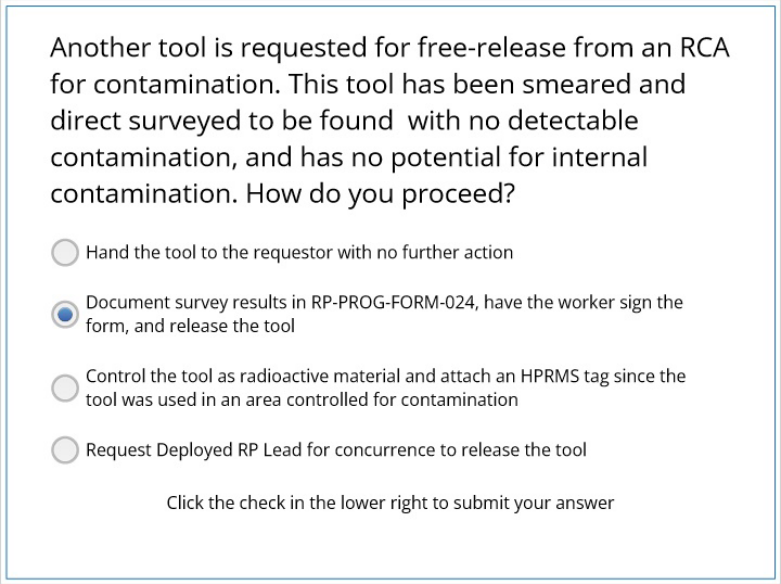


Try Again (Slide Layer)



1.40 Knowledge Check 6

(Multiple Choice, 10 points, unlimited attempts permitted)



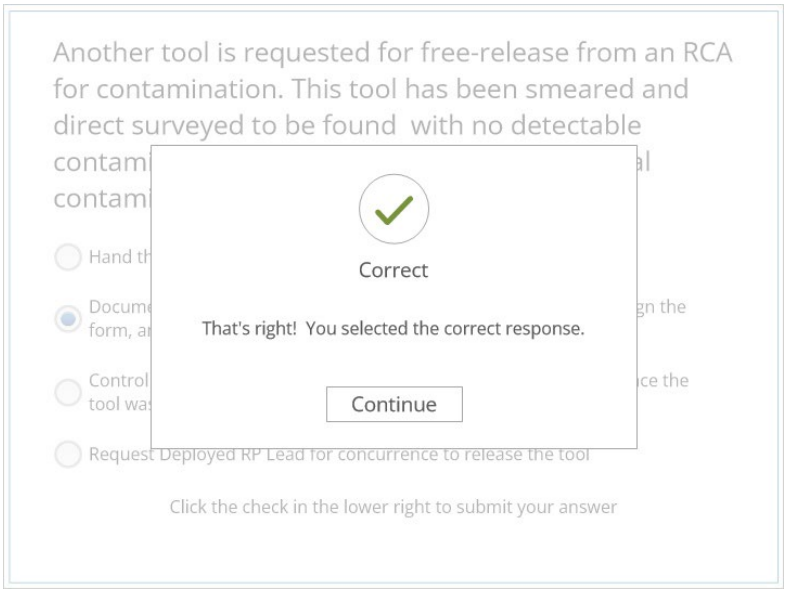
Correct	Choice
	Hand the tool to the requestor with no further action

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

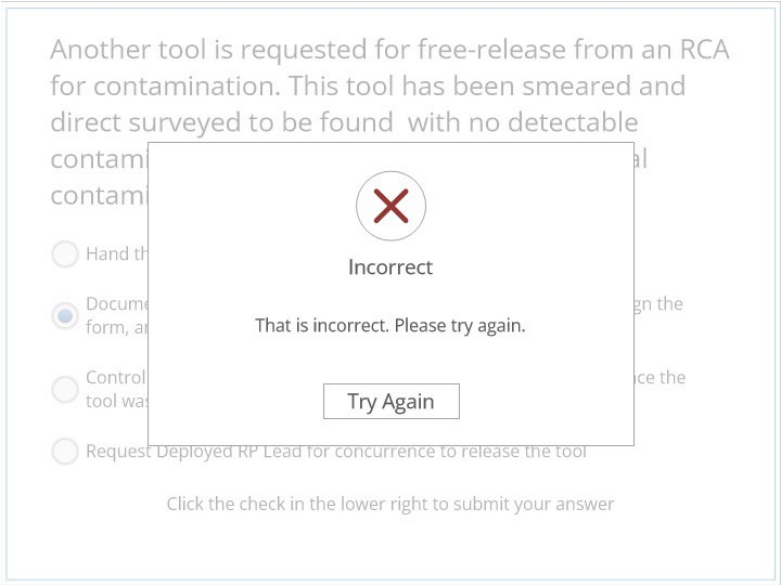
Feedback when correct:

That's right! You selected the correct response.

