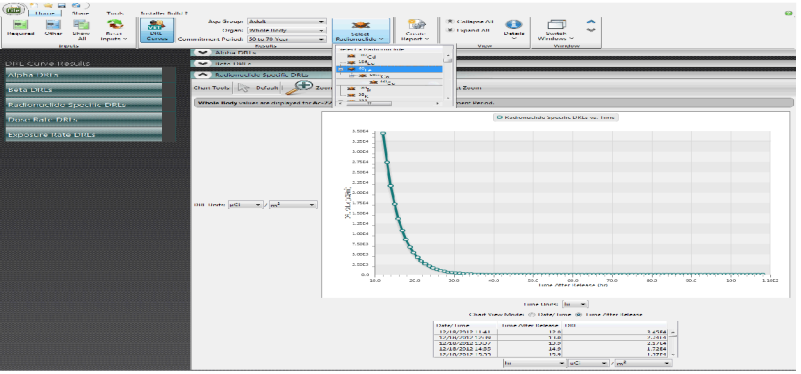
SAND2013-4737C

Exceptional service in the national interest

Sandia National Laboratories



Turbo FRMAC 2013

John Fulton, PMP

U.S. DEPARTMENT OF ENERGY

National Nuclear Security Administration

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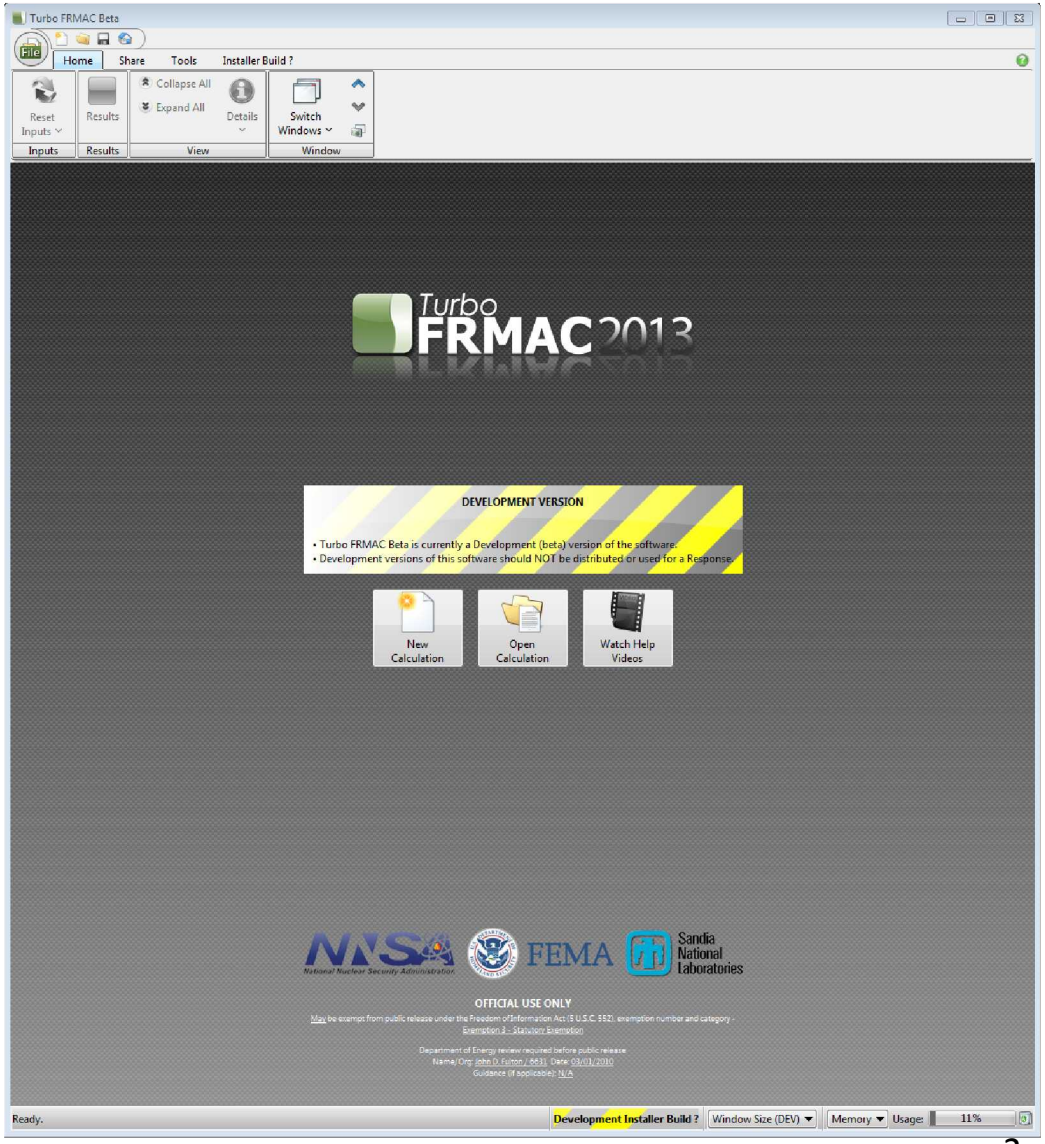
Overview

- Why do I care?
- Available Calculations.
- General Features
- Collaboration.
- Other
- How to Access.



Why do I care?

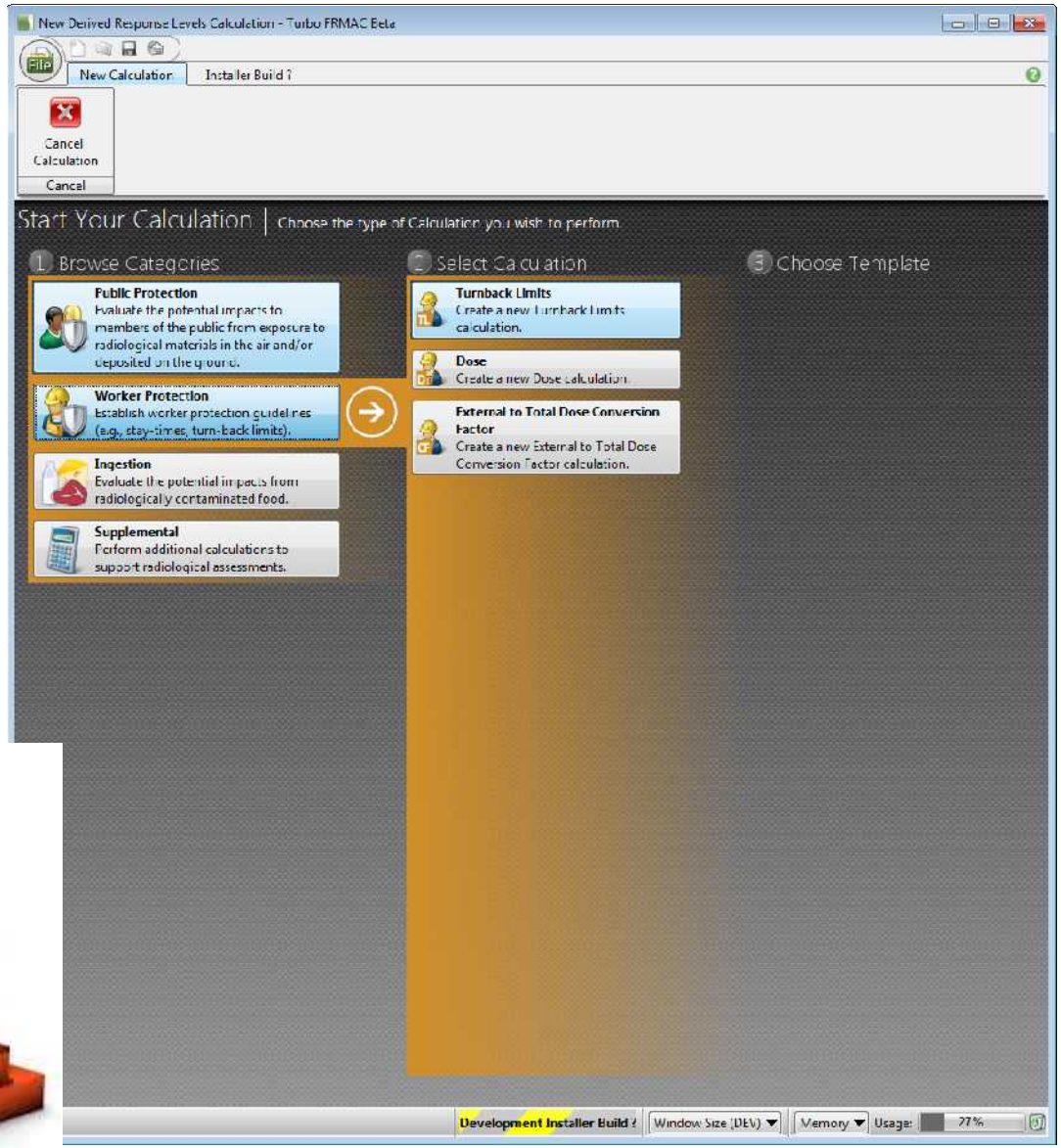
- 2013 PAG Manual release for Public Comment
- The FRMAC Assessment Manuals (DOE 2010a, b)14 provide guidance in calculating DRLs and DCFs based on the ICRP dosimetry models (ICRP 60 series). In addition, the FRPCC encourages the use of computational tools such as DOE's **Turbo FRMAC** and NRC's Radiological Assessment System for Consequence Analysis (RASCAL) as well as other appropriate or more current tools to implement the PAGs.

