

Monninger, John

From: Osborn, Douglas [dosborn@sandia.gov]
Sent: Wednesday, September 26, 2012 10:38 AM
To: Bixler, Nathan E; Monninger, John; Ghosh, Tina; Fretz, Robert
Subject: RE: [EXTERNAL] Re: Newer Updated MACCS2 slides for 10/3 ACRS presentation

Also one other point of note is our land contamination calculations do go beyond 50 miles. For Case 13 (i.e., drywell venting with main steam line rupture and containment spray at 24 hrs – large source term), the Cs-137 land contamination of 1 Ci/km² has a land contamination area of 86,000 km² (33,205 miles²).

Doug

*Continuous U.S. land area = 2.96 million square miles
3.79 million square miles*

From: Bixler, Nathan E
Sent: Wednesday, September 26, 2012 8:32 AM
To: Osborn, Douglas; Monninger, John; Ghosh, Suchandra Tina (External Contacts); Fretz, Robert
Subject: RE: [EXTERNAL] Re: Newer Updated MACCS2 slides for 10/3 ACRS presentation

Doug,

That's a nice discussion of the contaminated areas and related doses as a function of time. One thing I would add is that our calculation allows for wind shifts, which means that all of the release may not travel in a single direction. When there are wind shifts over the duration of the release (nearly all of the time), there would be a number of distorted ellipses (as in your figure) of different sizes pointing in different directions. The final shape of the isopleth would be a superposition of these distorted ellipses, accounting for the additive nature where the ellipses overlap.

Nate

From: Osborn, Douglas
Sent: Wednesday, September 26, 2012 8:07 AM
To: Monninger, John; Ghosh, Suchandra Tina (External Contacts); Fretz, Robert
Cc: Bixler, Nathan E
Subject: RE: [EXTERNAL] Re: Newer Updated MACCS2 slides for 10/3 ACRS presentation

John,

The distances reported for that row (e.g., 280 km² for Case 2) are not circular areas / radial distance from the plant.

Nate calibrated me on this as well. The area is something more like what you see in Fukushima. It's a contaminated area that looks more like a cigar shape downwind from the plant.

The reported results I provided from MACCS2 are a 'mean' contaminated land area, which means the area is not in a specific downwind direction. But considering MACCS2 uses a Gaussian plume model, any downwind contamination area will look like something shown in the figure below (taken from SOARCA Uncertainty Analysis – DRAFT).

Information in this record was deleted
in accordance with the Freedom of Information
Act, exemptions 7
FOIA 2013-0083



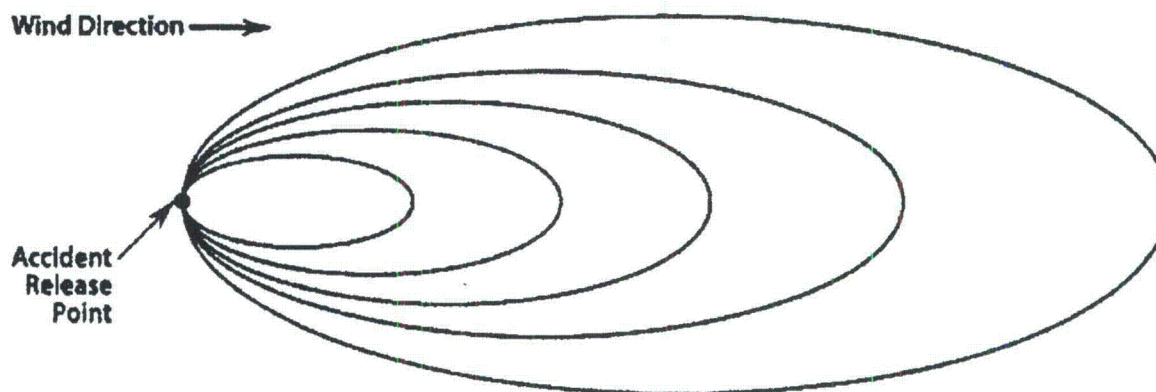


Figure B.1-4 Isopleths of equal pollutant concentration

Cs-137 land contamination discussed by the International Atomic Energy Agency (IAEA) for the Chernobyl accident were reported at levels of 1, 5, 15, and 40 Ci/km², which translate to 1, 5, 15, and 40 µCi/m², respectively. Based on these land contamination levels, the IAEA report was able to estimate annual effective external doses. Table 1 provides the annual effective external dose estimates based on Cs-137 soil-surface contamination [1].

