



# SNAP/RADTRAD

## Exercise 2:

Adding a Control Room to the FHA Model

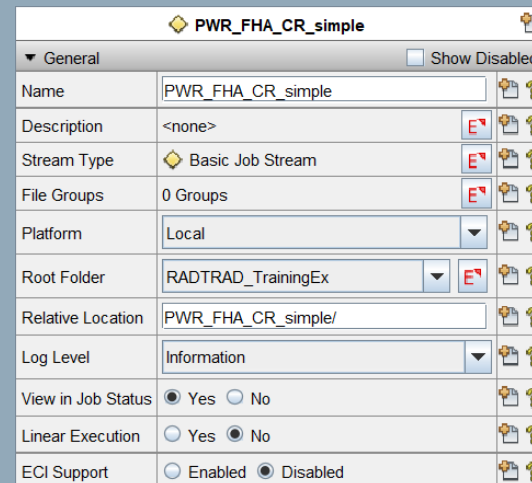
# Exercise Overview

- The accident is the same as assumed in Exercise 1
- You will be adding a simple control room compartment with two pathways:
  - one from the environment to the CR
  - one from the CR to the environment
- Doses will be examined at the EAB, LPZ, and control room



# Step 1: Preliminary Setup

- You should have Exercise 1 open in your Model Editor
- In the Navigator Window, select “Model Options”
- Change the “Title” to “FHA\_CR\_simple”
- Select the job stream in the Navigator Window and change the “Name” to “PWR\_FHA\_CR\_simple”
- Change the “Relative Location” in your job stream
  - Consider appending “CR” to the location in order to prevent the files from the previous exercise from being overwritten
  - See an example image to the right:
- Save the model as “FHA\_CR\_simple.med”























The screenshot shows the 'PWR\_FHA\_CR\_simple' model options dialog box. The 'General' tab is selected, and the 'Show Disabled' checkbox is unchecked. The dialog contains the following fields and options:

Field	Value	Icons
Name	PWR_FHA_CR_simple	File, Help
Description	<none>	Refresh, Error, File, Help
Stream Type	Basic Job Stream	Refresh, Error, File, Help
File Groups	0 Groups	Refresh, Error, File, Help
Platform	Local	File, Help
Root Folder	RADTRAD_TrainingEx	Refresh, Error, File, Help
Relative Location	PWR_FHA_CR_simple/	File, Help
Log Level	Information	File, Help
View in Job Status	<input checked="" type="radio"/> Yes <input type="radio"/> No	File, Help
Linear Execution	<input type="radio"/> Yes <input checked="" type="radio"/> No	File, Help
ECI Support	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled	File, Help




# Step 2: Adding the Control Room

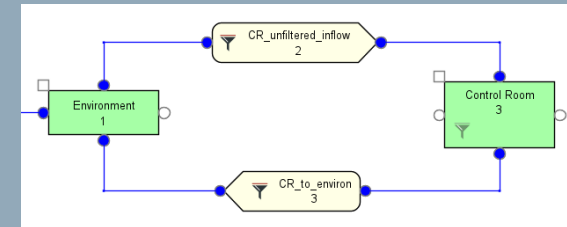
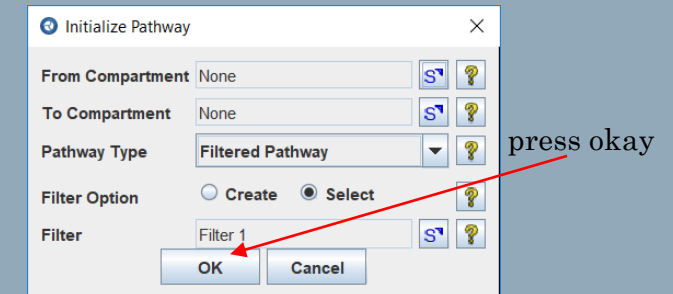
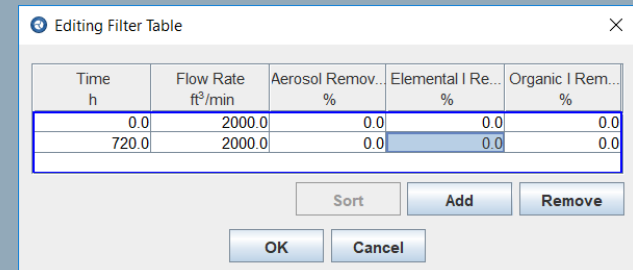
- Using the skills you learned in the last exercise, add a new compartment and populate it with the inputs below:

▼ General		<input type="checkbox"/> Show Disabled
Name	Control Room	 
Component Number	3	 
Description	<none>	  
Type	Control Room Dose	 
Output Detail Level	Full Edit at Time Steps	 
Volume	1.0E5 (ft <sup>3</sup> )	 
Filter	 <none>	  
Dose Locations	0 Dose Location connections	  