Public Protection Calculations

- Derived Response Levels
- Public Projected Dose
- Dose Parameters
- Nuclear Fallout
- Varying Evaluation Times
- Projected Return Times
- Return Thresholds.

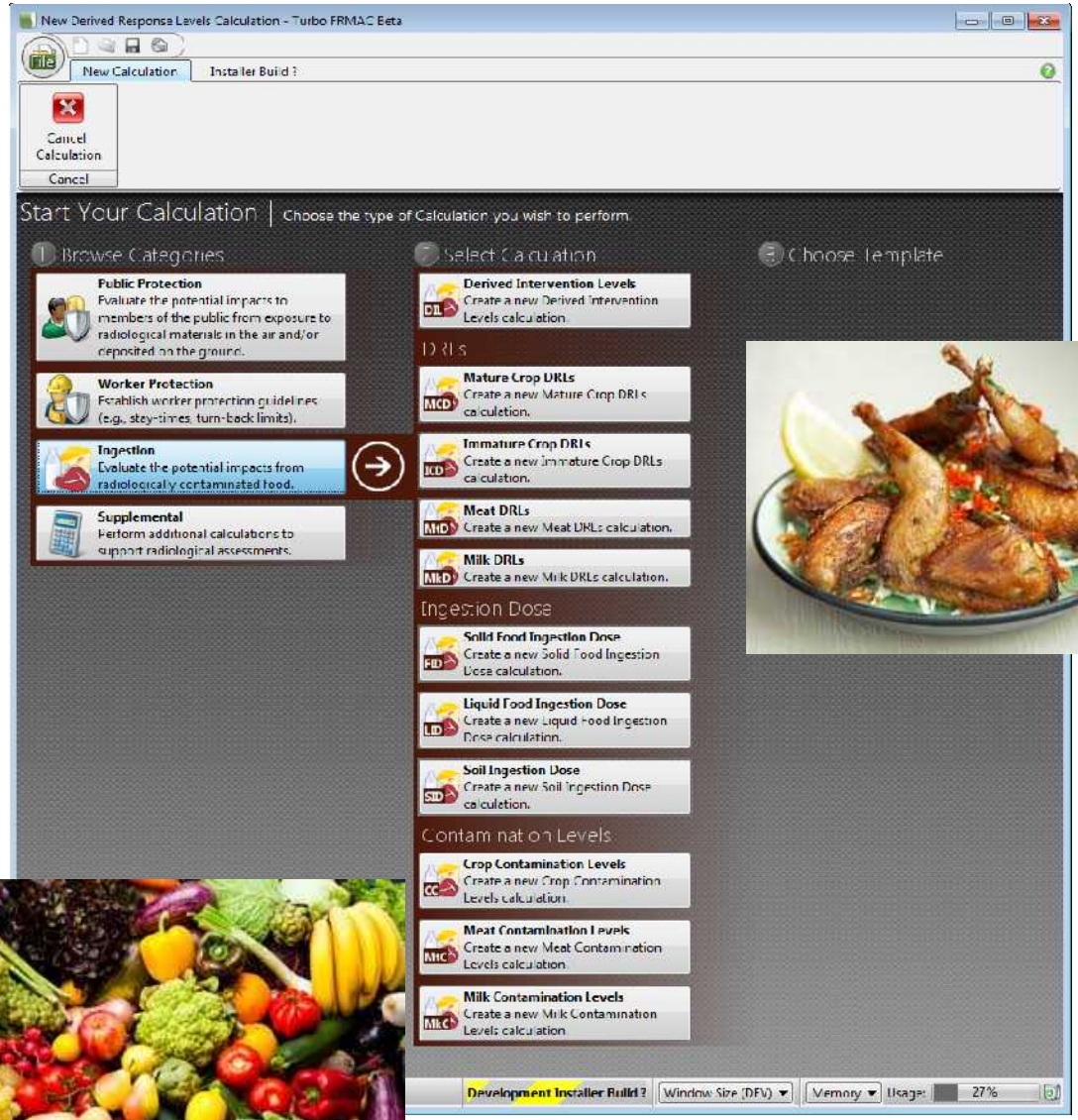
Worker Protection Calculations

- **Turnback Limits**
- **Dose**
- **External To Total Dose Conversion Factor.**



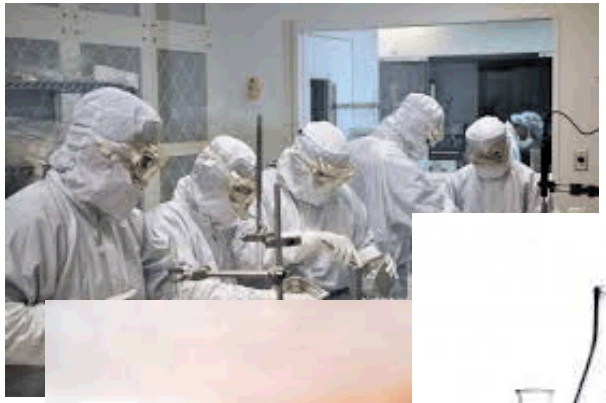
Ingestion