Table 1 Chernobyl annual effective external dose estimates for 1986 to 1995

5	0.25	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.04	0.04
---	------	------	------	------	------	------	------	------	------	------

[1] International Atomic Energy Agency (IAEA). IAEA-TECDOC-1240, "Present and Future Environmental Impact of the Chernobyl Accident," Vienna, Austria: IAEA August 2001.

Regards,
Doug

From: Monninger, John [mailto:John.Monninger@nrc.gov]
Sent: Wednesday, September 26, 2012 7:02 AM
To: Ghosh, Suchandra Tina (External Contacts); Fretz, Robert
Cc: Szabo, Aaron; Stutzke, Martin; Basu, Sudhamay; Harris, Brian; Gibson, Kathy; Scott, Michael; Santiago, Patricia;
 Bixler, Nathan E; Osborn, Douglas; Skeen, David; Reckley, William; Collins, Timothy
Subject: [EXTERNAL] Re: Newer Updated MACCS2 slides for 10/3 ACRS presentation

Many thanks Tina.

Two questions for clarification

1) On the MACCS results slide, is the contaminated area metric (15 Ci/km²) reported only for land out to a 50 mile radius? Or, does it include land beyond 50 miles if that land meets the contamination metric?

I'm trying to reconcile in my mind the FV land contamination results verse the SFPSS land contamination results. The SFPSS reported land contamination out to 500 miles. I fully understand that for the Reg Analysis we look at impacts to 50 miles.

2). Also, is our land contamination metric (15 Ci/km2) the same as the SFPSS metric (500 mrem annual limit based on Pa code)?

I don't want us to change anything, I'm just trying to sort out the results in my head.

Thanks.

John Monninger

(b)(6)

From: Ghosh, Tina
To: Fretz, Robert
Cc: Monninger, John; Szabo, Aaron; Stutzke, Martin; Basu, Sudhamay; Harris, Brian; Gibson, Kathy; Scott, Michael; Santiago, Patricia; 'Bixler, Nathan E' <nbixler@sandia.gov>; 'Osborn, Douglas' <dosborn@sandia.gov>
Sent: Tue Sep 25 22:43:55 2012
Subject: Newer Updated MACCS2 slides for 10/3 ACRS presentation

Hi Bob,

If it is not too late, we made the following additional changes to the updated MACCS2 slides.

- Slide 3, changed 3rd sub-bullet to "First released in 1997"
- Slide 7, deleted "; land contamination" from the second "Outputs" bullet (this is actually an output of the EARLY module, as noted on the 8th slide)
- Slide 14, added the following as second bullet: "Individual latent cancer fatality risk and prompt fatality risk"
- Slide 20, changed "largely controlled" to "controlled in part" in the first bullet.

The updated set is attached; please use this version.

Thanks,
Tina

From: Ghosh, Tina
Sent: Tuesday, September 25, 2012 5:23 PM
To: Fretz, Robert
Cc: Monninger, John; Szabo, Aaron; Stutzke, Martin; Basu, Sudhamay; Harris, Brian
Subject: Updated MACCS2 slides for 10/3 ACRS presentation

Hi Bob,

Attached are updated slides for the MACCS2 portion of next week's ACRS presentation. Please replace the previous set of draft slides with the attached set (except the title slide doesn't matter – I think you reformatted, what you did is fine).

I have been unable to reach you on the phone, and would like to recommend one additional change (slide number based on the 2:52pm version of the slides posted to the SharePoint site):

- Slide 105, 3rd row titled "initiating event probability," could you change "Op. Experience based" to "Global Statistical Value"?

This would match the revised last table entry on slide 72 – thank you very much for making that change.

Thanks again, and my cell number is below if you have any questions,

Tina

(b)(6)