



# TEAMSTERS SAFETY AND HEALTH NATIONAL TRAINERS' EXCHANGE



## MERRTT – Adapting to Your Audience



# Objectives

- Give a brief history of the Railroad Workers Hazardous Material Training Program
- Define MERRTT and how it applies to rail workers
- Define and apply ADDIE to the curriculum process
- Discuss various approaches to meeting the needs of your students
- Apply these processes to the curriculum and evaluate



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# Railroad Workers Hazardous Materials Training Program

- Originally funded in 1990 by the NIEHS
- Trained over 27,000 rail workers in that time from nine different unions
- Peer Trainers, sometimes with the help of SMEs, do all the training
- Around 2008 RWHMTP received a grant from DOE to provide radiological training
- The Modular Emergency Response Radiological Transportation Training Program (MERRTT) was our program of choice



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# Modular Emergency Radiological Response Transportation Training (MERRTT)

Created by the Transportation Emergency Preparedness Program (TEPP)  
TEPP's mission is to ensure that federal, state, tribal, and local responders have access to the plans, training, and technical assistance necessary to safely, efficiently, and effectively respond to transportation accidents involving DOE-owned radioactive material.

MERRTT has 16 modules supported by several videos and hands on exercises.

It relies heavily on Powerpoint to present the subject matter



Transportation Emergency Preparedness Program	
Modular Emergency Response Radiological Transportation Training Program (MERRTT)	
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Radiological Basics	Module 01
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Radioactive Material Shipping Packages	Module 03
Hazard Recognition	Module 04
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Patient Handling	Module 06
Radiological Survey Instruments & Dosimetry Devices	Module 07
Decontamination, Disposal, and Documentation	Module 08
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Waste Isolation Pilot Plant	Module 10
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Transportation by Rail	Module 13
Case Histories	Module 14
Public Information Officer	Module 15

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# MERRTT

- TEPP contracts with outside agencies to provide trainers to deliver the program
- Our contact is with Technical Resources Group (TRG) in Idaho Falls, Idaho
- TRG provides SME trainers and Go Kits with all the hands on exercise material
- After several training sessions with TRG all RWHMTP peer trainers were qualified to deliver the MERRTT program
- Since 2008 we have trained over 1200 students in some form of MERRTT



