

COMPARE STDose RESULTS TO FIELD MEASUREMENTS

Part of the RASCAL Instructor-led Training

FIELD TEAM - BACKGROUND

- STDose vs FMDose
 - STDose projects gamma readings for deposition on the ground
 - FMDose converts concentration at a single location to intermediate/long term doses
- Field Team Measurements
 - Types
 - Communication Process
 - Roles/Expectations

ONE OF THE DETAILED RESULTS OPTIONS IS TO VIEW THE GAMMA DOSE RATE

Detailed Results of Dose Calculations

Result Type

- TEDE
 - Inhalation CEDE
 - External Gamma Exposure Rate (cloudshine + groundshine)
 - Cloudshine Dose
 - 4-Day Groundshine Dose
- External Gamma + Beta Exposure Rate
- Acute Bone Dose Total
- Acute Bone from Inhalation Only
- Acute Lung Dose
- Acute Colon Dose
- Thyroid CDE
- Child Thyroid CDE
- Groundshine Dose Over Defined Period
- Ground Concentration - Total
- Ground Concentration of: Am-241
- 1st year Intermediate Phase TEDE
- 2nd year Intermediate Phase TEDE
- 50 year Intermediate Phase TEDE
- I-131 Time-integrated Air Concentration

Time Period for Exposure

- Start of release to end of calculation
- Cumulative over interval
- From: 2016/01/13 00:00
- To: 2016/01/13 08:00
- Rate at single time
- 2016/01/13 08:00

