Commenter	Page No.	Guidance Section	Guidance Sub-Section	Exposure pathway	Comment	Commenter Recommendation	EPA Resolution
Gogolak	1	Disclaimer	NA	NA	Broken Link		
Gogolak	1	Disclaimer	NA	NA	Broken Link		
Gogolak	1	Introduction	NA	NA	Refer reader to where it is explained how to do this.		
Gogolak	2	2.0	2.1	NA	Broken Link		
Gogolak	2	2.0	2.1	NA	Broken Link		
Gogolak	2	2.0	2.3	NA	Ditto		
Gogolak	2	2.0	2.3	NA	Many of these links say authorization required. Why is this since I already entered a password?		
Gogolak	3	3.0		NA	Authorization required for link		
Gogolak	3	3.0	3.1	NA	Provide links		
Gogolak	3	3.0	3.1	NA	Ditto		
Gogolak	3	3.0	3.1		I guess open circles signify not quantified?		
Gogolak	3	4.0	NA		In the Surface PRG calculations, the 3 choices are resident, indoor worker and outdoor worker. Where do these other scenarios fit in?		
Gogolak	4	4.0	4.1		There are 5 residential scenarios in the preceding section, it would be better to have these links associated with the "equation bullets" rather than just lumped together as they are now.		
Gogolak	4	4.0	4.1		The sheer number of parameters is overwhelming. I suggest that you hyperlink the parameters in the equation to their definition and default values in Table 1.Otherwise it just gets too hard to follow.		
Gogolak	4	4.0	4.1		Explain the relationship between this equation and those that follow. Explain where they will be found in the calculator, and whether or how they should be combined.		
Gogolak	4	4.0	4.1		These four equations seem to vary only with the depth of contamination. This is not readily apparent and causes some considerable redundancy. Use one equation and state which parameter changes and why.		
Gogolak	5	4.0	4.1		Same as comment above		
Gogolak	5	4.0	4.2.1		Same comments as for residential		
Gogolak	6	4.0	4.2.2		Again, same comments as for residential		
Gogolak	8	4.0	4.3		Can these discussions be hyperlinked to Table 1? There is a lot of info here, but it is not very well organized to be useful. Since this appears to be a web tool, maximum advantage of hyperlinking should be considered. It would also be useful to have a self contained help file with the same links.		
Gogolak	8	4.0	4.3.1		Did I miss any prior discussion of how this tool should be used differently for children and adults? Since this is screening, would using the most restrictive be appropriate? for residential?		
Gogolak	12	4.0	4.3.11	NA	Link refers to Table 5.1. Is there supposed to be a Section 5 in this users manual?		
Gogolak	16	4.0	4.4.2.2 (Table 1)	NA	Authorization required message		
Darois		Website		NA	Finding the actual calculator was not initially obvious. I suggest making this easier. In the download section it was not initially obvious that the xls and pdf files were simply the default SPRG values.		
Darois		Website		NA	Have objectives of SPRG Calculator, as stated in the documentation, been realized? Yes		
Darois		Website		NA	Does the Users Guide match the SPRG Calculator (online tool) and visa-versa? Yes, generally the Users Guide is consistent with the calculator.		
Darois		General			I am primarily concerned with the number of very conservative assumptions that are used as default values. This appears to compound into some values that are below the measurement capability of instrumentation. Also, there is no discussion of the presence of multiple nuclides. I have provided an annotated pdf of the guide and a separate Word document that discusses the results of various default analyses (see Eric Darois Summary of SPRG Default Value Observations.doc).		
Darois	4	4.0	4.1		The equations or the sections below should be numbered for easy reference.		
Darois	4	4.0	4.1		The explanation of the differences and application of the 2D and 3D models is not well described.		
Darois	4	4.0	4.1		Intuitively, it appears that the numerator should include (lambda + k) rather than lambda alone. Please verify that this is correct.		
Darois	4	4.0	4.1		This equation does not seem reasonable. These default values also seem unreasonable.		
Darois	5	4.0	4.1		It would appear that this equation should be the same as the external component of the 1st equation, but it is quite different.		
Darois	8	4.0	4.3.3		I know of no adults that put three fingers in their mouth regularly. This is an ultra-conservative assumption.		
Darois	8	4.0	4.3.4		Yes but, these frequency values are linked to the SA values. So an adult will place 45cm2 of hand surface to his mouth 1 time per hour? I do not think this is reasonable.		