Correct (Slide Layer)

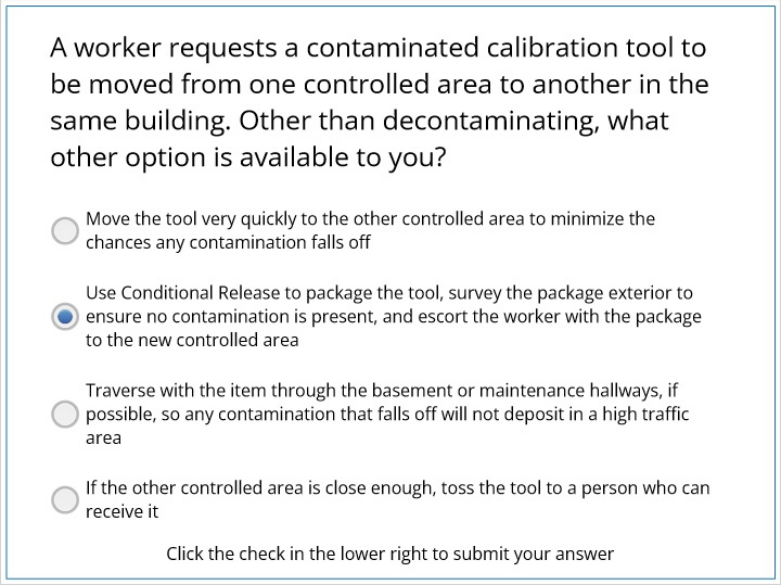


Try Again (Slide Layer)



1.41 Knowledge Check 7

(Multiple Choice, 10 points, unlimited attempts permitted)



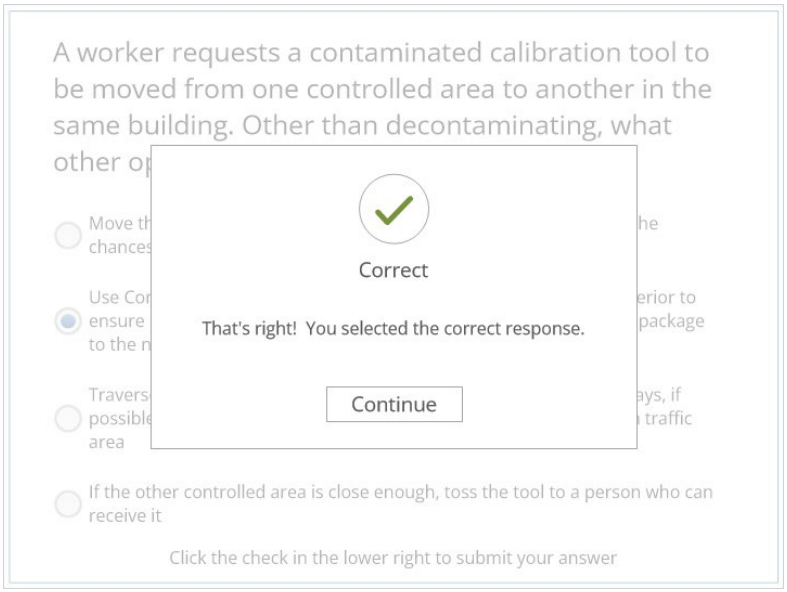
Correct	Choice
	Move the tool very quickly to the other controlled area to minimize the chances

	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

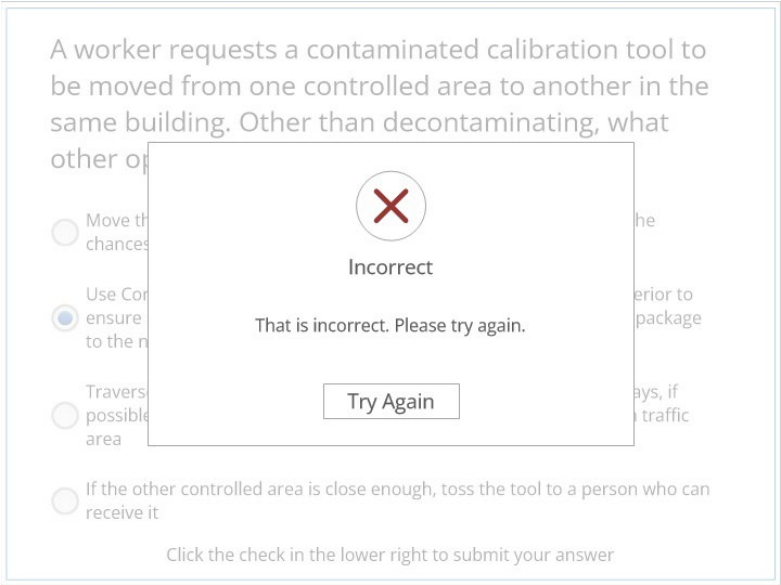
Feedback when correct:

That's right! You selected the correct response.

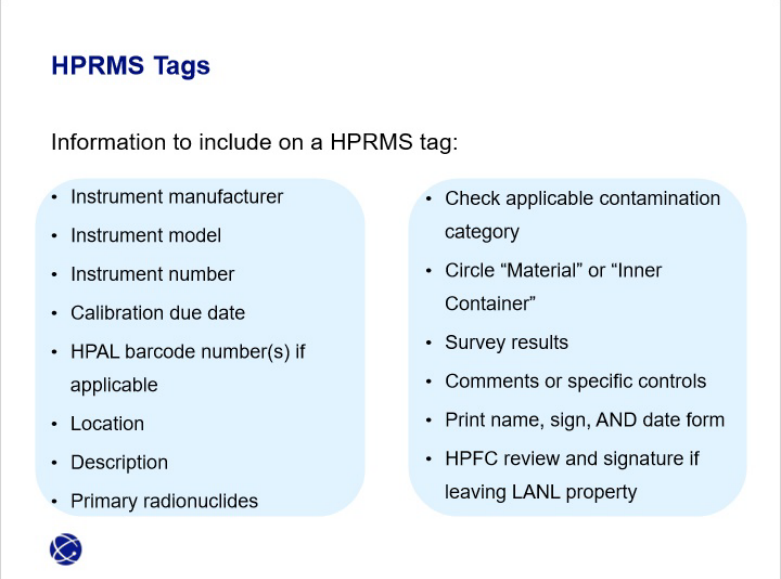
Correct (Slide Layer)