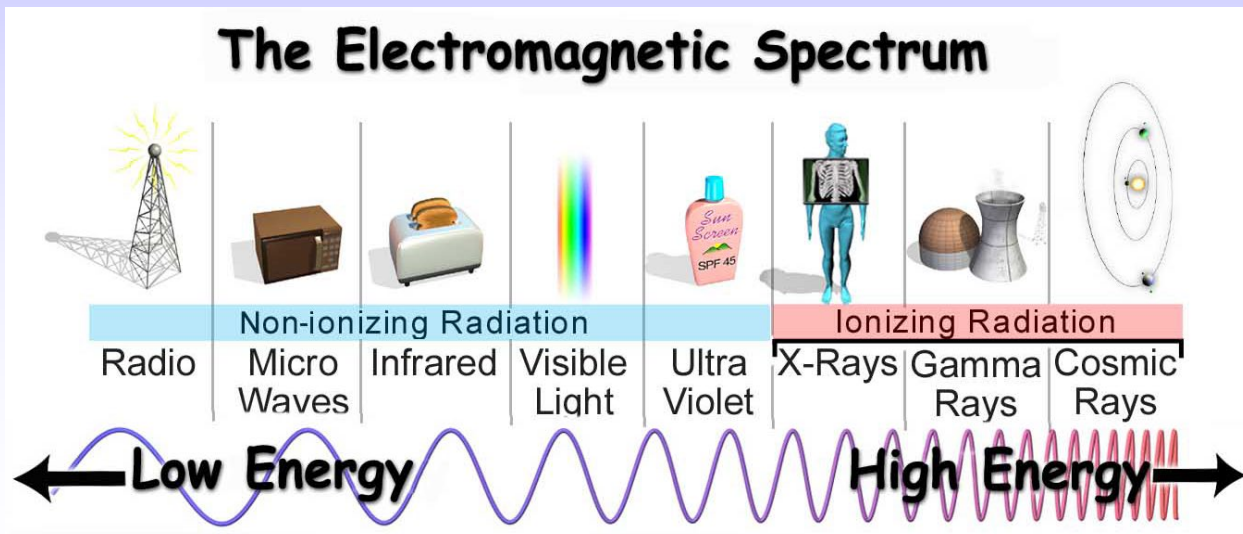
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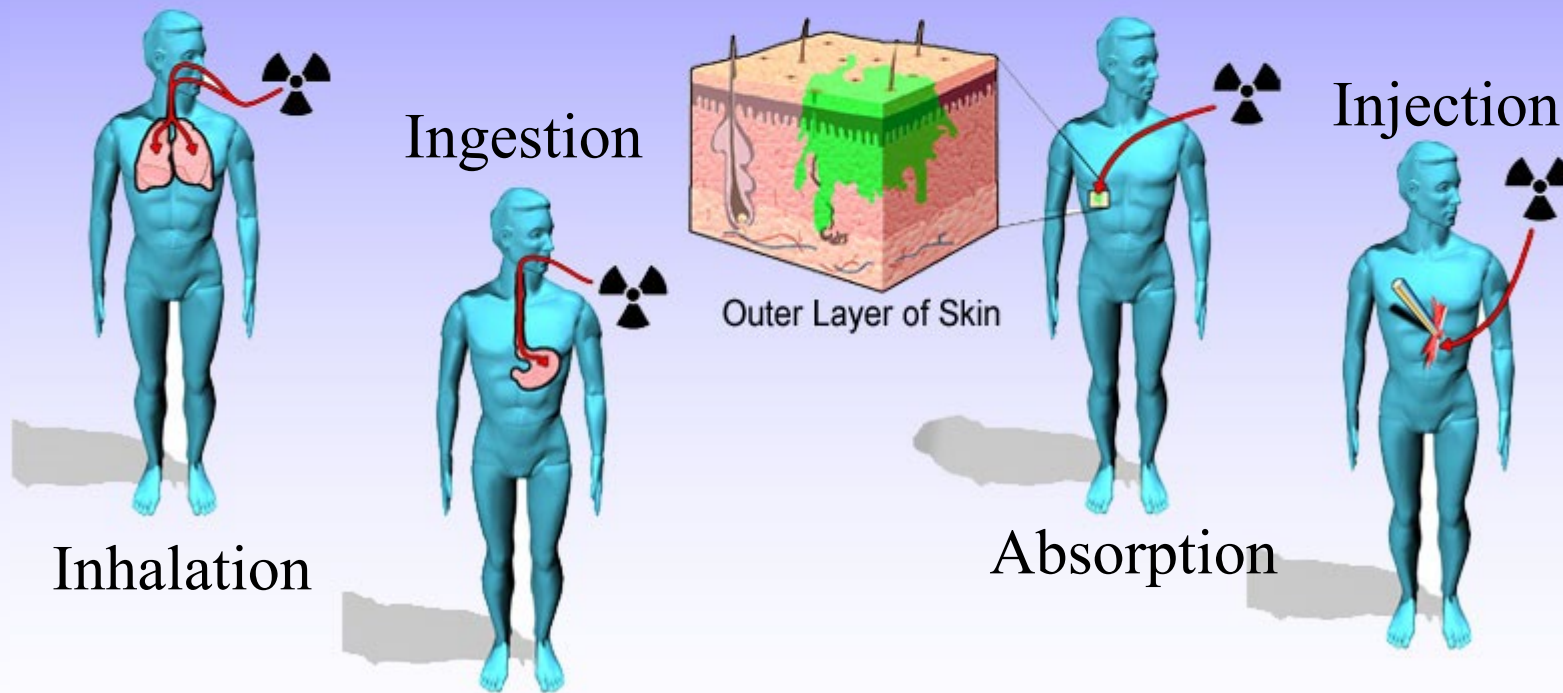
# Ionizing Radiation