Darois	8	4.0	4.3.5		Also quite high, especially for indoor workers where the hands are washed several times per day.		
Darois	9	4.0	4.3.8		This is all true. However, for the first case where fixed contamination is on an outdoor surface, a k factor from weathering should be encouraged and applied. Also, more guidance on K factors from weathering must be available and should be included. This guidance discourages the use of K unless it is well understood and documented but it is likely a rare event that a zero value of K is actually found.		
Darois	10	4.0	4.3.10		So we have this factor but the value of K is set to 0? These assumptions are inconsistent.		
Darois	10	4.0	4.3.10		This factor assumes that the silt is the source. This is an inconsistent assumption. I believe the introduction of "clean" silt will effectively reduce the inhalation intakes.		
Darois	12	4.0	4.3.11		This is true for external gamma radiation. However, for factors such as SLF and PEF, this does not appear to be true since clean silt will be introduced into the contamination area. The ACF adjustments do not consider inhalation pathways.		
Darois	12	4.0	4.3.12		I am unaware of any outside structure that has been contaminated to any appreciable height. This is an overly conservative estimate and may lead to confusion of the end user. I suggest limiting the height choices to more realistic values.		
Darois	12	4.0	4.4.2		This should be related to the value of K since the particles are assumed to be source particles. I would suggest that most of these particles would not be source particles.		
Darois	13	4.0	4.4.2.2		This assumes soil and is inconsistent with concrete surfaces. Especially if the K value is set to 0.		
Darois	15	4.0	4.4.2.2 (Table 1)		This variable is labeled SFinh in the 1st equation.		
Darois	15	4.0	4.4.2.2 (Table 1)		Using this value as a default does not recognize the acceptable range of risk values. As with most default values, this will likely cause most decision makers to apply these very conservative values in order to maintain a safety margin. This results in clean-up values that compound the conservatisms such that the actual risk is much lower than the assumed value. I generally suggest that the calculator consider a range of default values for some of the critical parameters such that a range of clean-up values is provided. This may give the end user a "feel" for the uncertainties involved and less likely to interpret these values and sacrosanct limits.		
Darois	15	4.0	4.4.2.2 (Table 1)		T		
Darois	16	4.0	4.4.2.2 (Table 1)		T		
Darois	16	4.0	4.4.2.2 (Table 1)		T		
Darois	16	4.0	4.4.2.2 (Table 1)		These factors (highlighted in yellow) can take on a large range. Probably needs more guidance on using any parameter values including the defaults.		
Darois	16	4.0	4.4.2.2 (Table 1)		T		

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Darois	16	4.0	4.4.2.2 (Table 1)		T		
Darois	16	4.0	4.4.2.2 (Table 1)		T		
Mullen		General	Website		The website is generally easy to navigate, with an appealing mix of figures and text. The embedded links in the text to various references are very useful. The layout is useful and easy to follow.		
Mullen		General			The silt loading factor (SLF) refers to paved roads while the particle emission factor (PEF) is based on an old equation for unpaved roads. This guide and the tool should use different PEF formulas based on whether the vehicle activity at the site is occurring on paved or unpaved roads.		
Mullen	13	4.0	4.4.2.1		The equation used to calculate resuspended dust emissions from unpaved roads is out of date. The current equation (based on the AP-42 chapter finalized November 2006) is as follows (http://www.epa.gov/ttn/chief/ap42/ch13/index.html): Public Unpaved Roads: E = {[1.8 * (s/12) * (S/30)0.5 / (M/0.5)0.2] – 0.00047} * (365-p)/365 * 281.9 * sum(VKT) Where E is the total resuspended road dust emissions in grams, s is the surface material silt content (%), M is the surface material moisture content (%), p is the number of days in a year with at least 0.01 inches of precipitation, and VKT is the total vehicle kilometers traveled on the road segment. More details on the definitions of the variables and appropriate ranges can be found in the AP-42 chapter. In addition, the AP-42 document provides a separate equation for resuspended road dust on industrial roads. Since it is expected that many of these sites might have industrial roads rather than publicly traveled unpaved roads, the tool should distinguish between which type of road is located on or near the site, and use the appropriate equation.		