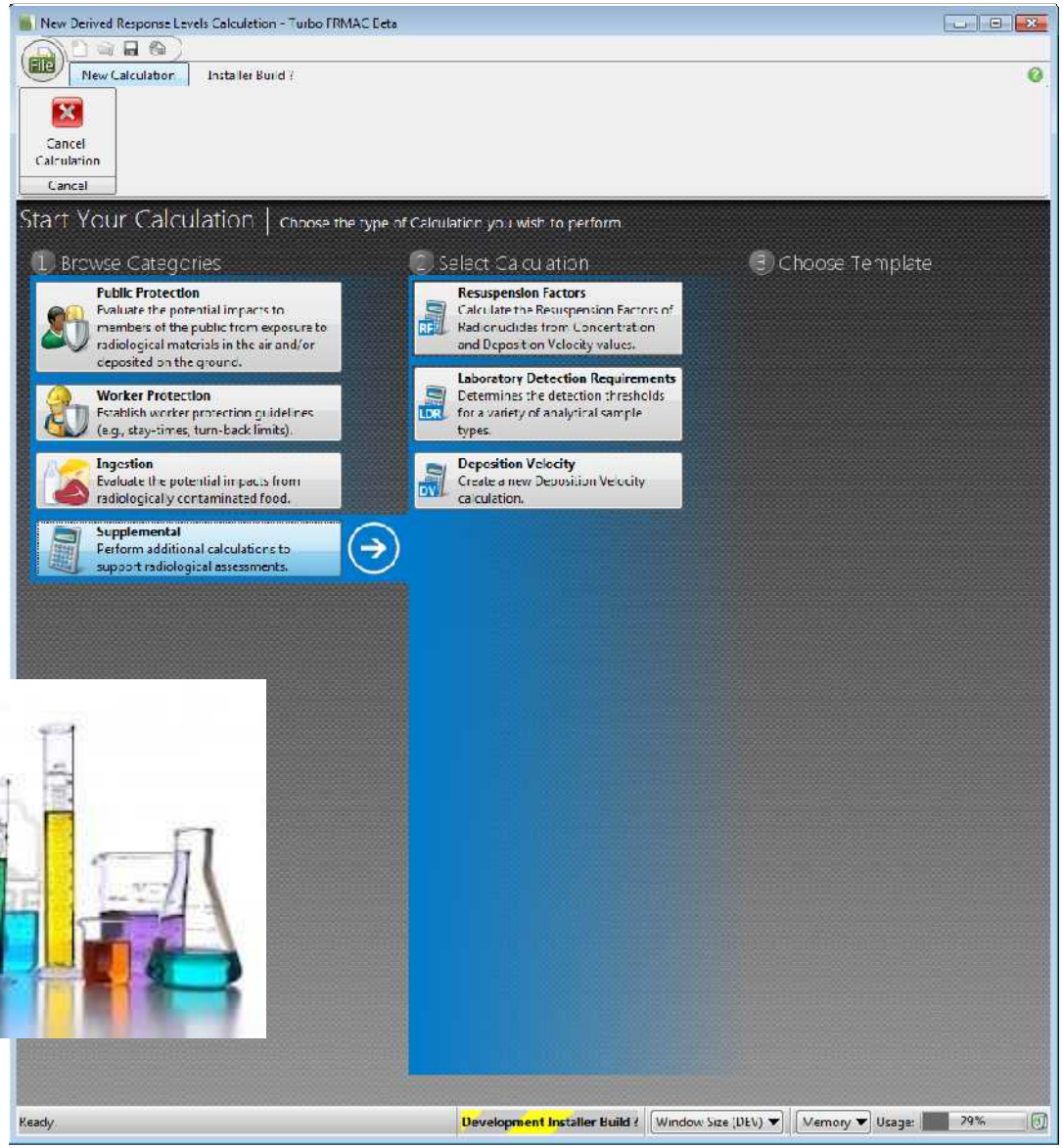
- Derived Intervention Levels
- Derived Response Levels
  - Mature Crop
  - Immature Crop
  - Meat
  - Milk
- Ingestion Dose
  - Inadvertent Soil
  - Liquid Food
  - Solid Food
- Contamination Levels
  - Crop
  - Meat
  - Milk



Supplemental

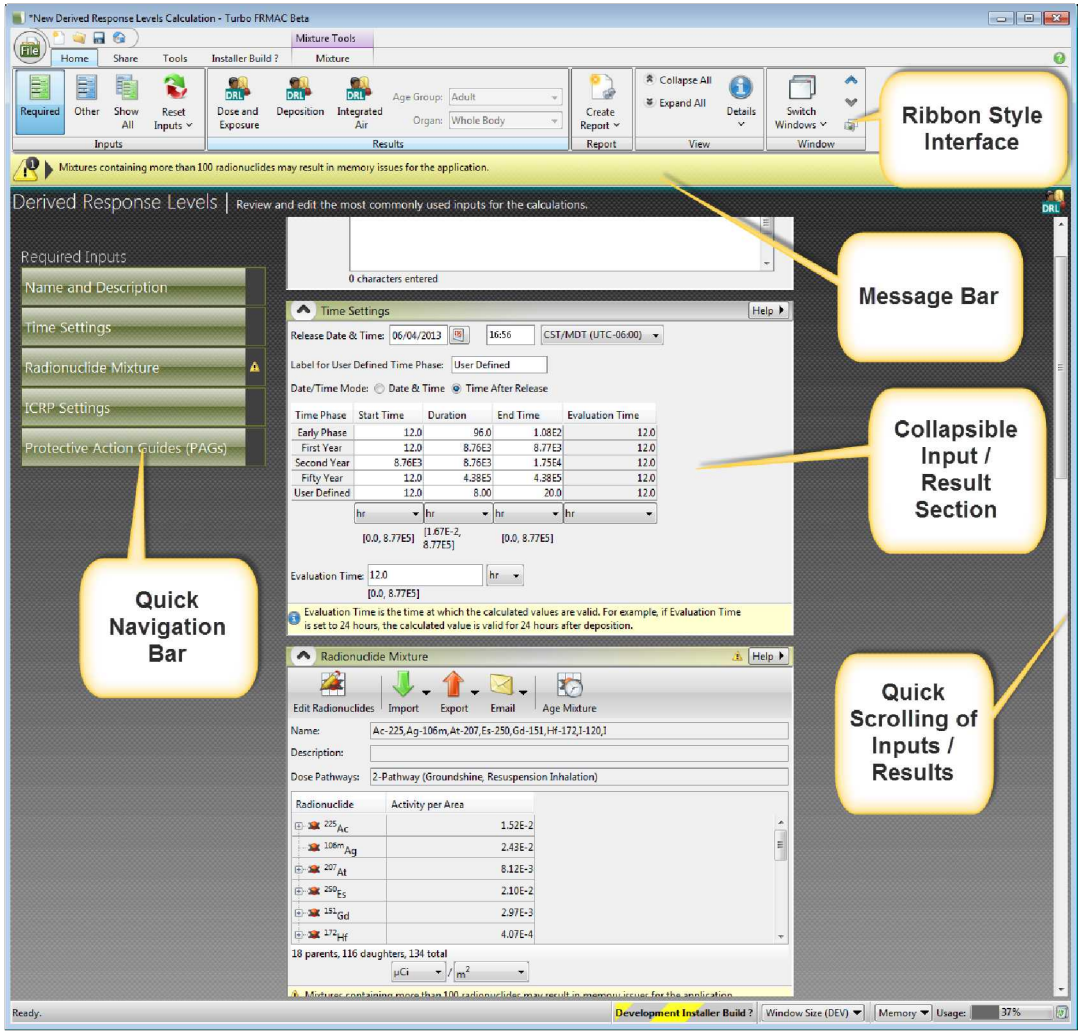
- **Resuspension Factors**
- **Laboratory Detection Requirements**
- **Deposition Velocity**