- Non-Ionizing Radiation
  - Visible light/heat/radio waves/microwaves
  - Does not have enough energy to cause ionization
- Ionizing Radiation
  - Physical change in atoms by making them electrically charged—called ionization



# Biological Pathways

- Biological pathways that can introduce internal contamination include:



[View Video](#)



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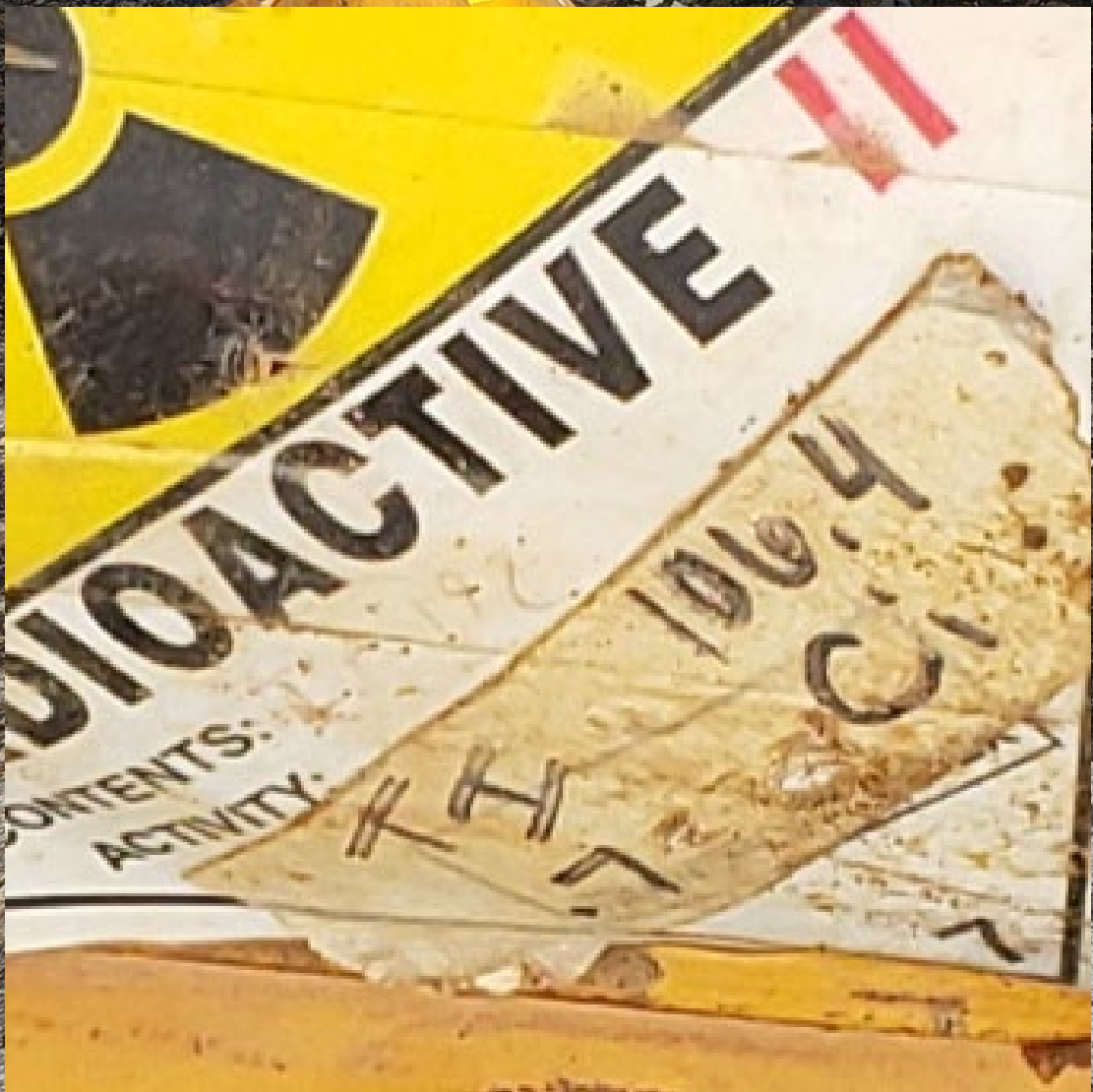
DEPARTMENT OF ENERGY







# DEPARTMENT OF ENERGY



## Accident Summary

The truck hauling radioactive material contained 12 packages. Of the 12 packages it is estimated that 8 packages broke open and the contents (syringe containers) were spilled onto the highway. One of the packages remained in the pickup truck and was destroyed in the fire. However, the lead pigs located inside the destroyed package were only charred. The contents were intact.