Mullen	13	4.0	4.4.2.1		The current AP-42 equation for resuspended road dust on industrial unpaved roads is as follows: Unpaved Industrial Sites: E = 1.5 * (s/12)0.9 * (W/3)0.45 * (365-p)/365 * 281.9 * sum(VKT) Where E is the total resuspended road dust emissions in grams, s is the surface material silt content (%), W is the mean vehicle weight (tons), p is the number of days in a year with at least 0.01 inches of precipitation, and VKT is the total vehicle kilometers traveled on the road segment. More details on the definitions of the variables and appropriate ranges can be found in the AP-42 chapter.		
Mullen	13	4.0	4.4.2.1		Both of these equations include a conversion factor of 281.9, which was also included in the PEF equation. This is not defined anywhere in the PEF equation description and is not obvious. This should be documented and is the conversion from lb per vehicle mile traveled (VMT) to gram per VKT.		
Mullen	13	4.0	4.4.2.1		Similar equations should also be provided for paved roads and the tool should have the user select the appropriate road type: paved road; public unpaved road; or industrial unpaved road. The AP-42 equation for resuspended road dust from paved roads is as follows: Paved Roads: E = [4.6 * (sL/2)0.65 * (W/3)1.5 – 0.1317] * [1 – p / (4*365)] * sum(VKT) Where E is the total resuspended road dust emissions in grams, sL is the road surface silt loading (g/m2), W is the mean vehicle weight (tons), p is the number of days in a year with at least 0.01 inches of precipitation, and VKT is the total vehicle kilometers traveled on the road segment. More details on the definitions of the variables and appropriate ranges can be found in the AP-42 chapter.		
Mullen	13	4.0	4.4.2.1		The Table A1-6 provided in the user's guide is useful, however, as indicated, this table applies to paved roads, not unpaved roads (which is what is currently calculated in the PEF equation). Its utility is much greater than the state purpose of estimating the mean vehicle weight. Mean vehicle weight should be relatively easy to estimate based on the mix of vehicles traveling over the road. The more useful information in this table would be in providing general examples of the other variables needed in the resuspended road dust equation for paved roads, such as silt loadings.		
Mullen	13	4.0	4.4.2.1		The text in section 4.4.2.1 should be updated to be specific to the equations presented above, and the tool should be updated to allow the user to select the type of road (public unpaved, industrial unpaved, or paved).		
Mullen	10	4.0	4.3.10		It would be useful to copy the sentence from section 4.4.2.1 that provides the definition of silt into this section, since this section is focused on the silt loading factor. Table 2 is probably not useful for this discussion. Table 2 is looking at the aggregation of vehicle travel by roadway class across all roadways of the same type in a state. Since the purpose of the SPRG Calculator is for more site-specific calculations, the user should have a pretty good idea of the type of road and traffic volume on the road. Therefore, Table 2 should be replaced with the silt loading factor defaults shown for the baseline by average daily travel category from Table 13.2.1-3 in the paved road section of AP-42.		
Mullen	10	4.0	4.3.10		The paragraph at the end of this section seems extraneous. It is not necessary to know the road class to estimate the default silt loading factor if the table referenced in the above paragraph (13.2.1-3 from AP-42) is included. The information in Table 13.2.1-4 is useful and should be retained.		
Mullen		General Users Guide			For the PEF equation presented in the green box in section 4.4.2.1, it doesn't make sense that some of the variables are defined but some aren't. I realize that all the variables are defined in a later table, but it would be helpful to have the PEF variables all defined in the green box, if possible.		
Mullen		General Users Guide			I am not sure I understand why the SLF is divided by the PEF, when (at least for paved roads) the SLF is used in calculating the PEF. The overall calculations shown in sections 4.1 and 4.2 are outside the area of my expertise, but this is just puzzling to me, and it would be good if someone with expertise in this part of the process can verify that this portion of the equations makes sense. Also, I am not sure what should be used in place of the SLF for unpaved roads, which are generally defined by a silt content percent rather than a loading factor.		
Mullen		General Search Tool			The width of the Variable field should be shortened so that the Value field doesn't start to disappear off the end of the computer screen.		
Mullen		General Search Tool			The user should be able to enter the silt loading factor (SLF) in units of g/m^2, since this is the set of units that SLFs are generally expressed in. The tool should then convert these units as needed.		
Mullen		General Search Tool			The dropdown menus for "Most Likely State Road Conditions" (when State Specific SPRGs is selected) could be replaced by a user entry box for the SLF, if the recommendations from the User's Guide section are implemented.		
Mullen		General Search Tool			When Site Specific SPRGs is selected, default values should be included for the tons/car and tons/truck fields.		