- The dose location will be addressed in a later step
- Add the control room to the default view by dragging it from the Navigator Window to the View Window

# Step 3: Control Room Pathways

- Add two new pathways; this time, in the “Initialize Pathway” window, leave the “from” and “to” compartments blank. The first pathway’s filter option will only include create and will create Filter 1. Filter one can then be selected when making the second pathway.
- Name one pathway “CR\_unfiltered\_inflow” and the other “CR\_to\_environ”
- Drag these pathways to the View Window and use the connection tool (  ) to link the pathways between the CR and environment as shown to the right:
  - Hint – for the “CR\_to\_environ” pathway, right click and change the “Drawn Orientation” to “Left” before making the connection
- There should be Filter 1 created from making the first pathway. Add an additional filter (right-click > new) and name the filters “CR\_unfiltered\_flow” and “Cr\_to\_environ” to match the pathways.
- Populate both filter tables as shown to the right:
- Finally, set each of the pathways to their corresponding filters by selecting the pathway (might have to click back on the selector  ) and pressing the  icon.

Time h	Flow Rate ft³/min	Aerosol Remov... %	Elemental I Re... %	Organic I Rem... %
0.0	2000.0	0.0	0.0	0.0
720.0	2000.0	0.0	0.0	0.0

# Step 4: Adding a Dose Location

- Add a new dose location from the Navigator Window of the control room type, as shown on the right:
- Name the new compartment “Control Room”
- In the Navigator Window, add a new X/Q table (right-click > new on X/Q Tables) and name it Control Room. Expand (E) the X/Q table and enter the values to the right:
- Select Dose Location 3 (Control Room) and press the S icon next to X/Q Table and select the Control Room table as shown to the right:
- Select the Environment Compartment and expand (E) the Onsite X/Q Tables. Select the Control Room X/Q table for the Leak to Environment pathway as shown in the last image.

The image displays four sequential screenshots of software dialog boxes used for configuring a new dose location.

**1. Select Dose Location Defaults**  
This dialog prompts the user to "Select the breathing rates for the new dose location:". A dropdown menu is set to "Control Room".

Control Room
6.12E-4

**2. Editing X/Q Table**  
This dialog shows a table for entering breathing rates.

Time h	X/Q s/m <sup>3</sup>
0.0	6.12E-4
720.0	6.12E-4

**3. Select from X/Q Tables**  
This dialog lists available components for selection.

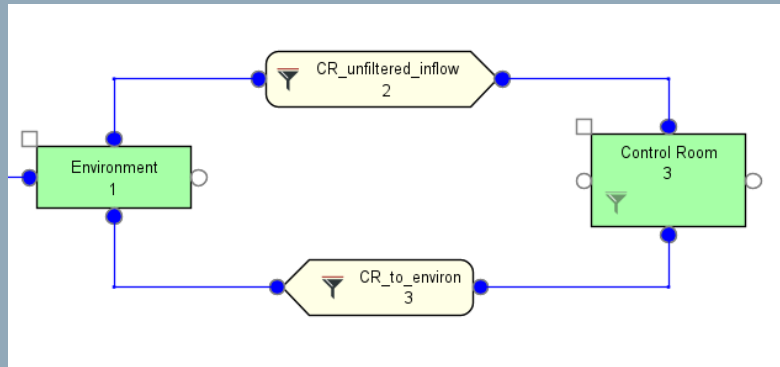
Number	Component
1	X/Q Table 1 (Exclusion Area Boundary)
2	X/Q Table 2 (Low Population Zone)
3	X/Q Table 3 (Control Room - containment leakage)

**4. Onsite X/Q Table Map**  
This dialog maps pathways between compartments. The "Intake from Environment" section is active.

Intake from Environment	
1 Pathways →	[2] CR_unfiltered_inflow
[1] Leak to Environment	X/Q Table 3 (Control Room - containment leakage)
[3] CR_to_environ	

# Step 5: Running the Simulation

- Check the model in your View Window against the image below:



- If it looks the same, try running the simulation as we did in Exercise 1
- Check the results of the simulation against the values to the right:

radtrad.out (Base\_Job) - File Viewer

Edit Help

Find    ☐ Case Sensitive ☐ Match Whole Words

```
#####
Worst Two-Hour Doses
#####

Exclusion Area Boundary
Time      Whole Body  Thyroid  TEDE
(hr)      (rem)        (rem)    (rem)
0.0-2.0   1.6311e-01  2.6663e+01  9.7912e-01

#####

Final Doses
#####

Low Population Zone
Time      Whole Body  Thyroid  TEDE
(hr)      (rem)        (rem)    (rem)
720.0     5.2428e-02  8.5704e+00  3.1472e-01

Control Room
Time      Whole Body  Thyroid  TEDE
(hr)      (rem)        (rem)    (rem)
720.0     2.8920e-02  1.1605e+02  3.5781e+00
```

1068 1109

Close