# Why Train Railroaders?

- Railroads handle most of the High Level Nuclear Waste (HLNW), Low Level Nuclear Waste (LLNW) and Spent Nuclear Fuel (SNF) transported in the U.S.
- Yucca Mountain in Nevada was still under consideration and it was estimated that over 38,000 car loads would eventually be interred there.





# Example of a MERRTT video Graniteville



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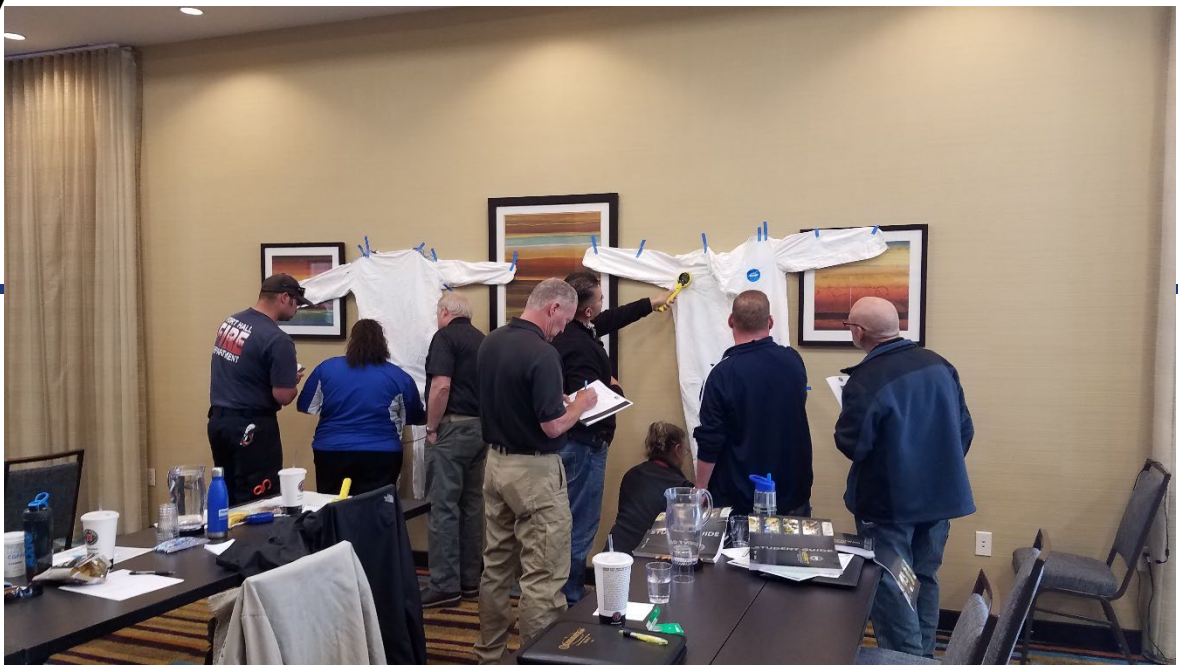
# MERRTT

- 16 modules including a case history module for student evaluation exercise, a 25 question exam, and hands on exercise.
- At the end of the second day there is a hands on exercise that has three stations and the class is rotated through each one. These exercises allow the student to utilize survey equipment to locate and determine different forms of radioactive material, do a contamination survey, and assessing package integrity. When completed the students received a certificate of completion.