Try Again (Slide Layer)



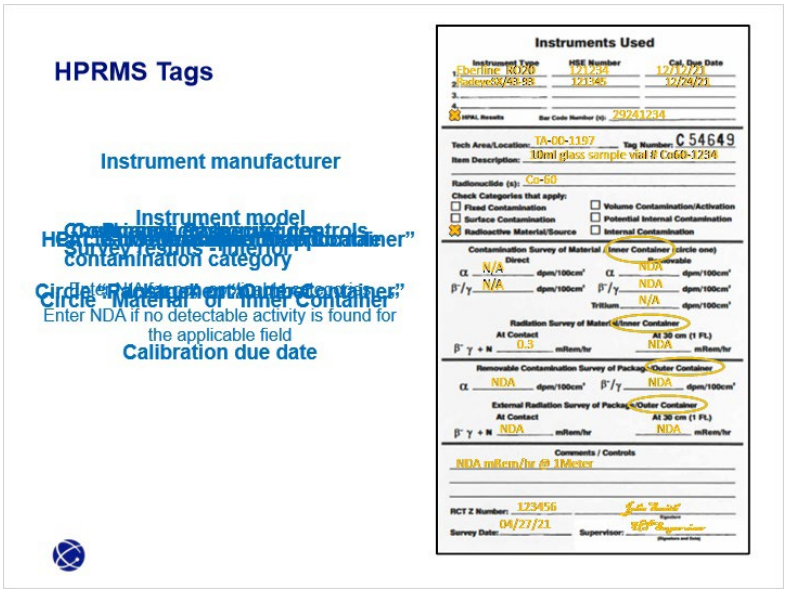
1.42 HPRMS Tags



Notes:

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

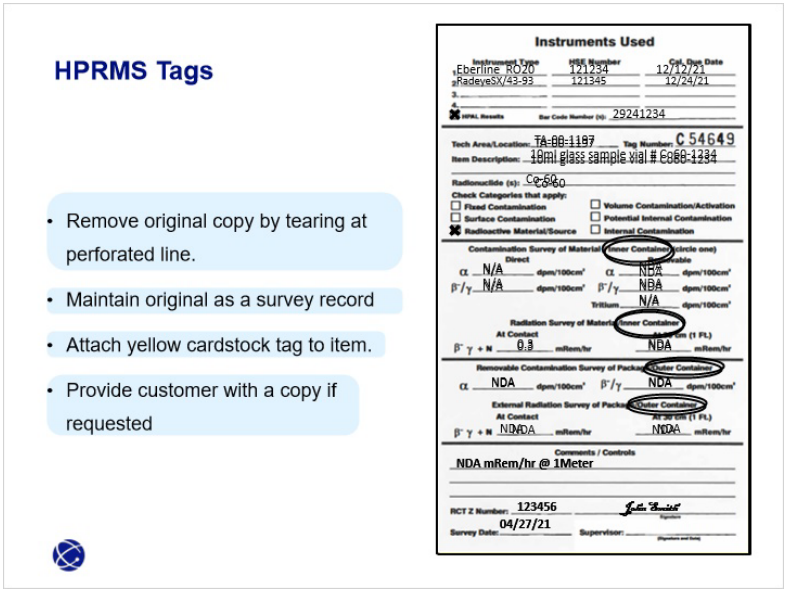
1.43 Filling out an HPRMS Tag



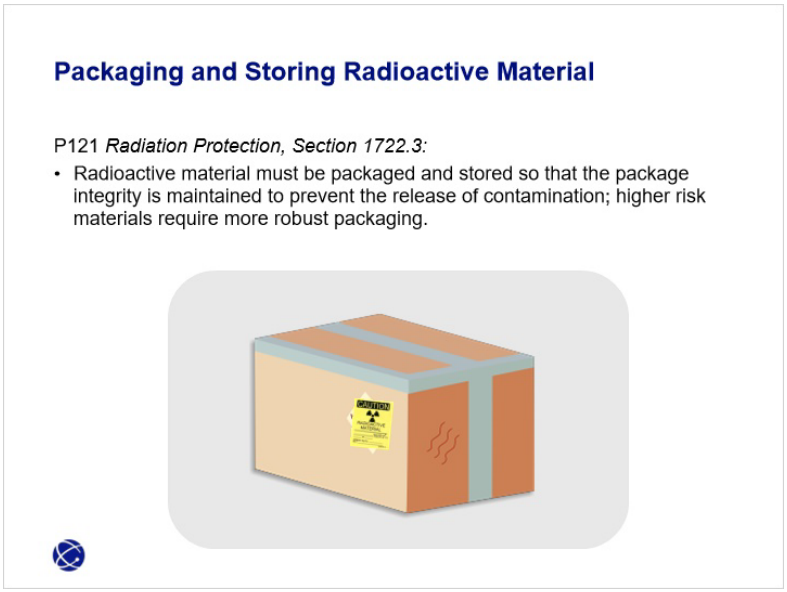
Notes:

