

FRMAC Assessment Working Group Update for Semi- Annual State/FRMAC Call

July 29, 2015



Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company,
for the United States Department of Energy's National Nuclear Security Administration
under contract DE-AC04-94AL85000.



FRMAC Assessment Manual

- Released updated FRMAC Assessment Manual (April 2015)
 - Added FRMAC Intervention Level (FIL) Method to assess non-FDA radionuclides
 - Removed 4-Pathway (includes plume dose) and 2-Pathway (excludes plume dose) concepts so users can select any combination of the 4 main exposure pathways. Informal, but academic discipline is required

SAND2015-2884 R
Supersedes SAND2012-0888 P
Unlimited Release

**FEDERAL RADIOLOGICAL
MONITORING AND ASSESSMENT CENTER**

FRMAC ASSESSMENT MANUAL

VOLUME 1

OVERVIEW AND METHODS



**The Federal Manual for Assessing Environmental
Data During a Radiological Emergency**

April 2015



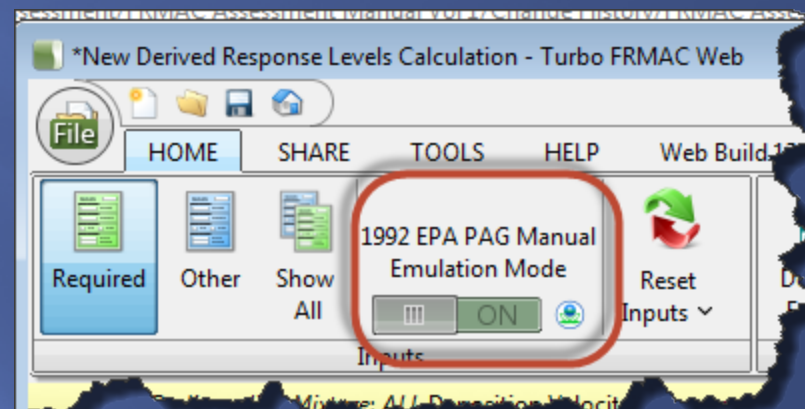
FRMAC Assessment Manual

- Released update FRMAC Assessment Manual (cont.)
 - Expanded worker protection methods to include the airborne plume dose
 - Added new method to account for partial occupancy in the contaminated zone and for shielding protection provided by buildings
 - Added information on how to assess radionuclides that can exist in non-particulate and/or multiple physical/chemical forms (e.g., iodine released from NPP).
 - Tabulated FIL values in Appendix C, Table 8 for non-FDA radionuclides
 - Added discussion about radionuclides that have dose coefficients for different physical/chemical forms to Appendix F.
 - ...



Turbo FRMAC Tool Update

- Turbo FRMAC Updates (Turbo FRMAC 2015)
 - Added 1992 EPA PAG Manual emulation mode that pre-sets all Derived Response Level (DRL) input parameters (e.g., ICRP 30, weather model, dose pathways) to match the 1992 PAG Manual
 - Allows users to independently setup time phases (e.g., start and stop times, dose pathways)



Time Settings

Release Date & Time: 07/14/2015 10:41 CST/MDT (UTC-06:00)

Date/Time Mode: ☐ Date & Time ☒ Time After Release









Time Phase	Start Time	Duration	End Time	Evaluation Time	Plume Inhalation	Plume Submersion	Resuspension Inhalation	Groundshine
Early Phase	0.0	96.0	96.0	12.0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
First Year	12.0	8.76E3	8.77E3	12.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Second Year	8.76E3	8.76E3	1.75E4	12.0	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Fifty Year	12.0	4.38E5	4.38E5	12.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
User Defined	0.0	12.0	12.0	12.0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Turbo FRMAC Tool Update

- Turbo FRMAC Updates (Cont.)

- Enables users to assess radionuclides that can exist in non-particulate and/or multiple physical/chemical forms (e.g., iodine from NPP).

	Physical Form	Radionuclide	Activity per Area	Integrated Air Concentration	Deposition Velocity	Particle Size Distribution
–	P	+  ¹³⁷ Cs	1.22E6	4.08E8	3.00E-3	 Mono 100%
–	P	 ¹³⁸ Cs	5.96E5	1.99E8	3.00E-3	 Mono 100%
–	P I2 CH3I	+  ¹³¹ I	1.35E7	3.81E9	3.54E-3	Mono 100%
–	P I2 CH3I	 ¹³² I	1.81E7	5.09E9	3.54E-3	Mono 100%
–	P I2 CH3I	+  ¹³³ I	2.41E7	6.80E9	3.54E-3	Mono 100%
–	P I2 CH3I	 ¹³⁴ I	3.04E6	8.57E8	3.54E-3	Mono 100%

70 parents, 190 daughters, 260 total

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- Can now paste radionuclide mixture data from Excel into Turbo FRMAC
- Redesigned the radionuclide mixture interface
- The particle size distribution of each parent radionuclide can be set independently
- ...



FRMAC Assessment Training Update

- Provided AS100 training May 2015 and AS200 June 2015
- Provided AS50 training at HPS Mid-Year, NREP and special session for the State of South Carolina in preparation for SE15
- Formalized the requirement for Assessment Scientist continuing/quarterly training (AS400/401) to maintain qualifications
- Conducted AS300 class July 2015



QUESTIONS?