Mullen		General Search Tool			In addition, these fields would need to be updated to capture the variables needed for the revised AP-42 equations.		
Mullen		General Search Tool			Reflecting the input variables and values selected in the output section is very useful.		

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Mullen		General Search Tool			Some range checks should be performed on the values entered in the tool, and the user should be alerted if an entered value is outside of the expected range. Typical ranges could be listed next to the variables.		
Ginevan		General			The calculator is really the SPRG Search tab – this should be made clear somehow (a tutorial?). Would it be more appropriate to call the site something like a data resource? This might be more accurate.		
Ginevan		General			When one opens the user manual tab it should open in a new window – the way it works now is that the calculator page is closed when the manual is opened. Trying to refer to the manual while using the calculator is frustrating.		
Ginevan		General			I have found that the calculator (the SPRG Search tab) works sporadically in Firefox – should the documentation note Internet Explorer only? In the same vein, has anybody tried it on a Mac?		
Ginevan		General			Some entries are accepted that don't make sense – that is, I specified "F_{CD} (fraction of time spent in compartment) unitless" as 2. I think this only makes sense as 0-1, you need to do range checking. If we increase FCD from 1 to 2 PRG is smaller by a factor of 2 but does this make sense? Some other entries may have the same problem		
Ginevan		General			The diagram on page 1 is nice but could we add some live links – that is when you click on "HEAST" you get the HEAST link? Actually live diagrams might be a nice organizing principal for a lot of this material.		
Ginevan		General			Obviously I cannot check all equations but the sources are pretty well documented and the math makes sense. One issue that may not be addressed is the "sunbather" scenario. That is in certain cases people actually recline on a surface – this is a worst case for gamma emitters. I recognize that this is uncommon but it came up once for me. If it's there I missed it.		
Ginevan		General			One problem that might want to be highlighted is the sample support issue – the goals are "reasonable maximum exposure (RME) concentrations." I would take these to be upper confidence bounds on the arithmetic mean concentration, but operationally we certainly do not want to remove all material above the goal because typically the data are right skewed and removing all samples above even an upper bound on the mean would result in an average much below the mean.		
Ginevan		General			One issue that I'm not sure is adequately addressed is that radiation exposure can be a very small area exposure compared to chemicals. That is, if one simply sits in one spot, the amount of chemical exposure will usually be nil but radiation exposure for gamma emitters particularly can be pretty substantial. This adds a dimension to point 7 above – we have to know what the PRG numbers apply to in terms of sample size – 50 cm^2 surface measurements are more variable than 500 cm^2 measurements. I think the PRG number calculations assume a uniform concentration – which is reasonable, but I think some guidance has to be given or explicitly referenced to allow users to relate the PRG's to actual measurements. That is, what concentration (average/upper bound/something else) from what area (square meters?) should the PRG's be compared to?		
Charnock		Website			(A1) The site is reasonably clearly organised. The first page clearly explains the purpose of the site and how it meshes with the regulations and advice it is intended to support. For a newcomer to the site it is important that this first page is read thoroughly. A very minor complaint is that the site does not do enough to guide new comers through the appropriate subsequent sequence of pages. Along the tabs at the top of the next page following the home page is the SPRG Calculator itself (slightly confusingly called SPRG search), but it is more important for a new user to read the Users Guide before using the calculator. A page especially designed for new users might help guide users through the Website. A few minor technical issues with the Website were identified as follows in no particular order: (a) no matter how wide the screen is made, a small part of the contents is always cut off at the left or the right; (b) often the site loads very slowly and without formatting.		
Charnock		General			(A2) Have the objectives of the SPRG Calculator, as stated in the documentation, been realised? Generally these objectives have been met. However, there are some choices for wording, particularly in the Users Guide, that suggest that the objective is to state policy and provide recommendations, rather than to be a tool that implements the policy and recommendations. For example, under "Disclaimer" in the Users Guide is the phrase "This guidance document sets forth recommended approaches based on EPA's best thinking…". Is it true that the objective is for the EPA to put forward its recommendations in this document or have the recommendations be made elsewhere? Could it be better worded as follows: "This guidance document is based on approaches recommended by EPA (citation)…"? Similarly, also under "Disclaimer" in the Users guide, the sentence "The policies set out in the Radionuclide SPRG Users Guide provide guidance to EPA staff" can be found. Again is it true that the policies are set out in the Users Guide or are they set out elsewhere?		
