



CENTER FOR ARMS CONTROL AND
NON-PROLIFERATION
BIOLOGICAL AND CHEMICAL WEAPONS CONTROL PROGRAM

322 4th Street, NE Washington, DC 20002

May 3, 2007

Dr. John Vitko
Division Head
Chemical and Biological Defense
Science and Technology Directorate
U.S. Department of Homeland Security

Dear John,

I'm happy to submit to you some thoughts regarding the types of information that would be both important and reasonable to include in an unclassified public version of the DHS 2006 Bioterrorism Risk Assessment (BRA). This memo reflects the considerations and judgment of several members of the Scientists Working Group on Biological and Chemical Weapons at the Center for Arms Control and Non-Proliferation. Our thoughts have been informed by the publicly available presentations made to the NRC Committee on Methodological Improvement to the DHS 2006 Bioterrorism Risk Assessment.

In addition to offering our thoughts on this issue, we would like to take this opportunity to ask DHS several questions:

- Beyond probabilistic risk assessment, what analytical framework is utilized for the 2006 BRA? That is, does the BRA use a threat-based, capabilities-based, mixed or other assessment approach?
- How has the 2006 BRA been used to support DHS resource allocation and response planning?
- How will the 2008 BRA be used to support DHS resource allocation and response planning?
- Given some experts' concerns over the methodology and expertise involved in the 2006 BRA and considering planned BRA improvements, how will DHS ensure a valid methodology and application of required expertise in the 2008 BRA process?

Finally, we note that 10 February 2007 presentation by Traci Hale on planned improvements in the 2008 BRA indicates that SME elicitation will be expanded to include estimates of bioagent selection probabilities elicited from selected IC psychologists. There are also heavy psychological and other social components involved in target selection, attack timing, and method/means of production and attack. Thus, we suggest that IC psychologists, other IC experts, and non-IC psychologists and social scientists also be incorporated into the expert elicitation process concerning these elements of the risk assessment.

I hope that you will find our thoughts and suggestions to be helpful.

Best regards,

Alan

Alan Pearson
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Recommendations on Information for Inclusion in the Public Version of the
DHS 2006 Bioterrorism Risk Assessment (BRA)

The following types of information are considered in turn: information about methodology, information about data inputs, and information about data outputs. These recommendations assume that all of the information listed below is contained in the classified 2006 BRA. Where this is not the case, analogous information contained in the BRA should be substituted.

Information about methodology

All methodological information contained in the 2006 BRA should be made public. Methodological information is critical for public understanding of the manner by which DHS assesses risk, and public confidence in the results and biodefense strategies that follow. Methodological information is very unlikely to reveal vulnerabilities that could be exploited by adversaries and thus can be released in full. However, if redactions are made, they should be specifically indicated.

It is particularly important that the methodological information provided include:

The definition of “initiating event” and the method by which initiating event frequencies are determined.

Definitions of all other key terms (e.g., “high technology,” “interdicted,” “target mass,” “respirable,” “active,” etc.).

The specific methods by which all data inputs were generated (for example, target selection means were determined as SME estimates, and variances were determined as Battelle’s perception of the uncertainty in the SME judgments).

The number and general characteristics (area of expertise, job description (e.g. “intelligence analyst”) of SMEs from whom information was elicited for each event on the event tree, and the method(s) by which elicitation was conducted (such as questions posed, or questions for consideration provided to SMEs)).

Any assumptions underlying the determinations of input data for each event on the event tree and each component of the consequence analysis.

Input data

A general description of the types of data and data sources used to: 1) assign attributes and characteristics to each branch of the event tree; 2) determine frequencies and probabilities for each branch of the event tree; and 3) calculate the distribution of each component of the consequence equations.

The specific attributes and characteristics assigned to threat organizations (technical capabilities, financial resources and motivations), targets and agents. Much information regarding these attributes and characteristics is already available in the public record (Congressional testimony by USG agencies, published articles by USG and non-governmental experts, presentations to the above mentioned NRC committee, etc.). Knowing which attributes DHS uses in its risk assessment process is important for public understanding of that process and its results.

The initiating event frequencies used in the 2006 BRA. These would provide useful contextual information and could be provided without revealing the underlying intelligence information.



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The sources and ranges of uncertainty (i.e. the least, most and average variance) for each event in the event tree and each component in the consequence calculation. Such information could be provided without revealing agent- or mode of attack-specific information that would be useful to adversaries. Information on uncertainty is important for public understanding of the risk assessment. It may also have added value insofar as the demonstration of a large degree of uncertainty in consequences may deter terrorist pursuit of biological weapons.

The data quality matrices contained in the 2006 BRA, at least in general form (i.e. low/medium/high, including definitions of those terms).

The list of 28 agents analyzed in the 2006 BRA.

Output data

The identity of the agents in the highest risk group can and should be made public, without indicating which agent is associated with which CCDF or consequence-weighted density function. HSPD-18 already indicates that the identity of top tier threat agents will be made public.

De-identified CCDF curves (illustrating the median, mean and 5th and 95th percentiles) and consequence-weighted density functions for each agent should be provided. HSPD-18 and the high level of public discussion of biological threats probably negates most of the value associated with withholding such information. De-identification will further reduce security concerns related to releasing the information. However, should DHS decide not to release this information, then it should provide information on the range of CCDFs and consequence weighted density functions observed across the 28 agents analyzed in the 2006 BRA. This could be done by providing a few actual but de-identified CCDFs or consequence weighted density functions that illustrate the range of shapes and uncertainties found among the 28 agents.

The relative contributions of aleatory and epistemic uncertainty, and of uncertainty in the probability calculations and consequence calculations, to the overall risk uncertainty should be indicated, either for each agent (de-identified as necessary) or the range, mean and median across all 28 agents.