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# MERRTT

- A full MERRTT class takes 16 hours over two days. It is lecture based throughout with Ppt. and videos to support the material
- Since MERRTT is a universal class for all types of responders it has several modules that deal with first aid, pre-hospital practices, decontamination, patient handling and PIO
- DOE's grant did not allow for stipends for students to attend, which made it difficult to attract students to the class
- In recognizing our need to shorten the class and make it more rail specific we worked with DOE to create RAIL UNION MERRTT



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# Rail Union MERRTT

We needed to create a program that met the needs of our students, fit into our time constraints and still meet all the DOE requirements to have our program certified

We used the ADDIE system employed by Instructional Systems Design

A – Analysis

D – Design

D – Development

I – Implementation

E - Evaluation



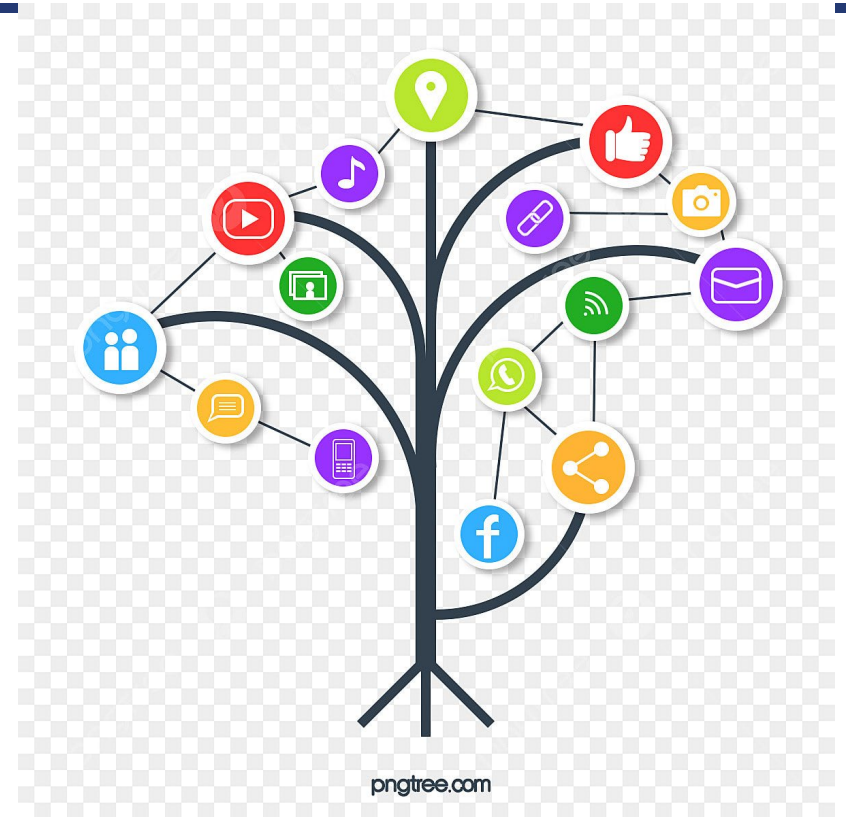
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# Analysis

- The process of deciding what is to be learned
- Must be performed first
- Gathering and analyzing data and information
- Most often ignored/neglected/forgotten
- What do my students need and how do I give it to them?



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# Design

- Process of specifying how it is to be learned
- Second phase
- Drafting stage where goals, objectives and other design issues are discussed and settled
- Equivalent to making a blue print for a building



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# Development

- The process of authoring and producing the materials
- Third phase
- Do we need to reinvent the wheel?
- What works?
- What does not work?

***What do our students want  
from us?***



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# Implementation

- The process of installing the project in the real world
- Fourth phase
- Program(s) are delivered
- Evaluate Reaction, Learning and Behavior