Charnock		General			(A3) No major discrepancies where found between the Users Guide and the website in general and the search calculator tool in particular. Trivial discrepancies are listed below: (a) the default PEFm value in the user guide is given as 3.05 107 but in the calculator a value of 1.34 105 is used; (b) table one refers to the parameter SFi, in the equations it is given as SFinh.		
Charnock		Website			(A4) Recommendations to improve usability: (a) It would be useful if site specific parameters could be saved to a file and uploaded at a later date. This would reduce the time taken and the possibility of errors when typing and retyping in parameters (e.g. when exploring the sensitivity of parameters) and facilitate archiving and sharing work between organisations; (b) The site specific parameter web page displays the input fields in an arbitrary order, which is a little confusing. Maybe they could be grouped by pathway or by adult and child inputs? (c) There are two fields labelled "Q/Cwind" on the site specific input form. On the state specific import form there is one field labelled "Q/Cwind" which should probably be "Q/Cmechanical".		
Charnock		General Users Guide			(B1) Is the tool and the Website clearly explained? There are some editorial problems with the Users Guide as discussed below. Generally it feels imbalanced as it is very thorough regarding the underlying models and assumptions but weaker on the practicalities of using the website and the process and pitfalls of developing a site conceptual model. Generally it lacks an overview that would be particularly useful to new users.		
Charnock		General Users Guide			(B1a) Are the assumptions clear and reasonable? The Users Guide describes the underlying models and methodology thoroughly and apart from one or two minor issues (discussed below) it is generally clear regarding the assumptions behind the models and the parameters, with adequate links and citations to the source material.		
Charnock		General Users Guide			(B1b) Does it adequately describe its limitations? Generally the Users Guide provides adequate explanation about the models and the underlying science and information about their limitations. The developers should consider bringing this material together within a single section.		
Charnock		General Users Guide			(B1c) Is it well written and clearly organized? The Users Guide contains a lot of useful information, particularly about the underlying models and the derivation of SPRGs, but it is not well structured and sections generally begin with in-depth methodological detail but do not give sufficient overview. For example, Section 2 "Understanding the SPRG website" does not explain the website but concentrates on slope factors and the derivation of SPRGs. Another example is that the option for calculating State specific SPRGs is never acknowledged or specifically explained (although it is referred to obliquely in section 4.3.10). I recommend that the developers reconsider the structure of the User's guide and the titles of the sections and subsections. They should consider adding a section on navigating and using the website and the use and options of the SPRG search tool. At various points the guide discusses the appropriate way to use the calculator and the SPRG, these considerations are very important and the developers should consider bringing all these together in a single section, possibly with a worked example of how to develop a conceptual site model and apply the calculator to it.		
Charnock		General Users Guide			(B1c) Specific issues about the User's guide are listed below in no particular order: (a) There is no table of contents; (b) Tables are labelled erratically; there are several items that look like tables and Table 1 is the fifth or sixth; (c) Abbreviations are used inconsistently. For example, some abbreviations are introduced before they are defined (PEF, RI), some are never defined (e.g. ADTV, HEAST, CERCLA, FS) and some are continually defined (COPC); (d) For each of the important parameters it would help to summarise what the effect of changing the parameter is on the SPRG. (i.e. increasing SLF will tend to decrease both SPRGw and SPRGm) and also to give a range of reasonable values if possible; (e) The developers should consider whether it is necessary to include separate external exposure equations for each depth; apart from different slope factors the equations are identical; (f) In Table 1, exposure time parameters are given under the "Ingestion rate variables" heading.		

