Jay,
I have attached my comments as annotations to both the user’s guide (yellow balloons) and the charge (blue insertion marks).

I looked at the references, but did not examine the parameters in detail. Generally, the User’s Manual is not. It does not explain how to use the calculator, and does not describe the screen and input options. Without more info, tutorial or guidance, I would be reluctant to use anything but the defaults. As with many of these models, the interaction amongst the parameters is not spelled out, viz., if I change parameter A, should that imply a corresponding change to parameter B? Should certain parameters be restricted to a reasonable range? Should there be error checking on the input to prevent gross errors in their values?

There are MANY broken links: some crucial, like the equations in the calculator. Like many of the models out there, this one tries to include everything. There is no real discrimination between which factors are the biggest contributors and should be paid most attention to. There are sensitivity analyses that can be done to assess such things.

It may not simple or easy to make some of the changes/additions I suggest. I feel that most folks who are not experts in these particular models will just use the defaults. Otherwise the learning curve may be too high.

I hope this is sufficient for the task at hand. If you need something else, I guess we have till COB today.

Regards
On behalf of EPA, I appreciate your willingness to conduct an external peer review of an on-line calculator of "Preliminary Remediation Goals for Radionuclides in Outdoor Surfaces."

We are requesting that you complete the peer review and provide me with your comments by February 15, 2008.

I am attaching a purchase order, the statement of work/"Charge" to the peer reviewers, a conflict of interest certification, and an IRS Form W-9 (the IRS form need not be used if your check will be issued to a corporation; if it will be issued to you as an individual, we are required to have it unless we already have yours on file).

Please return the conflict of interest certification as soon as convenient (not later than when you complete your peer review). Electronic submission is fine (either scanned signature or digital signature is acceptable).

Access instructions to the on-line calculator are provided in the SOW/Charge. Please contact me right away if you have problems accessing the site. We would appreciate it if you do not circulate the site, users name, or password.
While it is not germane to the peer review, I would appreciate it if you would keep track of how many hours you put into this peer review and let me know when you complete and return the purchase order for payment. This will assist us in designing future peer reviews.

Don’t hesitate to call or email me if you have questions. Once again, I very much appreciate your willingness to help make this tool a better product.

(See attached file: Peer Review PO Gogolak.pdf)

(See attached file: SPRG Peer Review Charge 01-16-08.pdf)

(See attached file: Peer Reviewer Conflict of Interest Certification.pdf)

(See attached file: IRS Form w-9.pdf)

N. Jay Bassin
Environmental Management Support, Inc.
8601 Georgia Avenue, Suite 500
Silver Spring, MD 20910
301-589-5318, ext. 31
301-589-8487 (fax)
jay.bassin@emsus.com

www.emsus.com
Summary of Comments on https://epa-sprg.ornl.gov/users_guide.shtml

Page: 1

Author: Carl Gogolak  
Subject: Note  
Date: 2/14/2006 3:58:16 PM  
Referred reader to where it is explained how to do this.

https://epa-sprg.ornl.gov/users_guide.shtml  
1/15/2008
3. Using the SPRG Table

- The SPRG "threshold exceedance" (and generic-recommended concentrations) in the absence of specific exposure assessments. Screening concentrations can be used for:
  - Prioritizing multiple sites within a facility or exposure unit
  - Setting risk-based action levels for development of focused concern (FCM)
  - Assessing future risk exposure

When appropriate for the site, consideration of risk-based screening levels.

3.1 Developing a Conceptual Site Model

Developing a conceptual site model (CSM) is necessary. It should illustrate likely contaminant sources, exposure pathways, and potential receptors. The information can be used to describe the site, develop the CSM, and the role for additional interpretation. The CSM should include specific exploration methods, mechanisms, pathways, and receptors, as presented in Table B.1. It should also provide information on how to mitigate the problem. A separate CSM for each potential receptors can be useful. Table 3 provides a list of the CSMs. Users Guide (Reg. 2000) contains the recommended steps for developing a CSM.