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

1.44 Filling out an HPRMS Tag Continued



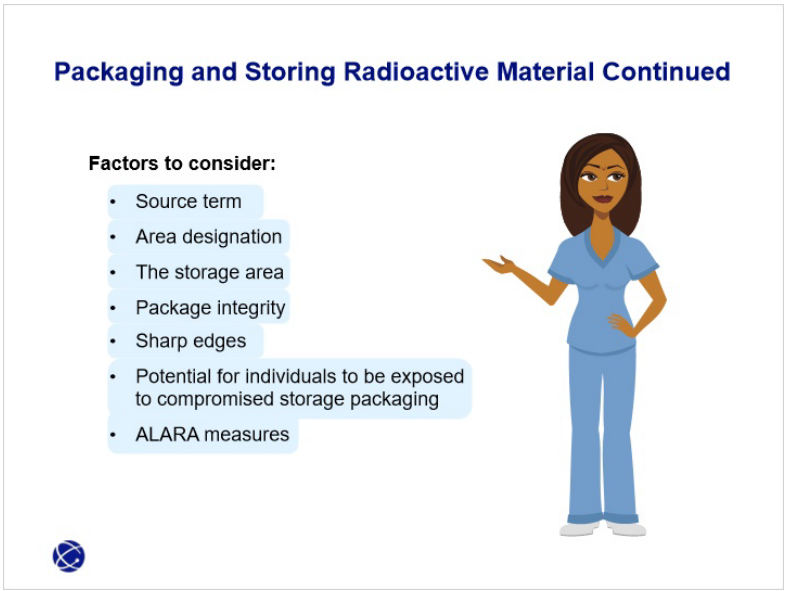
1.45 Packing and Storing RAM



Notes:

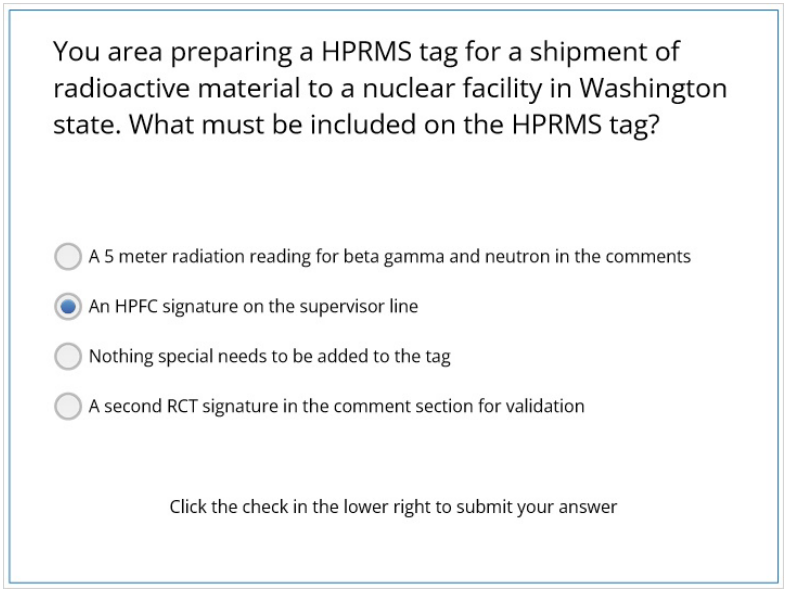
EO8: Locate the requirements for packaging and storing radioactive material

1.46 Packaging and Storing RAM Continued



1.47 Knowledge Check 8

(Multiple Choice, 10 points, unlimited attempts permitted)

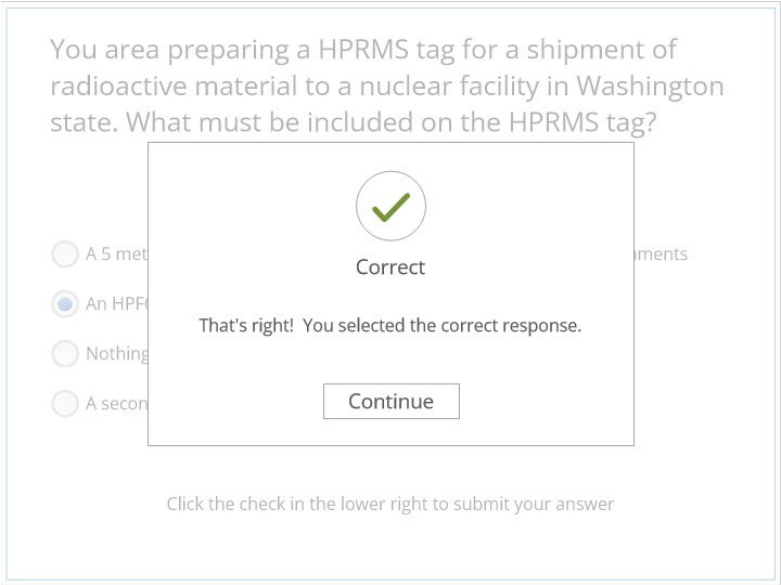


Correct	Choice
	A 5 meter radiation reading for beta gamma and neutron in the comments
X	An HPFC signature on the supervisor line
	Nothing special needs to be added to the tag
	A second RCT signature in the comment section for validation

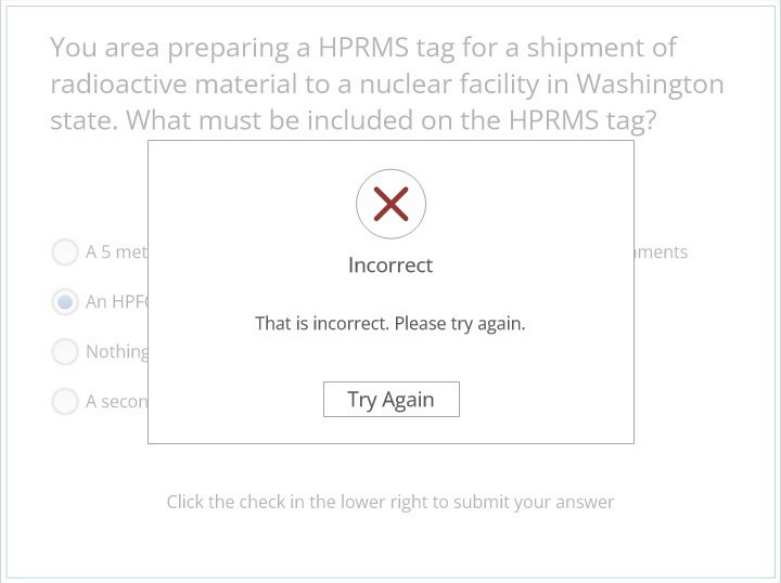
Feedback when correct:

That's right! You selected the correct response.