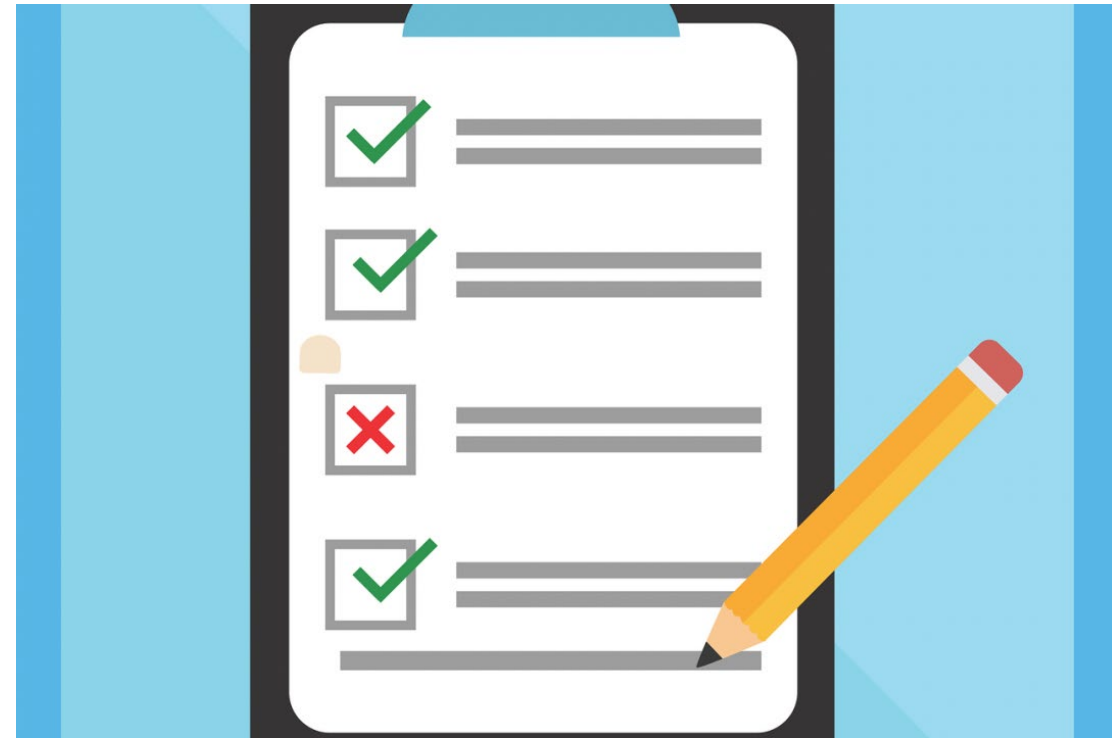
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# Evaluation

- The process of determining the adequacy of the instruction
- Active in all four previous phases
- Assure performance agreement with all other phases