3.2 Radiolabeled Background

Natural background radiation should be considered prior to applying SPRG or screening levels. Background and site-specific levels of radiation should be addressed as they are for other contaminants at CERCLA sites. Further information can be found in the guide "RDP Guide for the CERCLA Cleanup Program, April 2002. (DOE/RE-0061.)" It is important that additional pertinent radiation levels are identified and assessed. For example, some radionuclides amounts are not considered in the screening level guidance. Table B.1 provides a list of the CSMs. Users Guide (Reg. 2000) contains the recommended steps for developing a CSM.

3.3 Potential Problems

As with any risk based level, the potential exists for misinterpretation. In most cases, this results from not understanding the intended use of the recommended SPRG. In order to prevent misuse of the recommended SPRG, the following should be avoided:

- Using recommended SPRG levels to a site without adequately developing a conceptual site model that identifies relevant exposure pathways and exposure scenarios.

3.4 Technical Support Documentation

The recommended SPRG consider human exposure from direct contact with contaminated soil and external exposure to contaminated streets, buildings, and building materials. The CSMs and technical support documentation are included at the site-specific level for the site-specific SPRG. The following table provides the recommended levels to assess and their associated guidance. Table 3 presents the recommended levels to assess and their associated guidance. Any alternative values or assumptions used in any evaluation or selection can be found in the guide "RDP Guide for the CERCLA Cleanup Program, April 2002. (DOE/RE-0061.)" Information on the basis of the recommended values can be found in Volume 126, Number 3, March 2002. Users Guide (Reg. 2000) contains the recommended steps for developing a CSM.

Page: 3
- Author: Carl Gogolak
  Subject: Note
  Date: 2014/06/08 4:38:05 PM
  Authorized review

- Author: Carl Gogolak
  Subject: Note
  Date: 2014/06/08 4:38:11 PM
  Provide links

- Author: Carl Gogolak
  Subject: Note
  Date: 2015/06/08 7:46:21 AM
  -db

- Author: Carl Gogolak
  Subject: Note
  Date: 2015/06/08 7:50:05 AM
  - guess open choices signify not quantified?

- Author: Carl Gogolak
  Subject: Note
  Date: 2015/06/08 7:49:07 AM
  - In the surface PRO calculations, the 3 choices are resident, indoor worker and outdoor worker. Where do those other scenarios fit in?
null
4.2 Worker

4.2.1 Outdoor Worker

The outdoor worker land use exposure, presented here, contains the following exposure pathways and exposure routes:

1. Exposure to contamination deposited on streets and sidewalks (indoor ingestion, inhalation of particulates and external exposure to landing radiation from settled or using ground plane toxicity values)

\[
\text{Exposure} = \text{Flow} \times \text{Toxicity} \times \text{Concentration} \times \text{Exposure Time}
\]

where:

- Flow = \text{m}^3/\text{min}
- Toxicity = \text{mg/m}^3
- Concentration = \text{mg/m}^3
- Exposure Time = \text{hr}

The resulting units for the recommended SPMDs are in pCi/y. The units are based on area because the SP is used in the soil volume for external exposure.

- 2-D Exposure to Direct External Exposure (Materials with fixed contamination in a finite slab using infinite soil volume toxicity values)

\[
\text{Exposure} = \text{Flow} \times \text{Toxicity} \times \text{Concentration} \times \text{Exposure Time}
\]

The resulting units for the recommended SPMDs are in pCi/y. The units are based on mass because the SP is used in the soil volume for external exposure.

- 2-D Exposure to Direct External Exposure (Materials with fixed contamination in a finite slab at certain depth using finite soil volume toxicity values)

\[
\text{Exposure} = \text{Flow} \times \text{Toxicity} \times \text{Concentration} \times \text{Exposure Time}
\]

The resulting units for the recommended SPMDs are in pCi/y. The units are based on area because the SP is used in the soil volume for external exposure.

- 2-D Exposure to Direct External Exposure (Materials with fixed contamination in a finite slab at certain depth using finite soil volume toxicity values)

\[
\text{Exposure} = \text{Flow} \times \text{Toxicity} \times \text{Concentration} \times \text{Exposure Time}
\]

The resulting units for the recommended SPMDs are in pCi/y. The units are based on area because the SP is used in the soil volume for external exposure.