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Charnock		General Users Guide			(B1d) Is the technical support documentation complete, well organized and easy to follow? The technical support documentation is very complete, and contains many links to supporting information. It contains enough information for equations to be replicated independently. However, it is unstructured and maybe the parameters could be grouped into more logical sections by pathway. Specific issues about the technical support documentation in the user guide are listed below: (a) Most subsections that describe parameters of the models include the parameter abbreviation; however Section 4.3.10 "Silt Loading Factor" and Section 4.3.11 "Area Correction Factor" do not; (b) It is not clear why slope factors are discussed in section 2.2 and not in the technical support document;		
					(B1d continued) (c) It is not clear what the distinction is between sections 4.4, "Supporting equations", and 4.5 "Equation details", or why Section 4.5 comes after the references; (d) In Table 1 a wind driven PEFw is given for Minneapolis and a mechanical PEFm is given for Phoenix. This is the first mention in the User's guide of these cities and there needs to be an explanation of their significance; presumably they are defaults. However the values of the PEFm for Phoenix given in the User's guide (3.05 107) is not the same as that used by the calculator (1.34 105); (e) It is not explicit how the dose from the external exposure pathway calculated in Section 4.5.1 relates back to the risk and slope factors; (f) It is not clear what is the difference between tr and EDR. However the calculator ensures that they are the same; (g) It is not clear from the wording of external exposure equations whether the contamination is at 1, 5, 15 or 30 cm or infinite depth, or whether the material is uniformly contaminated to depths of 1, 5, 15, 30 cm or infinite depth. Presumably the latter assumption is the correct one.		
Charnock		General Users Guide			(B2) Are the sources/citations appropriate and do they represent the current state of knowledge? This appears to be the case. The full Eckerman and Ryman 1993 citation is not given but it is a familiar work.		
Charnock		General Users Guide			(B3) Are the models comprehensive, accurate, and do they represent the current state of knowledge? Are they supported appropriately by citations? Yes, for residential, worker exposure, and conceptual two- and three-dimensional. For children's exposure, the calculator does not treat children separately from adults. This seems to be in accordance with the EPA advice and recommendations and therefore it is not a weakness of the calculator. The slope factors from the HEAST data are age averaged and cannot be changed in the calculator. A situation can be identified in which using age specific information could make a difference to the SPRG (see Section B8b below in this document), but this is an artificial situation and is probably not a typical application.		
Charnock		General Users Guide			(B4) Are the equations comprehensive, accurate and do they represent the current state of knowledge? Are they supported appropriately by citations or derivations? Yes, for residential, worker exposure, and conceptual two- and three-dimensional.		
Charnock		General Users Guide			(B4d) Are the equation variables adequately explained in terms of relative sensitivities? Generally the relative sensitivities of parameters are not discussed in the Users Guide. For parameters such as: exposure time ET, fraction transferred from surface to skin (FTSS), frequency of hand to mouth (FQ), saliva extraction factor (SE) it is probably unnecessary as it is fairly intuitive. For the dissipation rate constant (k), the Users guide does give some discussion of sensitivity (see also Section B8e).		
					(B4d continued) For the silt loading factor (SLF), the sensitivity is not discussed but it is fairly clear that a higher SLF will lead to lower SPRGs. However a line in the Users Guide: "the default of 0.015 (g/m2) was chosen, with California interstate ADTV, for this calculator as a conservative value suitable for producing default SPRGs" is counter-intuitive because 0.015 (g/m2) is the lowest value in Table 2 and therefore not conservative. The statement is correct for mechanical resuspension because it is the corresponding Californian ADTV data (with high traffic volumes) that make the resultant SPRG conservative. It is not precise for wind driven resuspension which does not use traffic information; in this case the SLF for a country road with a higher SLF would give a more conservative SPRG.		
					(B4d continued) Particle emission factor wind (PEFw) and Particle emission factor mechanical (PEFm) – are fairly complex parameters and generally I found the explanation confusing (Section 4.4.2 of the User's guide). The section does not give a discussion about the relative sensitivity of the parameters. The developers should consider whether an in-depth discussion of PEF is appropriate or whether it is sufficient to cite the relevant material. Discussion of sensitivity should concentrated on the input parameters such as silt loading factor (SLF) and traffic factors that can be easily understood by the user; (e.g. a heavier traffic regime is likely to lead to a lower SPRG when considering mechanically driven resuspension).		
Charnock		General Users Guide			(B4e) Are the equation constants adequately explained and sourced? Generally yes; deficiencies are as discussed in Section B4d above because I haven't distinguished between constants and variables.		
Charnock		General Users Guide			(B5) Are the toxicological and exposure data comprehensive, appropriate, accurate, and do they represent the current state of knowledge? Are they supported appropriately by citations? Are they appropriate for residential and worker exposures? Toxicological data are taken from the HEAST which appears comprehensive and appropriate and adequately explained. It is beyond my capability to comprehensively test individual values.		
Charnock		General Users Guide			(B6) Are the assumptions and data for children's exposure reasonable and supportable? The assumptions and parameters for children appear reasonable and are well supported by citations. There is of course a lot of variability and uncertainty in these parameters (particularly those concerned with ingestion; SA, FQ, SE, and FTSS; and with exposure time ET and EF) and presumably they are chosen to be conservative. The User's guide should discuss this uncertainty and caution against excessive tinkering with these values without a very good reason.		