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# Rail Union MERRTT Phase 1

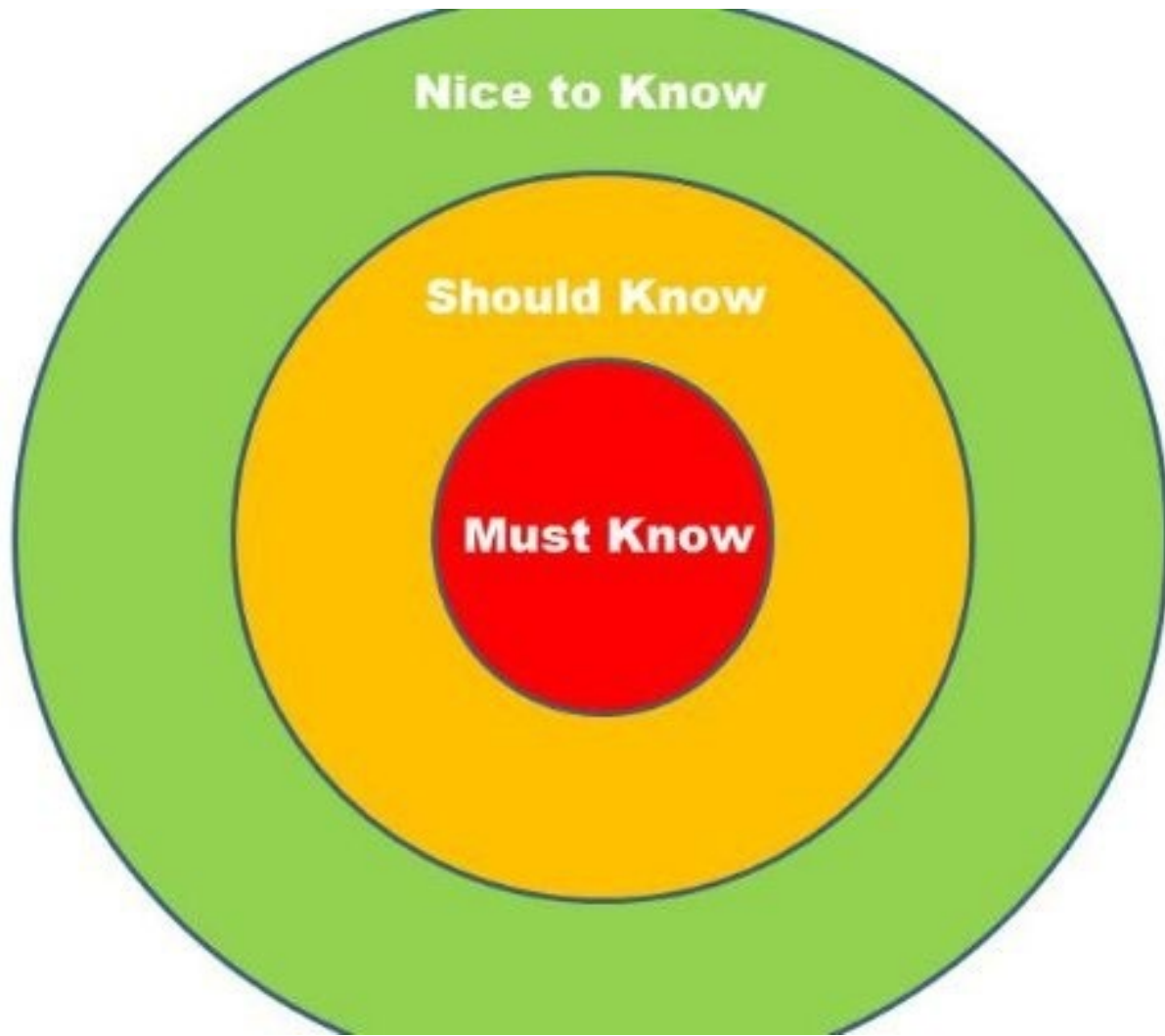
- MERRTT has 16 modules, takes two days
- Need to make it presentable in one day or less
- What are the priorities? What can we leave out?
- What do our students NEED to know?
- What should they know and what would be nice to know?



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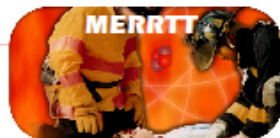




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Transportation Emergency Preparedness Program

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# What We Kept

1. Radiological Basics
2. Biological Effects
3. Radioactive Material Shipping package
4. Hazard Recognition
5. Initial Response Actions
6. Radiological Survey Instruments and Dosimetry Devices
7. Transportation of Safeguard Material
8. Transportation by Rail
9. Hands on Exercises

Upon completion students were given a Rail Union MERRTT Certificate of Completion



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# Rail MERRTT Phase II – 12 Modules

## Added:

- Shipment Resources
- Radiological Terms and Units
- Package Integrity
- Incident Control
- Decontamination

## Removed:

- Transportation of Safeguard Materials
- Hands on exercises



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# Condensed MERRTT - CMERRTT

1. Radiological Basics
2. Biological Basics
3. Shipping Packages
4. Hazard Recognition
5. Survey Instruments
6. Patient Handling
7. Decontamination

## Hands on Exercises

1. Radiation Sources
2. Radioactive Material Packages
3. Decon Survey of Tyvec Suits

Developed a 78 slide Ppt.  
Presentation

Delivered in two hours



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# Review

Rail Union MERRTT was successfully delivered in a one day format several times and was well received

Rail MERRTT 2 was presented once to bad reviews

CMERRTT was delivered about 14 times over a two year period. Although it is short and sweet it succeeded in giving the student small recognition of a complex subject

*Did we succeed in meeting our objectives?*



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**Thank you for Participating**



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