- 2-D Exposure to Direct External Exposure (Materials with fixed contamination in a finite slab using finite soil volume toxicity values)

\[
\text{Exposure} = \text{Flow} \times \text{Toxicity} \times \text{Concentration} \times \text{Exposure Time}
\]

The resulting units for the recommended SPMDs are in pCi/y. The units are based on mass because the SP is used in the soil volume for external exposure.

- 2-D Exposure to Direct External Exposure (Materials with fixed contamination in a finite slab at certain depth using finite soil volume toxicity values)

\[
\text{Exposure} = \text{Flow} \times \text{Toxicity} \times \text{Concentration} \times \text{Exposure Time}
\]

The resulting units for the recommended SPMDs are in pCi/y. The units are based on area because the SP is used in the soil volume for external exposure.

The resulting units for the recommended SPMDs are in pCi/y. The units are based on area because the SP is used in the soil volume for external exposure.

The resulting units for the recommended SPMDs are in pCi/y. The units are based on mass because the SP is used in the soil volume for external exposure.

- 2-D Exposure to Direct External Exposure (Materials with fixed contamination in a finite slab at certain depth using finite soil volume toxicity values)

\[
\text{Exposure} = \text{Flow} \times \text{Toxicity} \times \text{Concentration} \times \text{Exposure Time}
\]

The resulting units for the recommended SPMDs are in pCi/y. The units are based on area because the SP is used in the soil volume for external exposure.

- 2-D Exposure to Direct External Exposure (Materials with fixed contamination in a finite slab using finite soil volume toxicity values)

\[
\text{Exposure} = \text{Flow} \times \text{Toxicity} \times \text{Concentration} \times \text{Exposure Time}
\]

The resulting units for the recommended SPMDs are in pCi/y. The units are based on area because the SP is used in the soil volume for external exposure.

- 2-D Exposure to Direct External Exposure (Materials with fixed contamination in a finite slab at certain depth using finite soil volume toxicity values)

\[
\text{Exposure} = \text{Flow} \times \text{Toxicity} \times \text{Concentration} \times \text{Exposure Time}
\]

The resulting units for the recommended SPMDs are in pCi/y. The units are based on area because the SP is used in the soil volume for external exposure.

- 2-D Exposure to Direct External Exposure (Materials with fixed contamination in a finite slab at certain depth using finite soil volume toxicity values)

\[
\text{Exposure} = \text{Flow} \times \text{Toxicity} \times \text{Concentration} \times \text{Exposure Time}
\]
<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
<th>Column 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value 1</td>
<td>Value 2</td>
<td>Value 3</td>
<td>Value 4</td>
</tr>
<tr>
<td>Value 5</td>
<td>Value 6</td>
<td>Value 7</td>
<td>Value 8</td>
</tr>
<tr>
<td>Value 9</td>
<td>Value 10</td>
<td>Value 11</td>
<td>Value 12</td>
</tr>
<tr>
<td>Value 13</td>
<td>Value 14</td>
<td>Value 15</td>
<td>Value 16</td>
</tr>
<tr>
<td>Value 17</td>
<td>Value 18</td>
<td>Value 19</td>
<td>Value 20</td>
</tr>
</tbody>
</table>

- Additional text and data related to the table.
4.3 Exposure Parameter Justification

The following sections describe the exposure parameter default values and the values selected.

4.3.1 Exposure Time (ET)

The exposure time represents the hours per day that a receptor spends in a sources. The exposure times vary by exposure scenario, age of the receptor, and whether the receptor is located on a hard or soft surface. This calculation also includes exposure to hard surfaces. For the residence time between the hard surface exposure time of a 10 hours per day used for adults and 5 hours per day used for the EPA or NPDES programs (720). The inhalation and external exposure the exposure time indoors at 1.5 hours per day and the average time outdoors is set at 6.792 hours per day. These values are from the 1997 Exposure Factors Handbook. From this, the inhalation and external ingestion of food particles trapped in mucous is not quantified in the SPCE equations due to lack of exposure information.

For the outdoor and indoor exposure, the default exposure time for the dust ingestion exposure time is based on exposure to hard surfaces. For this calculation, the inhalation times were set at 1.5 hours. The exposure time for direct external exposure is the entire work day or 5.904 hours.