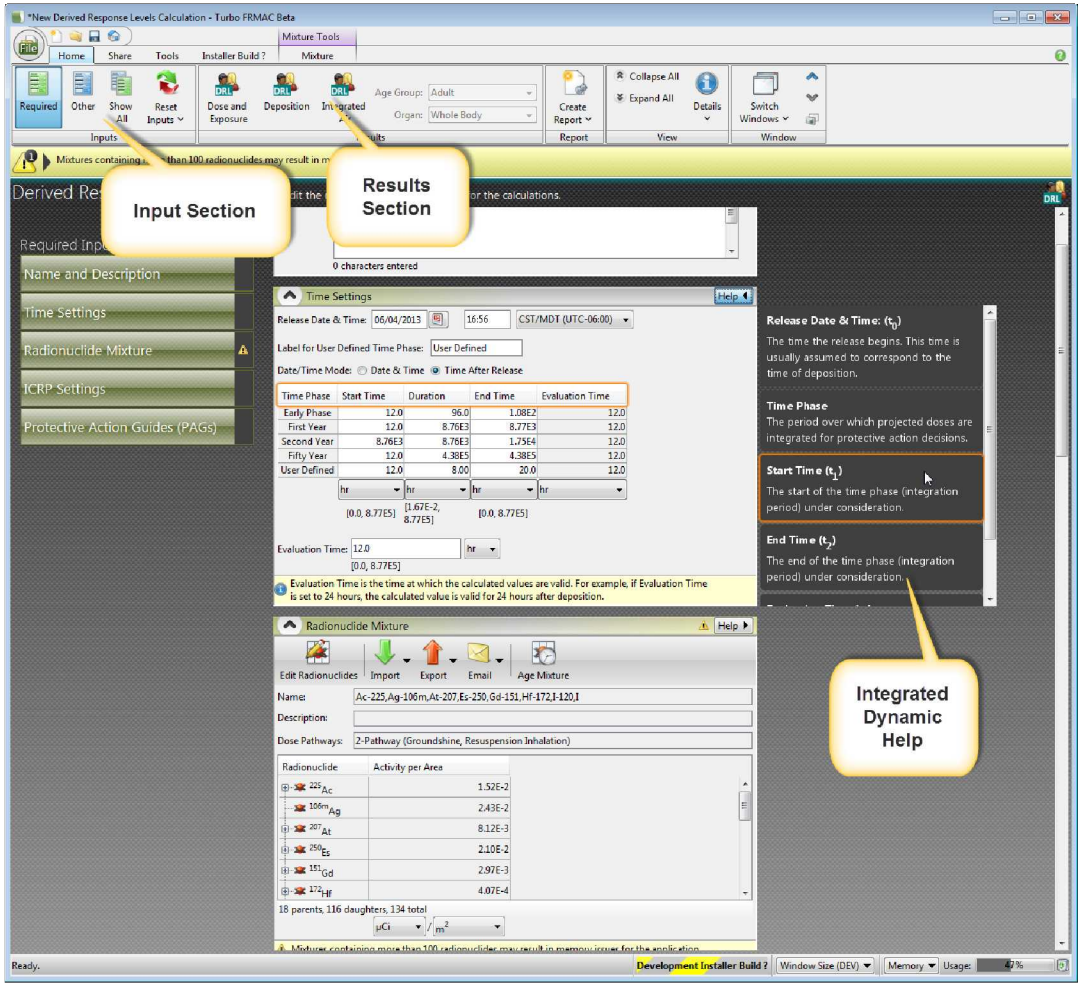
General Features

- Microsoft™ Ribbon Style Interface
- Quick Navigation Bar
- Collapsible Input/Result Panes
- Quick Scrolling of Inputs
- Message Bar

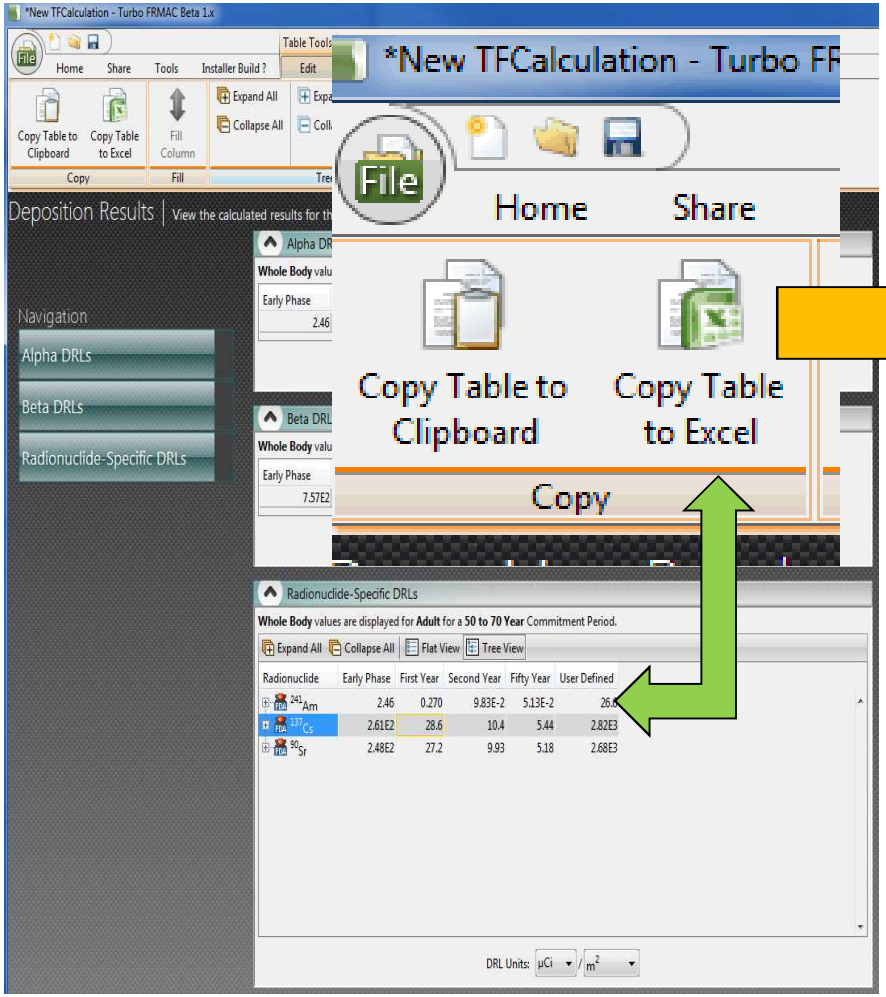


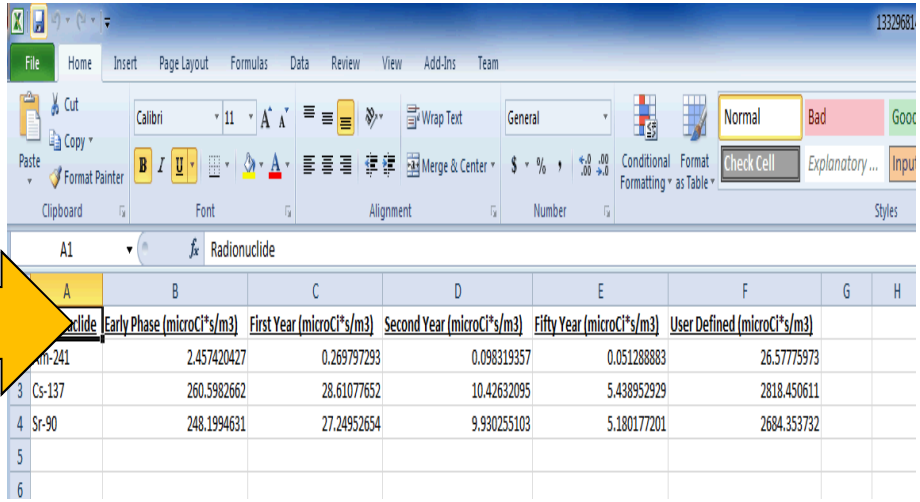
General Features Continued

- Input Section
  - Required
  - Other
  - Show All
- Results Section
- Integrated Dynamic Help
- Integrated Help Videos