Correct (Slide Layer)

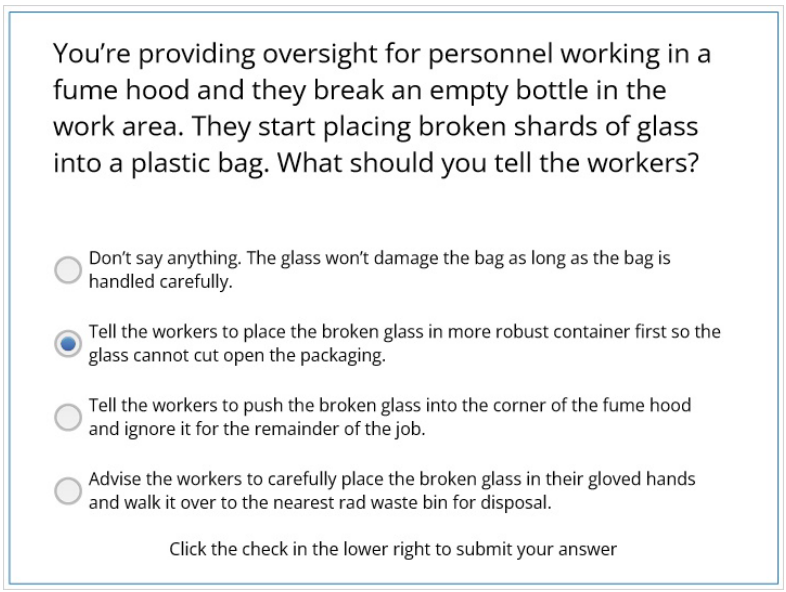


Try Again (Slide Layer)



1.48 Knowledge Check 9

(Multiple Choice, 10 points, unlimited attempts permitted)

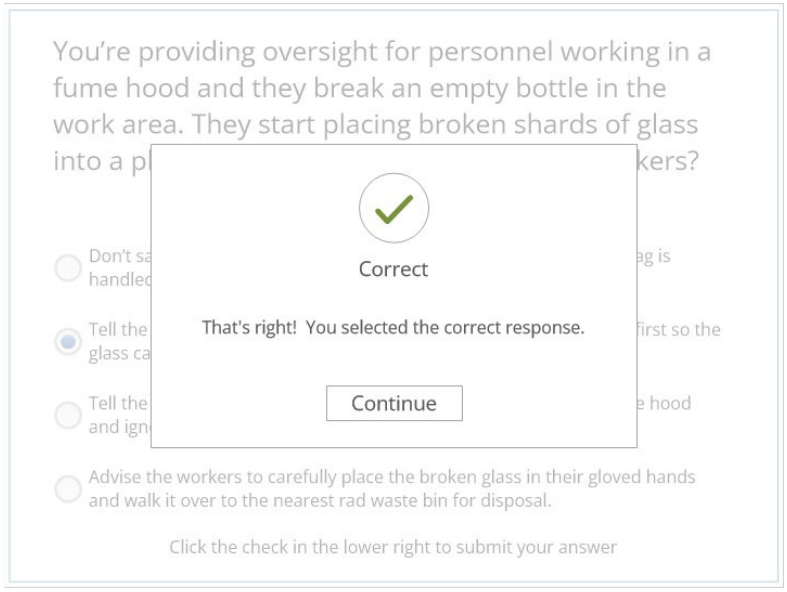


Correct	Choice
	Don't say anything. The glass won't damage the bag as long as the bag is handled carefully.
X	Tell the workers to place the broken glass in more robust container first so the glass cannot cut open the packaging.
	Tell the workers to push the broken glass into the corner of the fume hood and ignore it for the remainder of the job.
	Advise the workers to carefully place the broken glass in their gloved hands and walk it over to the nearest rad waste bin for disposal.

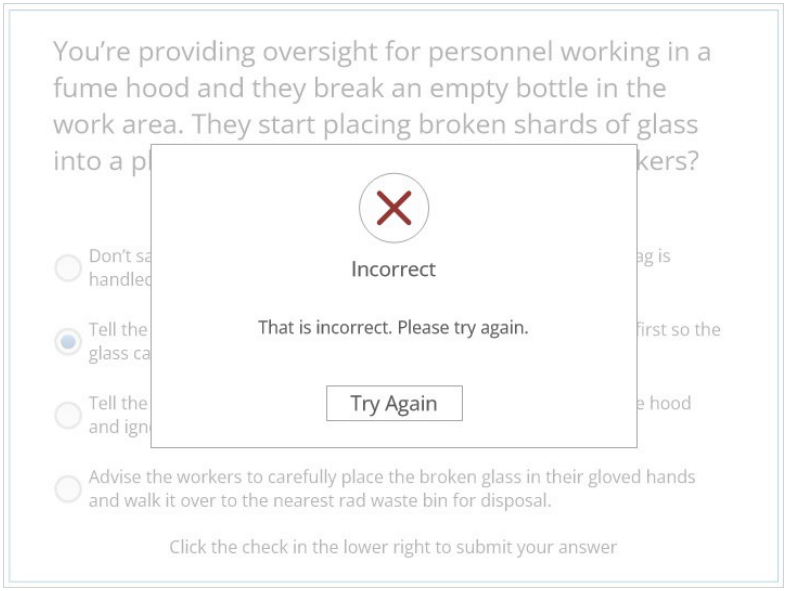
Feedback when correct:

That's right! You selected the correct response.