4.3.2 Fraction Transferred from Surface to Skin (FTSS)

In general, this is the fraction of residence on a surface that can be transferred to skin. This process is less important for the adult population. This value was used to assess exposure to a very thin layer of 1 mm thick, which would have an estimated value of 10.000. This value was used in the calculations for this calculation.

4.3.3 Surface Area (SA)

In general, this is the skin surface area that is exposed during the workday. The SA is 22.2 cm² based on the average surface area of the skin of a 10% adult body. This value was used in the calculations for this calculation.

4.3.4 Frequency of Hand to Mouth (FH)

The FH values support the default values used for hand to mouth contact. This will decline with age, but very little data are available for other ages. This value was used in the calculations for this calculation.

4.3.6 Surface Extraction Factor (SEF)

In general, the SEF is the fraction of ingestion that is transferred to the skin. This value was used in the calculations for this calculation.

4.3.7 Hand-Adjusted Dust Ingestion Rate (HD)

To account for the variability in exposure activities between children and adults, the age-adjusted dust ingestion rate equation is developed. This equation takes into account the differences in hand to mouth contact, hand surface area, and exposure to hard and soft surfaces over the exposure duration of an adult and child.

4.3.8 Worker Dust Ingestion Rate (WD)

This dust ingestion rate calculates the intake for a worker based on exposure to hard surfaces.

4.3.9 Dispersive Rate Constant (G)

In some circumstances, the load on a contaminated surface, to which receptors are exposed, may decline over time. Dispersal of dust may result from weather, cleaning, and transfer to skin and clothing. Some surfaces may, due to different release and to different source or point of origin, not be dispersed in a random, continuous manner. To determine whether dissipation is a factor in the plant site, the site manager or agents can calculate whether the rate of dispersion is larger than the rate of dispersion in the surrounding environment.

The recommended default value for the dissipation rate constant is 0.0. This assumes that the cumulative rate constant is zero. However, the variable is additive in the SPCE calculation. If a negative rate constant is used, it is assumed that the dust was deposited over the same time period. If the dissipation rate constant is zero, it is assumed that it is applicable to the plant in times the SPCE is calculated into the future. The discussion below provides a review of the dispersion surface.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSF</td>
<td>0.4 (assumes shielding)</td>
<td>EPA 2009 (pg. 2-18)</td>
</tr>
<tr>
<td>FM</td>
<td>1.0</td>
<td>ANL 2001 (pg. 2-5)</td>
</tr>
<tr>
<td>Fd</td>
<td>1.0</td>
<td>ANL 2001 (pg. 6-6)</td>
</tr>
<tr>
<td>FSET</td>
<td>1.0</td>
<td>ANL 2001 (pg. 6-6)</td>
</tr>
<tr>
<td>FSK</td>
<td>Specific Factor</td>
<td>Cozzarelli 2007</td>
</tr>
</tbody>
</table>

**Inhalation and Ingestion Rates**

- **IF**: Worker Dust Ingestion Rate - Worker (mg/kg/day) 30  
  Calculated Value based on EPA 2003 (pg. 2-5)
- **IFr**: Age-Adjusted Dust Ingestion Rate - Resident (mg/kg/day) 0.45  
  Calculated Value based on EPA 2003 (pg. 2-5)
- **IFs**: Age adjusted Inhalation Rate (m³/day) 10  
  Calculated Value based on NIOSH (1999)  
  Calculated Value based on U.S. EPA 2001 (pg. 3-15)
- **HRm**: Adult Inhalation Rate (m³/day) 23  
  U.S. EPA 1991 (pg. 3-15)
- **HRc**: Adult Inhalation Rate (m³/day) 10  
  U.S. EPA 1991 (pg. 3-15)
- **HRw**: Worker Inhalation Rate (m³/day) 2.5  
  U.S. EPA 1997 (pg. 3-23)