Charnock		General Users Guide			(B7) Are the exposure parameters and default values appropriate and based on supportable reasoning? Exposure parameters and default values seem appropriate and all have citations that can be followed up, most citations are EPA documents that appear current. I was unable to see how the default values for the parameters ETor (1.752 hr/day) and ETir (16.4 hr/day) were derived from the source material which gives mean values of 154.03 min/day (2.57 hr/day) and 1001.39 min/day (16.68 hr/day) respectively. A few questions that could be addressed in the User's guide are: (a) Why are the adult and child inhalation rates taken from one document and the worker inhalation rates from another? (b) The citation given for the worker breathing rate recommends 1.3 m3/hr, but the value chosen for the calculator default is 2.5m3/hr, the heavy work value. The justification needs to be included in the Users Guide, presumably it was chosen as it is the most conservative?		
Charnock		General Users Guide			(B8a) Were appropriate exposure input parameters selected and logically supported to developed risk-based criteria for settled dust? See Section B7 above. Also note that the citation for EPA 1999b is not included in the reference list.		
Charnock		General Users Guide			(B8b) Are children adequately protected by the risk-based criteria as developed? Generally children are protected by the approach. However, the use of slope factors that are not age specific may be of concern for short-lived radionuclides which, because of the rapid decay, have a relatively short exposure period. In these situations it could be argued that an age specific SF might be more appropriate. For example, for radionuclide 210Po, the difference in dose coefficients (Sv/Bq) for adults and children for both inhalation and ingestion is about a factor of 4 (see ICRP publication 72). However a short lived radionuclide that is not in equilibrium with the parent is a situation that users are not likely to encounter when dealing with historic sites.		
					(B8b continued) Similarly, it is possible that inhalation or ingestion rates averaged over age groups may be inappropriate for a short lived radionuclide, where the exposure is over a relatively short time. In these cases it may be more appropriate to use the more extreme behaviour of a single age group (e.g. the mouthing rate of a baby or the inhalation rate of an adult) than an averaged behaviour. By suitable adjustment of the inputs the calculator is able to account for this so it merely requires noting in the Users guide as an issue for the user to consider.		
					(B8b continued) As an example, I did a site specific calculation and adjusted the inputs to make the ingestion pathway dominant (by assuming an interstate silt loading factor, a rural local road level of traffic and a climate zone based on Minneapolis). In this calculation if I used the default exposures times of 24 years as an adult and 6 years as a child (30 years in total) I calculated a SPRGw of 6.19 10-2 pCi/cm2 and a SPRGm of 1.95 10-2. When I assumed 6 years of child exposure the calculator gives a lower SPRGw of 3.95 10-2 pCi/cm2 and SPRGm of 7.13 10-3 pCi/cm2. The difference of about a factor of two is due to the higher mouthing rate of the infant. Again this is a situation unlikely to be encountered at historic sites.		
Charnock		General Users Guide			(B8c) Is the use of the external ground plane slope factor appropriate? The use of external ground plane slope factors is appropriate for this kind of tool.		

Commenter	Page No.	Guidance Section	Guidance Sub-Section	Exposure pathway	Comment	Commenter Recommendation	EPA Resolution
Charnock		General Users Guide			(B8d) Is the use of mechanical resuspension approach appropriate? It is very appropriate to represent mechanical as well as wind driven resuspension. The approach was not one I am familiar with. However the use of a model apparently derived for unpaved roads is probably conservative, although the User's guide could include more justification for the use of this particular model.		
Charnock		General Users Guide			(B8e) Is the use of the dissipation rate appropriate? Including a default input parameter of 0? The ability to have a dissipation rate in the equation is important to allow the calculator to be applicable for situations where dissipation is significant. Assuming no dissipation is the most conservative option and therefore it is appropriate to set the default as zero. Establishing an appropriate dissipation rate would be difficult. Even direct measurement would be difficult as different hard surfaces may dissipate at different rates, because of traffic exposure, weather exposure, material etc.. Andersson et al (2002) give retention half lives for various surface between 120 days for roads and up to 50 years for roofs.		