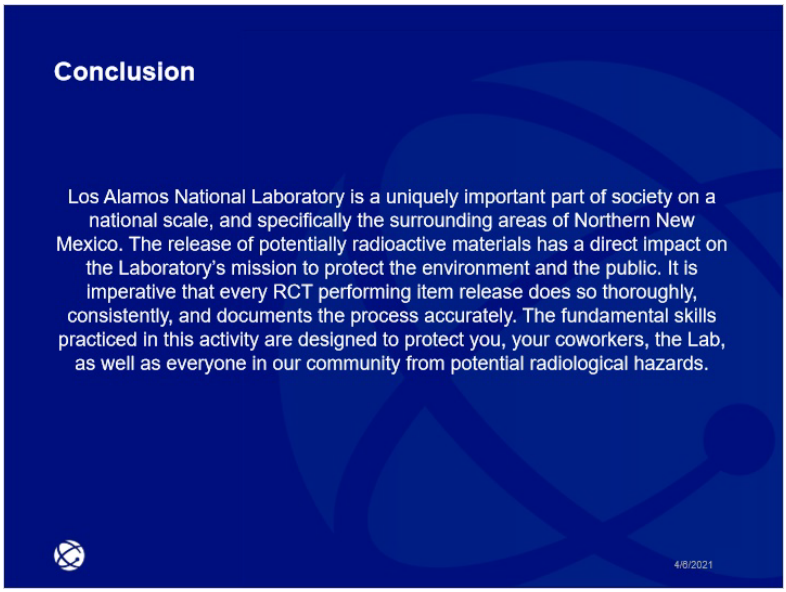
Correct (Slide Layer)



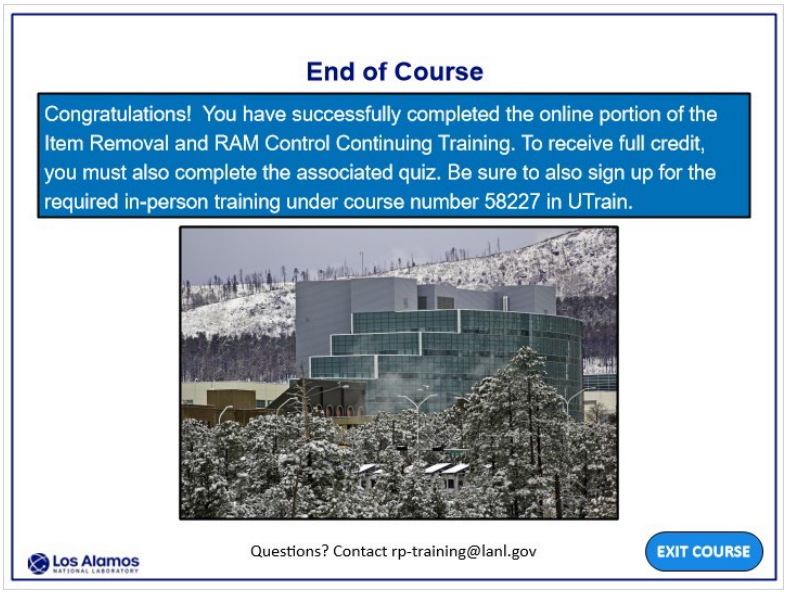
Try Again (Slide Layer)



1.49 Conclusion



1.50 End of Course



RCT Continuing Training: Item Release and Ram Control Transcript

Slide 1.1 – Item Removal Training
(LANL Title Page)

Slide 1.2 – Welcome Layout
"Welcome to RCT Continuing Training. This quarter's topic will review the fundamental elements of radioactive material (RAM) control and releasing items from controlled areas to include: evaluation if an item may be released and the actions necessary to perform a release from a controlled area. To complete this training, you will be required to view the online presentation and independently complete its associated quiz. The in-person training for this quarter can be found on UTrain course number 58227. Please register for a day that works best with your schedule."

Slide 1.3 – Terminal Objective
"The terminal objective for this course is: Given the need to perform duties as an RCT, recognize the requirements for item release and radioactive material in accordance with RP-PROG-TP-200, Radiation Protection Manual and P-121, Radiation Protection."

Slide 1.4 – Enabling Objectives
"The enabling objectives for this course are:

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

Slide 1.5 – Enabling Objectives Continued

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 and
10. List the tagging, packaging, and storage requirements for radioactive material"

Slide 1.6 – Training Purpose
"As an RCT, you are responsible for proper clearance of items and are a resource to our customers across the lab on this matter. This training will refresh you on the requirements associated with the various kinds of item removal and the required documentation to release items from radiological control. You also frequently work in areas that contain radioactive material. It is imperative that you recognize when RAM is tagged, packaged, or stored improperly and report your findings to your supervisors to prevent the release of contamination."