**Ingestion Rate Variables**

- **PS**: Fraction Transferred to Surface Skin - Hard Surface (mg/kg) 0.5  
  EPA 2004 (Exhibit B-1, pg. B-6)
- **SA**: Surface Area of Fingers - Adult (cm²) 45  
  EPA 2003 (pg. D-1)
- **SA**: Surface Area of Fingers - Child (cm²) 15  
  EPA 2003 (pg. D-1)
- **SA**: Surface Area of Fingers - Worker (cm²) 45  
  EPA 2003 (pg. D-1)
- **FD**: Frequency of Hand to Mouth - Adult (events/hr) 10  
  EPA 2003 (pg. D-1)
- **FD**: Frequency of Hand to Mouth - Child (events/hr) 3.5  
  EPA 2003 (pg. D-1)
- **FD**: Frequency of Hand to Mouth - Worker (events/hr) 5  
  EPA 2003 (pg. D-1)
- **SE**: Saliva Extraction Factor (unitless) 0.5  
  EPA 2003 (pg. B-5)
- **ET**: Exposure Time - Adult Hard Surface (hours/day) 8  
  EPA 2003 (pg. D-4)
- **ET**: Exposure Time - Child Hard Surface (hours/day) 8  
  EPA 2003 (pg. D-4)
- **ET**: Exposure Time - Worker Hard Surface (hours/day) 8  
  EPA 2003 (pg. D-4)
- **ET**: Exposure Time Indoor - Resident (hours/day) 16.4  
  EPA 1997 (Table 15-132)
- **ET**: Exposure Time Indoor - Worker (hours/day) 8  
  EPA 2003 (pg. D-4)

**Exposure Frequency, Exposure Duration, and Exposure Time Variables**

- **EF**: Exposure Frequency - Indoor worker (days/year) 220  
  U.S. EPA 1991 (pg. 3-15)
- **EF**: Exposure Frequency - Outdoor worker (days/year) 220  
  U.S. EPA 1991 (pg. 3-15)
- **EF**: Exposure Frequency - resident (days/year) 220  
  U.S. EPA 1991 (pg. 3-15)
- **ED**: Exposure Duration - worker (years) 25  
  U.S. EPA 1991 (pg. 3-15)
- **ED**: Exposure Duration - resident (years) 20  
  U.S. EPA 1991 (pg. 3-15)
- **ED**: Exposure Duration - adult resident (years) 24  
  U.S. EPA 1991 (pg. 3-15)
- **ED**: Exposure Duration - child resident (years) 6  
  U.S. EPA 1991 (pg. 3-15)

**Particle Emission Factor Variables**

- **IP**: Weight of Emission Factor - Minneapolis specific (mg/kg) 1.36 x 10⁻⁵  
  Minneapolis 1999 (pg. 2-1), U.S. EPA 1998 (pg. 2-1)
- **IP**: Weight of Emission Factor - U.S. specific (mg/kg) 1.37 x 10⁻⁵  
  Minneapolis 1999 (pg. 2-1), U.S. EPA 1998 (pg. 2-1)

**Wind Variables**

- **U**: Mean annual wind speed (m/s) 4.69  
- **U**: Equivalent wind speed at 7m (m/s) 11.32  
  U.S. EPA 1999a, U.S. EPA 1999b
CARL V. GOGOLAK, Ph.D.
17 Crown Court Drive
Basking Ridge NJ 07920
Phone: 908-903-1655
FAX: 928-832-4782
Email: carl@gogolak.org
Web Page: www.gogolak.org

EDUCATION
B.S., Physics, Fordham University, Bronx NY, 1970
M.A., Mathematics, Fordham University, Bronx NY, 1971
Ph.D., Applied Statistics, Polytechnic University, Brooklyn NY, 1986

POSITIONS
2006 – present Consultant on Environmental Radiation Physics and Statistical Survey Design
1970 - 2005 Physicist, Applied Physics Division, USDHS/EMIL
Principal Investigator, Outreach/Educational Program
1994 - 1995 Acting Director, Radiation Physics Division, USDOE/EMIL
1990 - 1992 New Production Reactor Research Coordinator, USDOE/EMIL
1989 - 1994 Radon Research Program Coordinator, USDOE/EMIL
1987 - 1995 Supervisor, Radon Group, USDOE/EMIL
1986 - 1995 Adjunct Mathematics Lecturer, Polytechnic University
1982 - 2002 Guest Lecturer, Harvard University School of Public Health Short Course Program

Dr. Gogolak conducts experimental and theoretical studies of ionizing radiation required for preventing, protecting against, and responding to radiological and nuclear events. His earlier work included research on the impact of non-nuclear energy technologies on the environment and the effect of diurnal radon progeny concentrations on terrestrial gamma-ray exposure rates; testing real-time monitoring instrumentation for $^{85}$Kr releases from nuclear reprocessing plants; developing the first mobile computer system for on-site data analysis of in-situ gamma-ray measurements and designing a monitoring program for potential releases from light water reactors employing high pressure ionization chambers and thermoluminescent dosimeters.