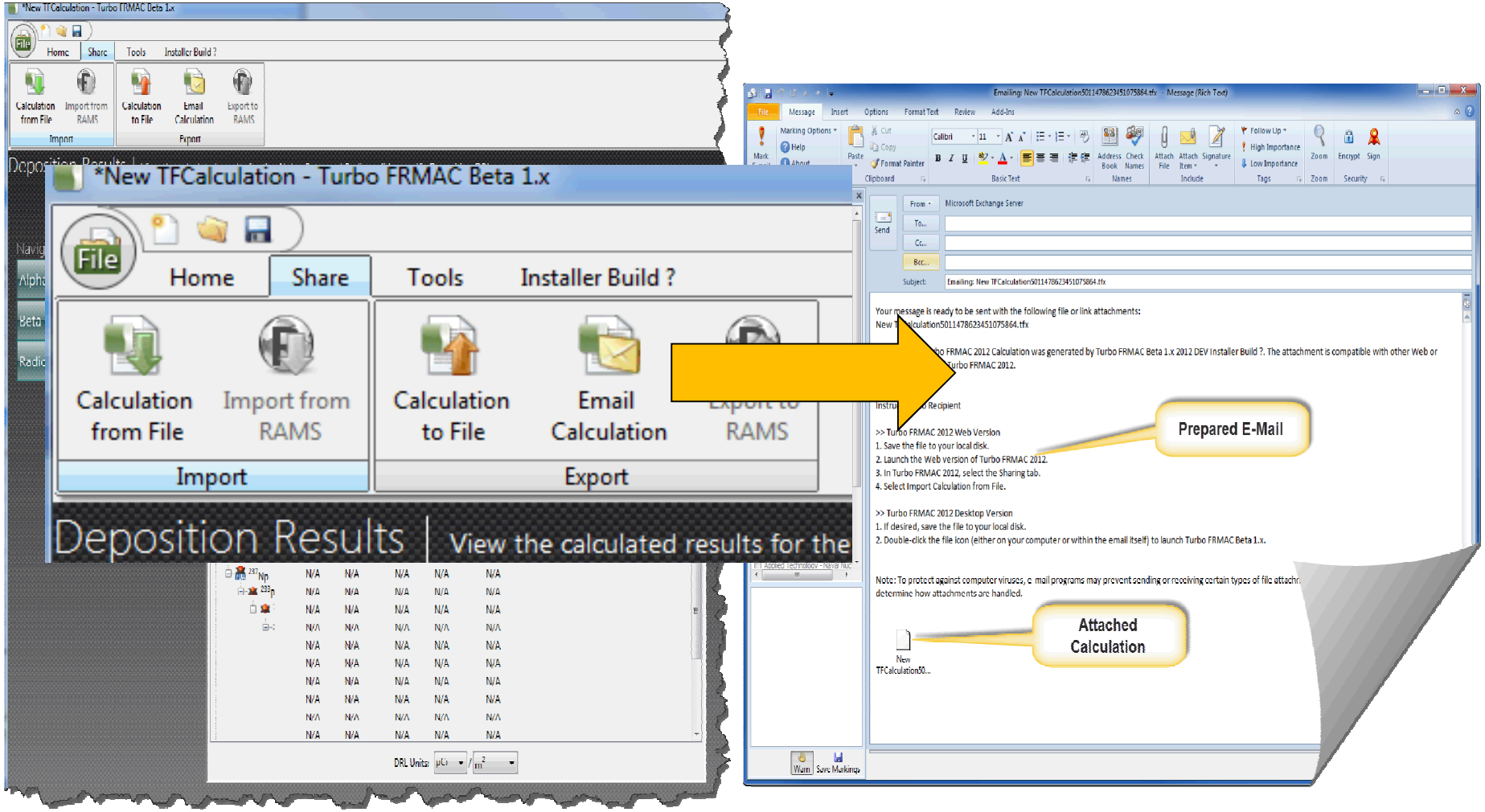
Collaboration



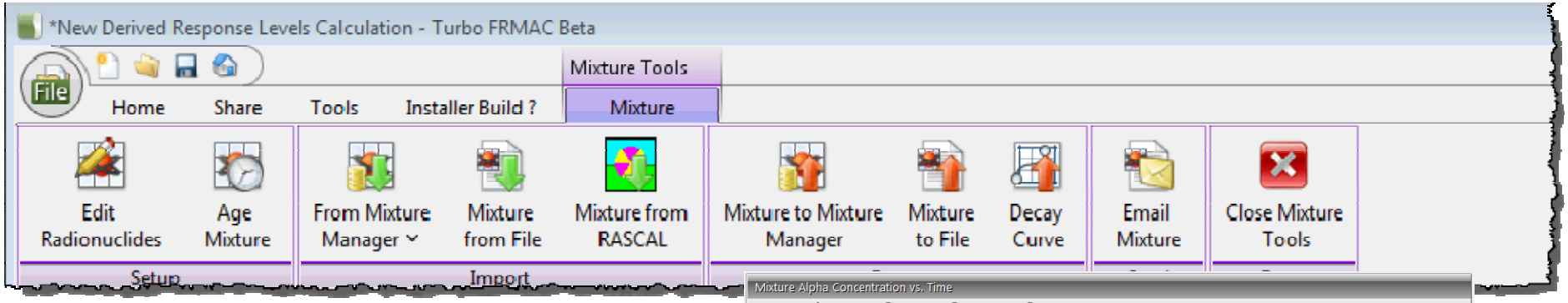


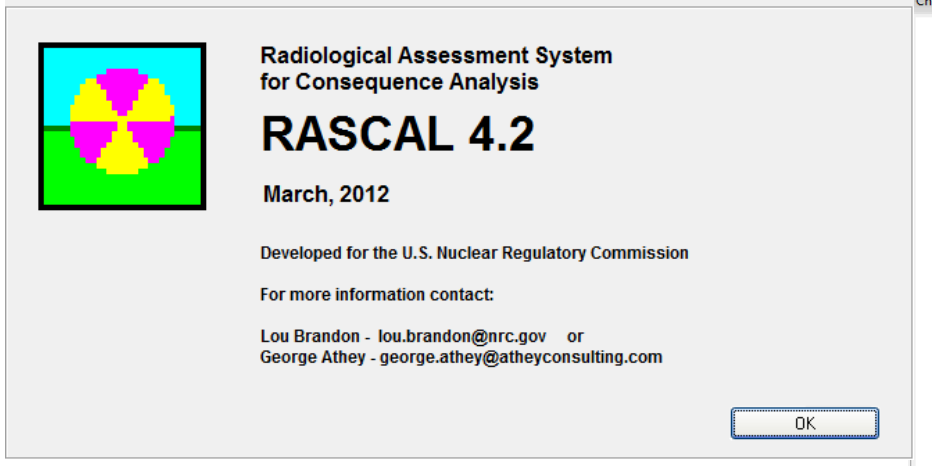
	A	B	C	D	E	F
	Radionuclide	Early Phase (microCi*s/m3)	First Year (microCi*s/m3)	Second Year (microCi*s/m3)	Fifty Year (microCi*s/m3)	User Defined (microCi*s/m3)
2	Am-241	2.457420427	0.269797293	0.098319357	0.051288883	26.57775973
3	Cs-137	260.5982662	28.61077652	10.42632095	5.438952929	2818.450611
4	Sr-90	248.1994631	27.24952654	9.930255103	5.180177201	2684.353732
5						
6						