Slide 1.7 – Lujan Center 1
"Before we begin this online lecture, let's take a moment to review an industry event which occurred here at Los Alamos National Lab that demonstrates what could happen if there is a breakdown in item removal practices and radiological controls. In 2012, a scientist working at the Lujan Center inadvertently spread radioactive contamination outside of controlled areas of the facility. The Lujan Center is located at TA-53 and welcomes scientists from all over the world to conduct research there. The contamination originated from a sample container that had previously been used to hold a powder sample made up of intrinsically radioactive technetium. Days after the initial release, the first indication of a problem resulted from a Personnel Contamination Monitor that alarmed on a worker in an adjacent area.
The nuclide of concern was initially unknown and Technetium ninety-nine, being difficult to detect, was underreported during early investigative surveys."

Slide 1.8 – Lujan Center 2
"The item release process in place at TA-53 included a RCT to survey and release OR control the material after irradiation, but was not understood by the scientist to be required at the time of the event.
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 benchtop without RCT coverage, which initiated the inevitable chain of events that followed."

Slide 1.9 – Lujan Center 3
"The final investigation results found contamination spread throughout various uncontrolled areas. According to the federal investigative report, a total of twenty-five people were found to have contaminated personal items, five of which had skin contamination.
The Radiological Assistance Program, or RAP Team, was deployed to survey areas of concern in Colorado, Arizona, and New Mexico. At least nine homes in New Mexico were found to have Technetium 99 contamination.
All individuals involved were determined to receive less than one milli-rem total dose."

Slide 1.10 – Lujan Center 4
"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 of the major contributors that pertain to RP were:
- Inadequate storing and labeling of radioactive material
- Informal and inconsistent established work controls
- And, a culture where deviation from procedures was normalized."

Slide 1.11 – LANL Event 1
"In 2020, two Ludlum model 215 detectors were sent to RIC for repair with out of service tags noting continuous chirping. RP-Services personnel investigating the cause, discovered removable contamination on the detectors at TA-36."

Slide 1.12 – LANL Event 2
"One detector was determined to have six-hundred dpm, and the other one-thousand dpm per smear. Instrument out of service tags include a checkbox that communicate the required survey results are less than the applicable limits of P121, table 14-2. RCTs who check this box acknowledge that they have surveyed and verified each instrument to be less than the table 14-2 limits."

Slide 1.13 – LANL Event 3
"Fortunately, no personnel or uncontrolled areas were found to be contaminated during this event. Corrective actions included additional RCT training and review of procedures associated with item release. Combining proper survey techniques with procedure use and adherence helps to prevent releasing contaminated instruments to uncontrolled areas. Personnel responsible for surveying and releasing instruments must understand the requirements and risks involved with item clearance. You may click on the picture link to learn more about this event."

Slide 1.14 – How Future Events are Minimized
"It is important to consider the effectiveness of our RP practices in place. Ask yourself: Is the process we have in place right now sufficient to prevent release of radioactive material?
The proper labeling and storing of radioactive material will prevent mishandling of items that should be controlled. Workers in the Lujan Center now have reviewed their practices and implemented 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 the item removal process is vital to preventing radioactive material from reaching the public. The 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."

Slide 1.15 – Item Removal Terms
"Let's start by taking a look at the key terms related to item removal. You can find these definitions in RPPROG-TP-200, Section 1435.1, Table 10; Release, Free-Release or Clearance, and Conditional Release."

Slide 1.16 – Release Definition
"According to RP-PROG-TP-200, the term "release" applies to item removal from a contamination area, high contamination area, airborne radioactivity area, radiological buffer area, or radiological controlled area. This type of removal ensures the item always remains within a radiologically controlled area."

Slide 1.17 – Free-Release Definition
"Free-Release, or Clearance, applies to any ***unrestricted release*** of items to the public from a Radiological Buffer Area or Radiological Controlled area; for contamination. Items that are free released must meet release requirements and have documentation to support the release requirements have been met. The terms free-release and clearance are equivalent and can be used interchangeably. The RP Field manual does not address all types of Free-Release. One example of this is the clearance of metals from LANSCE, which requires a special process for release. Requirements for release of metals from LANSCE are covered in RP-SOP-077, *LANSCE Metals Clearance Process*."

Slide 1.18 – Conditional Release Definition
"The term Conditional Release applies to movement on-site from one radiological area for immediate placement into another radiological area."

Slide 1.19 – Knowledge Check 1

Slide 1.20 – Item Clearance Classes
"Item clearance requirements depend on the location in which the item is used. Government vehicles are held to the same clearance requirements as the areas in which they are used. RP-PROG-TP-200, Section 1435.5, Table 11 establishes item clearance classes for free-release based on location."

Slide 1.21 – Class 1
"Class 1 is a designation for areas with a high potential for contamination. The areas that fall under this category are Radiological Controlled Areas for contamination that include Contamination Areas, High Contamination Areas, Airborne Radioactivity Areas and Radiological Buffer Areas for contamination. Also, RCA's for DU or Volume Contamination, Solid waste Management Units, and any other areas of concern."

Slide 1.22 – Class 1 Surveys
"In accordance with RP-PROG-TP-200, Section 1435.6.2a, Items leaving a class one clearance area must be surveyed for contamination unless they meet the following specific requirements for being released without survey, based on process knowledge alone."

Slide 1.23 – Class 1 Surveys Continued
"Hand-carried personal items such as 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."

Slide 1.24 – Class 2
"Class 2 areas have some potential for contamination, but likely below the limits of P121, Table 14-2. These areas are posted as Radiological Controlled Areas for Legacy Contamination."

Slide 1.25 – Class 2 Surveys
"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.
If the item is affected by legacy contamination, then the item must
evaluated and surveyed.
Note that the burden to initiate this process often lies with the workers in these areas. Which increases the importance of a clear and open line of communication between RP and our customers. RCTs who are regularly involved and who interact with the workers on a regular basis can be more effective at ensuring that these requirements are met."