Dr. Gogolak was a member of a team which developed statistical procedures for the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM). This team was awarded Vice President Albert Gore’s Hammer Award for Reinventing Government. In addition, he developed statistical methods for linking data quality objectives and measurement quality objectives for the Multi-Agency Radiological Analytical Laboratory Protocols (MARLAP) Manual. He developed the kriging methodology used by the National Cancer Institute to determine the thyroid dose from $^{131}$I releases from atmospheric testing in Nevada during the 1950's and 1960's.

PROFESSIONAL ACTIVITIES

Dr. Gogolak is a member of the National Council on Radiation Protection and Measurements Scientific Committee 64-2, A Design of Effective Effluent and Environmental Monitoring Programs. He is a co-Chair of the Council on Ionizing Radiation Measurements and Standards subcommittee on Public/Environmental Radiation Protection.

He is a Fellow of the Health Physics Society

He has authored or co-authored more than 100 papers, presentations, and technical reports.
Peer Reviewer Conflict of Interest Certification

A conflict of interest or lack of impartiality exists when the proposed peer reviewer personally (or the peer reviewer's immediate family, or his or her employer, has financial interests that may be affected by the results of the peer review; or may provide an unfair competitive advantage to the peer reviewer (or employer): or if the peer reviewer's objectivity in performing the peer review may be impaired due to other factors. When the Peer Reviewer knows that a reasonable person with knowledge of the facts may question the peer reviewer's impartiality or financial involvement, an apparent lack of impartiality or conflict of interest exists.

The following questions, if answered affirmatively, represent potential or apparent lack of impartiality (any affirmative answers should be explained on the back of this form or in an attachment):

- Did you contribute to the development of the document under peer review, or were you consulted during its development, or did you offer comments or suggestions to any drafts or versions of the document during its development? □ No □ Yes
- Do you know of any reason that you might be unable to provide impartial advice on the matter under consideration in this peer review, or any reason that your impartiality in the matter might be questioned? □ No □ Yes
- Have you had any previous involvement with the review document(s) under consideration? □ No □ Yes
- Have you served on previous advisory panels, committees, or subcommittees that have addressed the topic under consideration? □ No □ Yes
- Have you made any public statements (written or oral) on the issue? □ No □ Yes
- Have you made any public statements that would indicate to an observer that you have taken a position on the issue under consideration? □ No □ Yes
- Do you, your family, or your employer have any financial interest(s) in the matter or topic under peer review, or could someone with access to relevant facts reasonably conclude that you (or your family or employer) stand to benefit from a particular outcome of this peer review? □ No □ Yes

With regard to real or apparent conflicts of interest or questions of impartiality, the following provisions shall apply for the duration of this peer review:

(a) Peer Reviewer warrants, to the best of his/her knowledge and belief, that there are no relevant facts or circumstances that could give rise to an actual, apparent, or potential organizational or personal conflict of interest, or that Peer Reviewer has disclosed all such relevant information to EMS or to EPA.

(b) Peer Reviewer agrees that if an actual, apparent, or potential personal or organizational conflict of interest is identified during performance of this peer review, he/she immediately will make a full disclosure in writing to EMS. This disclosure shall include a description of actions that Peer Reviewer (or his/her employer) has taken or proposes to take after consultation with EMS to avoid, mitigate, or neutralize the actual, apparent, or potential organizational conflict of interest. Peer Reviewer shall continue performance until notified by EMS of any contrary action to be taken.

Signature

CARL V. GOGOLAK

Date

1/28/06

EMR

Printed Name

Affiliation/Organization

☐ Check here if any explanation is attached