Display Format

From 10-mile calculation

- Footprint
- Numeric table
- Special receptors
- Define Receptors

From close-in calculation

- Footprint
- Numeric table

Display Units

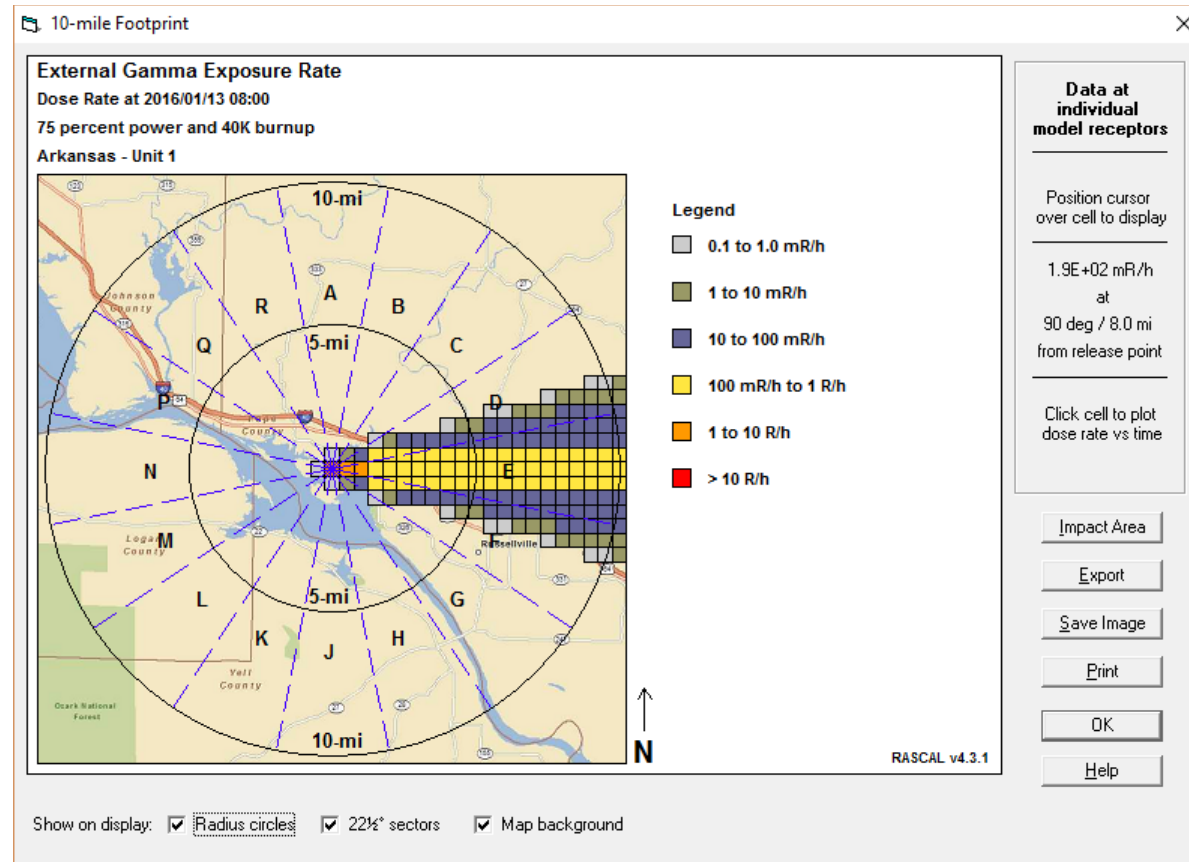
- English
- SI

Display Result

Help

Exit

USE YOUR CURSOR TO INTERROGATE THE CELLS



FIELD TEAM - SCENARIO

For the previous incident at Wolf Creek, field teams have been dispatched and reported measurements at 18:00 local time. Do these readings confirm that the RASCAL TEDE and Adult Thyroid CDE projections are representative of the impact?

Field Team	Measurement	Field Team Reading
Team 1 3 miles downwind on the centerline	Gamma	4 mR/h
	I-131	1.9E-10 $\mu\text{Ci}/\text{cm}^3$
Team 2 8 miles downwind on the centerline	Gamma	32 mR/h
	I-131	1.5E-7 $\mu\text{Ci}/\text{cm}^3$

YOUR TURN TO USE RASCAL



- **Use the previous RASCAL run and compare the results to below**

Field teams have been dispatched and reported measurements at 18:00 local time. Do these readings confirm that your dose projections are representative of the actual release?

Field Team	Measurement	Field Team Reading	RASCAL Results
Team 1 3 miles downwind on the centerline	Gamma	4 mR/h	
	I-131	1.9E-10 $\mu\text{Ci}/\text{cm}^3$	
Team 2 8 miles downwind on the centerline	Gamma	32 mR/h	
	I-131	1.5E-7 $\mu\text{Ci}/\text{cm}^3$	

LET'S WALK THROUGH THE PROBLEM TOGETHER



KNOWLEDGE CHECK



For Field Team 1, what is the projected gamma reading (mR/h) at 18:00?

- 7.6E-01 mR/h
- 2.7E+00 mR/h
- 1.7E+00 mR/h
- None of the above values

Field team 1 reports a I-131 value of $1.9\text{E}-10 \mu\text{Ci}/\text{cm}^3$. Does your RASCAL projection align with that?

- No, the field team must be measuring wrong
- No, my RASCAL results are probably wrong
- Yes, my RASCAL run reported $8.6\text{E}-02$ at that location
- Yes, my run projected 0.0 but field team numbers reflect background and noise

FIELD TEAM - RESULTS

Field Team	Measurement	Field Team Reading	RASCAL Results
Team 1 3 miles downwind on the centerline	Gamma	4 mR/h	2.7 mR/h
	I-131	1.9E-10 $\mu\text{Ci}/\text{cm}^3$	0
Team 2 8 miles downwind on the centerline	Gamma	32 mR/h	26 mR/h
	I-131	1.5E-7 $\mu\text{Ci}/\text{cm}^3$	1.2E-7 $\mu\text{Ci}/\text{cm}^3$

Conclusions?

- STDose vs FMDose
- What if RASCAL is higher than field team? Lower?
- Will there always be a centerline? Will it always represent the highest dose for that distance?
- If using STDose, may be possible to adjust model parameters to best fit to field team readings.