Slide 1.26 – Class 3
"No contamination is expected in Class 3 clearance areas, but it is possible. These are posted as Radiological Controlled Area's posted for external radiation hazards or for radioactive material storage."

Slide 1.27 – Class 3 Surveys
"Like class 2, in a class 3 area, the individual requesting item release must determine whether there are any obvious indications of radiological use history for the item.
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."

Slide 1.28 – Knowledge Check 2

Slide 1.29 – Knowledge Check 3

Slide 1.30 – Knowledge Check 4

Slide 1.31 – 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 you must determine the following:
- Whether the item was ever used for activities or in areas that could have caused internal or external contamination.
- And, 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."

Slide 1.32 – Item Release Review
"Let's take a minute to review the major steps that makeup the item removal process from the perspective of an RCT.
• Item removal is requested, based on the requestor's determination that there is potential for radioactive contamination.
• RCT evaluates item to be removed. Identify area clearance class, consider process knowledge, and determine eligibility for release.
• RCT performs all necessary surveys to include a direct frisk of all accessible external surfaces, and a sufficient amount of removable contamination surveys.
• RCT documents surveys. If the item is to be released, this requires and RP-PROG-FORM-024. If the item is found to include radioactive material, an HPRMS tag should be attached. Some situations may warrant additional documentation with the RP-PROG-FORM-114."

Slide 1.33 – RP-PROG-FORM-024
"RP-PROG-TP-200, Section 1435.1, states that if an item meets release limits, item removal must be documented using RP-PROG-FORM-024."

Slide 1.34 – Item Release Video
All audio is included in pre-recorded video.

Slide 1.35 – Item Release with Detectable Activity
"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
• And, reasonable measures to decontaminate the items have been applied.
Click the link to see the current list of Deployed RP Leads."

Slide 1.36 – Items Above 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."

Slide 1.37 – Removing Items After Survey
"Items should be removed from the area immediately or staged for removal in a way that would not risk contamination and invalidate recent surveys. RP-PROG-TP-200 states that if not removed promptly after surveys, then the deployed RP Lead must be consulted to ensure that appropriate controls are implemented to prevent potential contamination of the surveyed item."

Slide 1.38 – Conditional Release
"Items that cannot be decontaminated below the limits of P121, Table 14-2, 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."

Slide 1.39 – Knowledge Check 5

Slide 1.40 – Knowledge Check 6

Slide 1.41 – Knowledge Check 7

Slide 1.42 – HPRMS Tags

"If an item is found to have contamination, it should be labeled with a Health Physics Radioactive Material Survey tag. Let's take a minute to review sections to be filled out on an HPRMS tag."

Slide 1.43 – Filling out an HPRMS Tag

Pause between each phrase.

- "Instrument manufacturer, model, number, and calibration due date.
- HPAL barcode number, if applicable.
- Location.
- Item description.
- Primary Nuclides.
- Check all applicable contamination categories.
- Circle either material or inner container based on the contamination surveys taken.
- Record survey results for direct and removable contamination surveys as applicable. Write 'N' slash 'A' for fields that are not applicable. Write 'N', 'D', 'A' for items with no detectable activity.
- Circle either material or inner container based on the radiation surveys taken.
- Record beta/gamma+neutron survey results in millirem per hour on contact and at 30cm.
- Circle either package or outer container for contamination surveys taken.
- Record removable contamination results for alpha and beta in dpm per 100 cm^2.
- Circle either package or outer container based on radiation surveys taken.
- Record beta/gamma+neutron survey results in millirem per hour on contact and at 30cm.
- In the comments section, add any amplifying information or specific controls that may be required. Items being tagged for shipping will record the beta/gamma plus neutron reading at one meter here.
- Record your Z#, sign and date as the responsible RCT.
- And finally, HPFC signatures are required for items that are leaving LANL Property."

Slide 1.44 – Filling out an HPRMS Tag Continued

"Once the tag is filled out, ensure that all information was transferred and is legible on the yellow cardstock tag. Remove the perforated sheets and maintain the original copy with radiological survey records. Attach the yellow cardstock tag to the material and provide the requestor with a copy of the tag if desired. Once attached, HPRMS tags may only be removed by or under direction of RP Personnel."

Slide 1.45 – Packing and Storing RAM

"Radioactive material must be packaged and stored so that the package integrity is maintained to prevent release of contamination; higher risk materials require more robust packaging. For example, it does not make sense to store sharp edged materials in a plastic bag as the sharp edges would easily tear open a hole on the bag. A more robust containment or some form of protection applied to the sharp objects must be used to prevent the loss of the integrity in the storage container and consequentially the release of contamination."

Slide 1.46 – Packaging and Storing RAM Continued

"Packing and storage requirements in accordance with P121, Section 1722.3 state that the following factors must be considered by those packaging and storing radioactive material:

- Source term
- Area designation
- The storage area
- Package integrity
- Sharp edges
- Potential for individuals to be exposed
- And, ALARA measures"

Slide 1.47 – Knowledge Check 8

Slide 1.48 – Knowledge Check 9

Slide 1.49 – 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."

Slide 1.50 End of Course

"Congratulations! You have successfully completed the online portion of the Item Release and RAM Control Continuing Training. To receive full credit, you must also complete the associated quiz. Be sure to also sign up for the required in-person training under course number 58227 in UTrain. If you have any questions or concerns, please e-mail rp dash training at lanl dot gov. Click the exit course button below to close the lesson."