					(B8e continued) The Users Guide rightly cautions the user to be careful in setting an appropriate dissipation rate. But maybe it should also note that the dissipation rate following clean up could be less than before because the clean up operations may remove the more readily removed material. Researchers frequently represent retention on half surfaces as double exponentials representing a more easily and less easily removed fractions of the contamination and therefore measured rates should also be treated with caution.		
Charnock		General Users Guide			(B8f) Is the settled dust portion of the SPRG Calculator reasonably consistent with other relevant EPA superfund guidance? Are there aspects of other superfund guidance which should have been used or incorporated into the calculator? This appears to be the case, but my experience is limited in this area.		
Charnock		General Users Guide			(B9a) Were appropriate exposure input parameters selected and logically supported to develop risk-based criteria? See Section B7 above.		
Charnock		General Users Guide			(B9b) Are children adequately protected by the risk-based criteria as developed? Children appear adequately protected by the default parameters chosen. It could be argued that children are likely to spend more time outdoors than adults. However, given that the default indoor location factor does not reduce the exposure by much, this is not an issue (see Section B9c below).		
Charnock		General Users Guide			(B9c) Is the adjusted rate in(side?) for using the external slope factor on a contaminated urban street appropriate? The calculator uses a factor of 0.4 to adjust dose rates to account for the shielding when indoors. As a default I would use a value of 0.1. However, UK houses are generally of brick construction and so a value of 0.4 might be more appropriate for houses constructed with more lightweight material. The COSYMA code (CEC 1991) uses a value of 0.5 for lightly constructed houses.		
Charnock		General Users Guide			(B9d) Is the use of various (e.g., ground plane, 1cm 5 cm and 15 cm) external slope factors appropriate)? It is appropriate to use different slope factors to allow the user to consider different situations and I consider the range of options provided to be sufficient. The Users Guide could perhaps give some example situations and state which SF would be appropriate. It was not clear to me how the SF contamination at depth had been derived. The references FGR 13 is not given in the reference list.		
Charnock		General Users Guide			(B9e) Is the 3-D external portion of the SPRG Calculator reasonably consistent with other relevant EPA superfund guidance? Are there aspects of other superfund guidance which should have been used or incorporated into the calculator? This portion appears consistent; however I am not familiar with the EPA superfund guidance.		
Charnock		General Users Guide			(B10a) Were appropriate exposure input parameters selected and logically supported to develop risk-based criteria? See Section B7 above.		
Charnock		General Users Guide			(B10b) Are children adequately protected by the risk-based criteria as developed? See Section B9b above.		
Charnock		General Users Guide			(B10c) Is the adjusted rate in(side?) for using the external slope factor on a contaminated slab. See Section B9c above.		
Charnock		General Users Guide			(B10d) Is the use of various (e.g., ground plane, 1cm 5 cm and 15 cm) external slope factors appropriate)? See Section B9d above.		
Charnock		General Users Guide			(B11) Are the standard recommended default factors adequately explained, sourced and recommended? See Section B9d above.		
Charnock		General Users Guide			(B12) Are the radionuclides appropriate? See Section C5.		
Charnock		General Calculator			(C1) The results page is adequately clear given that a large amount of information is being presented.		
Charnock		General Calculator			(C2) Are the results appropriately described and qualified? On its own the results page does not provide the guidance needed to ensure that the users interpret and use the results correctly. However, there is sufficient information in the User's guide (once the editorial issues identified in Section B are addressed).		
Charnock		General Calculator			(C3) Do the results provide a defensible explanation of how they were derived or are they the result of a black box? The results page lists all the inputs to the models and provides links to the equations; it is therefore not a black box. I performed a hand calculation on the residential dust model and was able to replicate the results.		
Charnock		General Calculator			(C4) Is the 2-D external portion of the SPRG Calculator reasonably consistent with other Superfund guidance? Are there aspects of the other superfund guidance which should have been used or incorporated into the calculator? This portion appears consistent; however I am not familiar with the EPA superfund guidance.		
Charnock		General Calculator			(C5) Are the radionuclides appropriate and do the results adequately explain the variability among radionuclides? Yes, the calculator provides a very comprehensive list of radionuclides with and without contributions from significant daughters.		
Charnock		Summary			Generally the website SPRG Calculator is fit for use. A number of minor points were identified in Section A but none that would prevent its immediate use. The Users Guide needs editorial work (see Section B). The developers need to consider the structure and provide more guidance to the user on using the calculator and developing a site specific model. A worked example might facilitate this.		