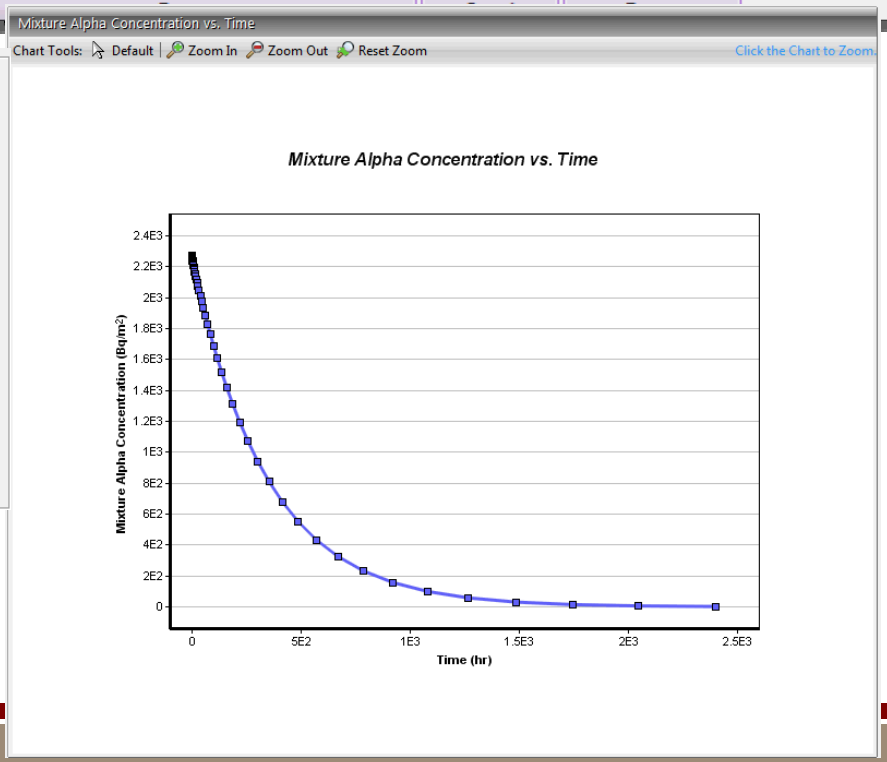
Collaboration - Continued



Mixture Tools

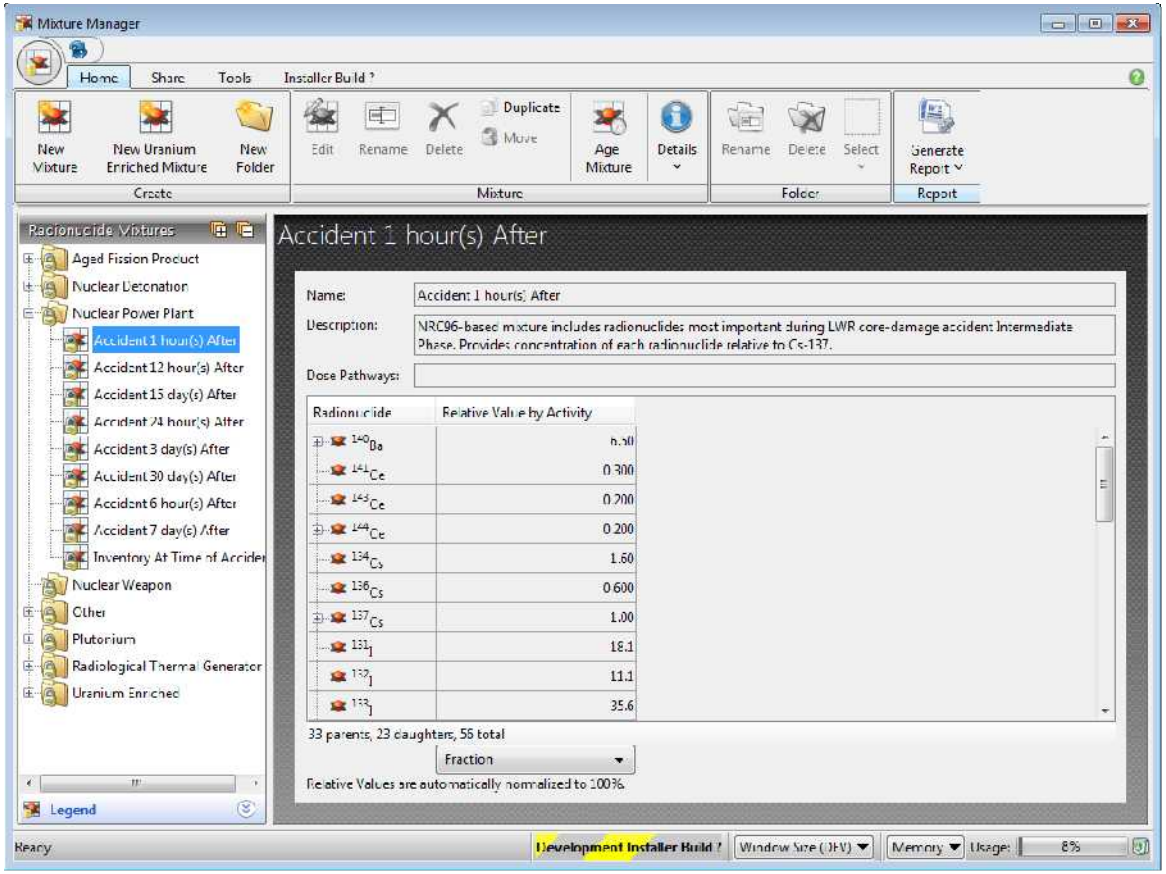




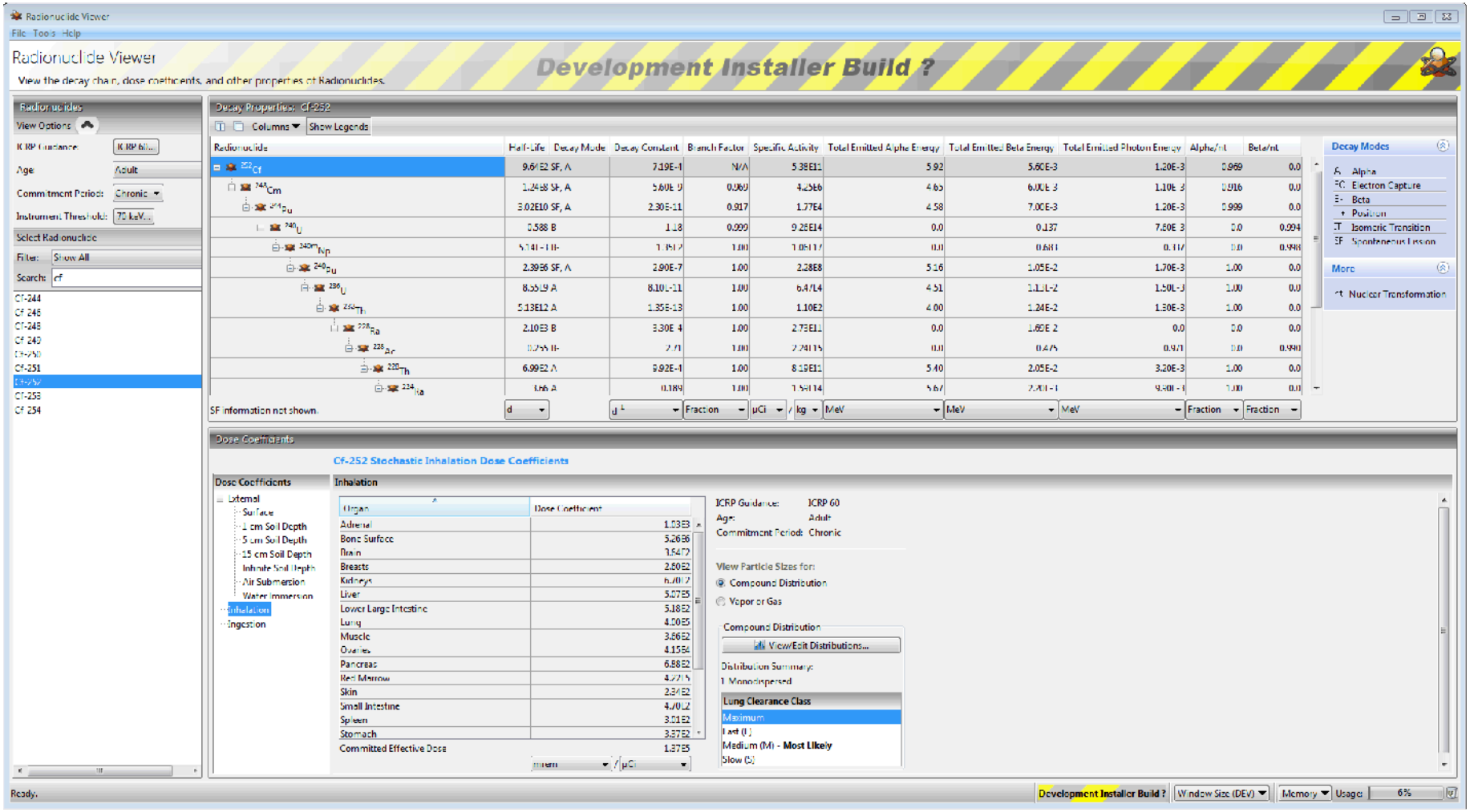


Mixture Manager

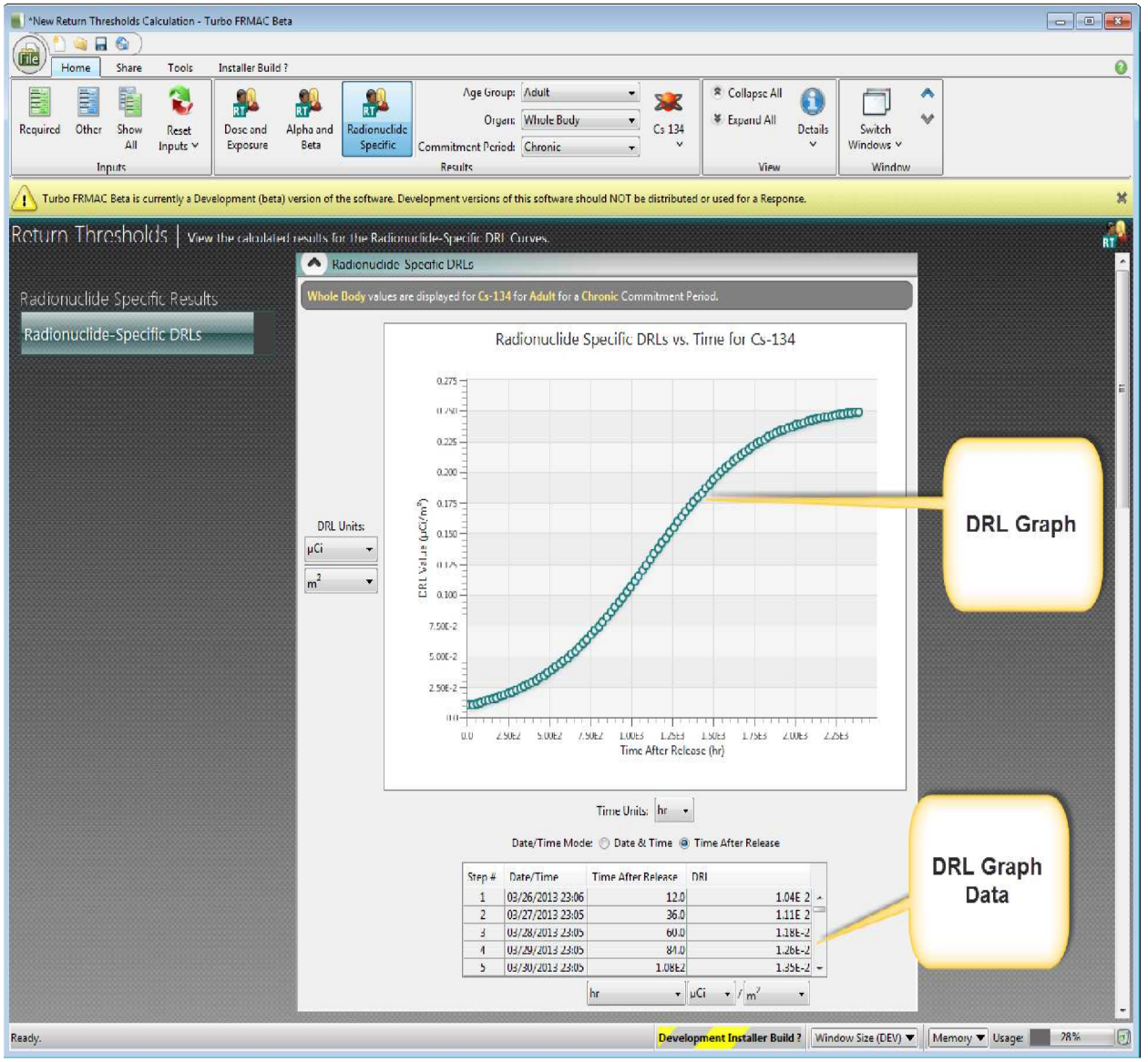
- Build Custom Mixture
  - Full Decay Chains
  - Truncated Chains
- Predefined Mixtures
  - Aged Fission Products
  - Nuclear Detonation
  - Nuclear Power Plant
  - Nuclear Weapon
  - Other
  - Plutonium
  - Radiological Thermal Generator
  - Uranium Enriched
- Tools



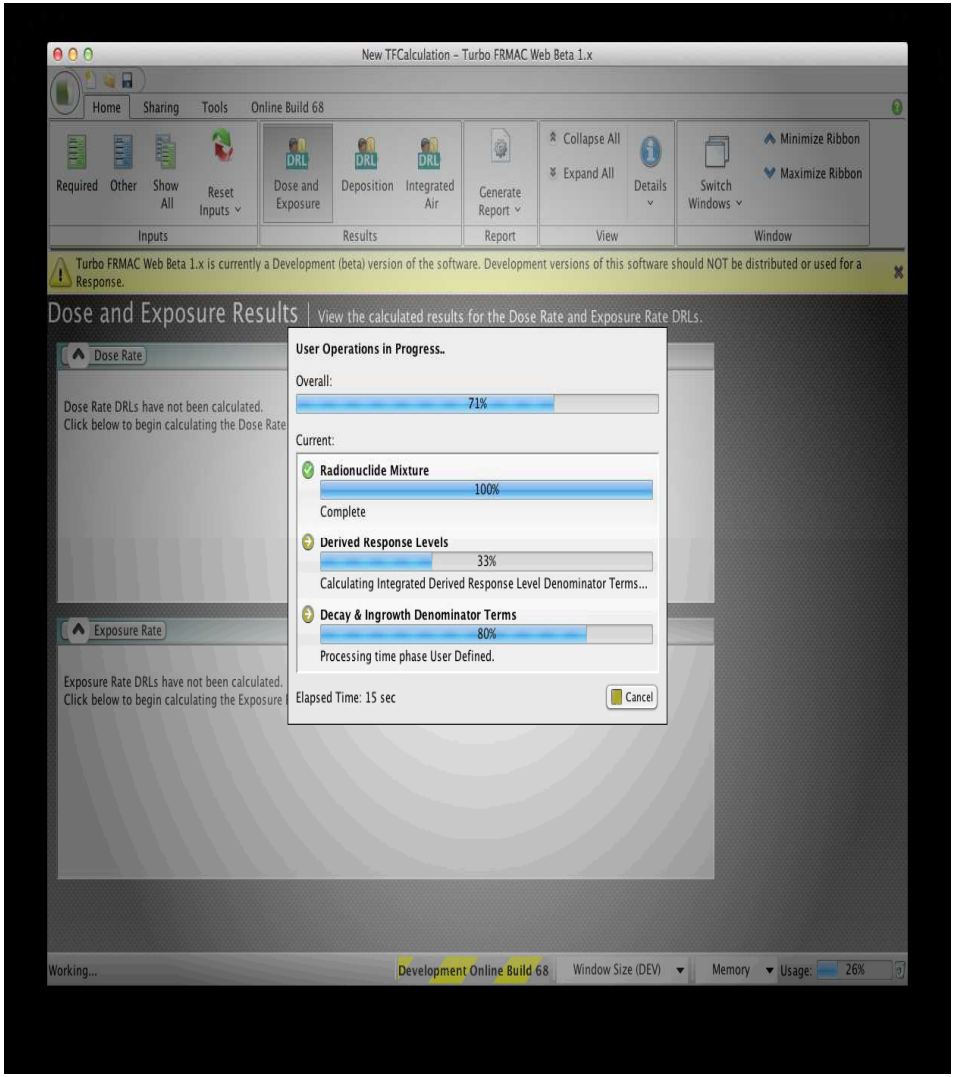
Radionuclide Viewer

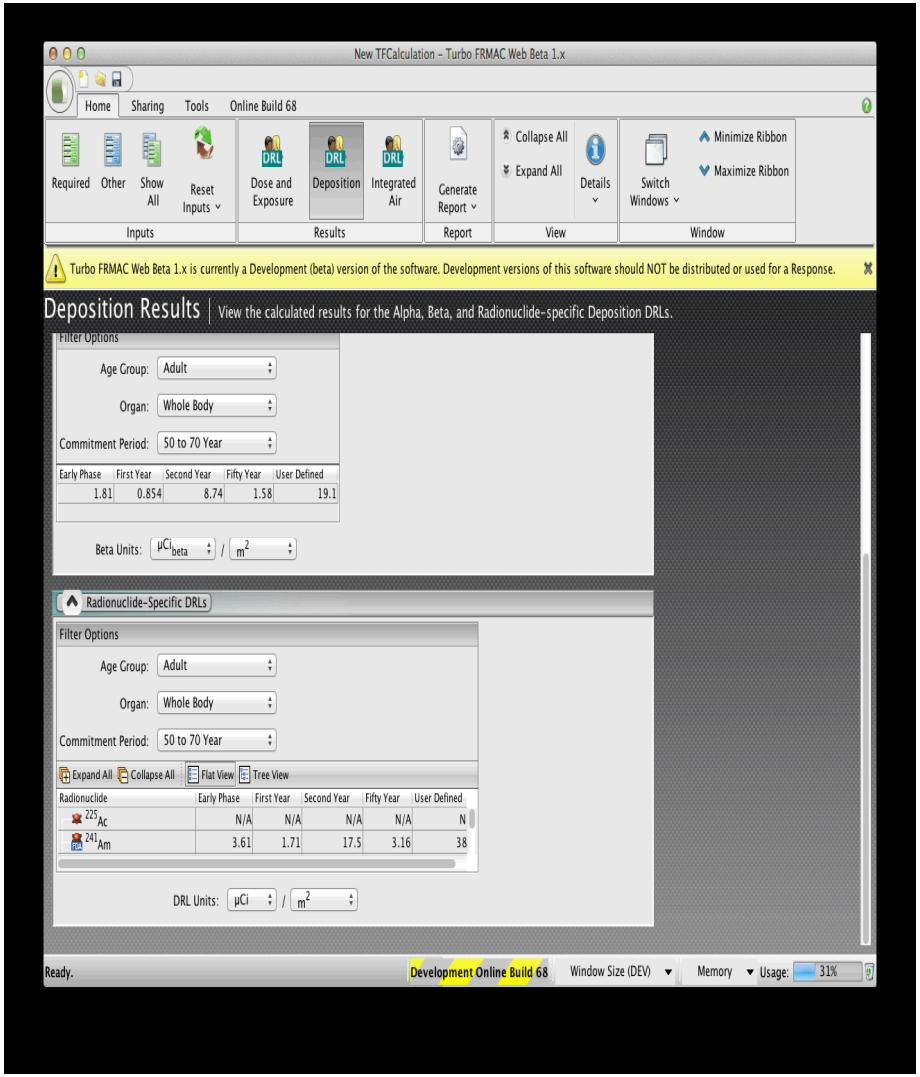


DRL Curves


*New Return Thresholds Calculation - Turbo FRMAC Beta
Home
Share
Tools
Installer Build ?
Required
Other
Show All
Reset Inputs
Inputs
Dose and Exposure
Alpha and Beta
Radionuclide Specific
Age Group: Adult
Organ: Whole Body
Commitment Period: Chronic
Cs 134
Results
Collapse All
Expand All
Details
View
Switch Windows
Window
Turbo FRMAC Beta is currently a Development (beta) version of the software. Development versions of this software should NOT be distributed or used for a Response.
Return Thresholds | View the calculated results for the Radionuclide-Specific DRL Curves.
Radionuclide Specific Results
Radionuclide-Specific DRLs
Radionuclide Specific DRLs
Whole Body values are displayed for Cs-134 for Adult for a Chronic Commitment Period.
Radionuclide Specific DRLs vs. Time for Cs-134
DRL Value (µCi/m²)
Time After Release (hr)
DRL Units:
µCi
m²
DRL Graph
Time Units: hr
Date/Time Mode: Date & Time Time After Release
Step # | Date/Time | Time After Release | DRL
1 | 03/26/2013 23:06 | 12.0 | 1.04E 2
2 | 03/27/2013 23:05 | 36.0 | 1.11E 2
3 | 03/28/2013 23:05 | 60.0 | 1.18E-2
4 | 03/29/2013 23:05 | 84.0 | 1.26E-2
5 | 03/30/2013 23:05 | 108.0 | 1.35E-2
DRL Graph Data
Ready.
Development Installer Build ?
Window Size (DEV)
Memory
Usage:
28%

Macintosh Compatible.





How to Access

Sandia National Laboratories

Turbo FRMAC is now web deployed.
Installation disks available only upon special request.

http://nirp.sandia.gov