

# **Appendix A**

## **World Trade Center Indoor Air Assessment Peer Review Meeting**

### **Meeting Materials**

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## **Overview of Peer Review Process**

Peer Review of

“World Trade Center Indoor Air Assessment:  
Selecting Contaminants of Potential Concern and Setting Health-Based Benchmarks”  
October 21 and 22, 2002

Welcome to the expert peer review of the document “WTC Indoor Air Assessment: Selecting Contaminants of Potential Concern and Setting Health-Based Benchmarks.” This expert peer review meeting has been organized by Toxicology Excellence for Risk Assessment (*TERA*). *TERA* is an independent non-profit organization with a mission to protect public health through the best use of toxicity and exposure information in the development of human health risk assessments

The purpose of a peer review is to convene a panel of scientists with diverse expertise to evaluate the scientific basis and appropriateness of the document and its conclusions. An independent evaluation by experts is critical to the credibility of a peer review. *TERA* is conducting this scientific peer review in accordance with U.S. EPA Peer Review procedures.

### **Sponsors of the Peer Review**

The Contaminants of Potential Concern (COPC) Committee of the World Trade Center Indoor Air Taskforce Working Group has developed the document, which identifies pollutants of concern in the indoor environment in lower Manhattan, and determines health-based benchmarks or clearance levels for these contaminants. The Working Group includes members from EPA, New York City Department of Health, Agency for Toxic Substances Disease Registry, New York State Department of Health and Occupational Safety and Health Administration. The U.S. EPA requested that *TERA* conduct this independent scientific peer review under subcontract to the Marasco Newton Group. Primary funding for direct meeting expenses and *TERA* labor was provided by the Federal Emergency Management Agency. Funding for panel members’ travel was provided by the Mickey Leland National Urban Air Toxics Research Center, a nonprofit organization founded to support research on the potential health risks posed by exposure to air toxics. The panel members are volunteering their time to participate in this review meeting and will not be compensated.

### **Selection of the Peer Reviewers**

*TERA* determined that in order to provide a complete and thorough review of the document it was important to locate scientists with experience in the following key subject areas: asbestos/fibrous glass, risk assessment, general exposure evaluation, evaluation of exposure by way of dermal contact with contaminants in settled dust and on building surfaces, indoor chemical sampling techniques, and industrial hygiene/ occupational exposure limits. As a first step in identifying experts to serve as peer reviewers, *TERA* requested that interested parties submit nominations of expert scientists. *TERA* received a total of 15 outside nominations: ten from individuals who recommended themselves and five from individuals who recommended another person. *TERA* considered these nominations, and independently identified additional experts, to compile a panel with expertise in

all of the key areas. Final selection of each of the eleven panel members was based upon their scientific experience and credentials. Individuals on the panel are not advocates of any particular position or for any specific group or agency. Rather, each panel member has been asked to provide his or her personal scientific opinions of the issues under discussion during the meeting. EPA and the other agencies did not participate in the selection of the panel. *TERA*, as the independent group convening the peer review, was solely responsible for selection of panel members. The selected panel list was posted on the Internet on September 11, 2002. One of the original panel members with expertise in asbestos issues, Dr. Michael Beard, had to withdraw and was replaced by Dr. Hugh Granger, who also has expertise in asbestos issues.

Each panel member has disclosed information regarding potential conflicts of interest and previous involvement with the issues. *TERA* has evaluated these disclosures to determine if there are any conflicts of interest or whether there is any appearance that the panel member lacks impartiality. Panel member disclosures will be discussed at the beginning of the meeting.

### **Conduct of Peer Review**

U.S. EPA and *TERA* developed a “charge” document that identifies the scientific issues to be discussed by the panel and asks specific questions for the panel to consider. The panel received a copy of the document (“World Trade Center Indoor Air Assessment: Selecting Contaminants of Potential Concern and Setting Health-Based Benchmarks”), the charge, and key references on September 23, so that they had adequate time to carefully review the document and be prepared for the discussions.

The meeting will be organized to make best use of the time available to hear the opinions of the experts on the scientific basis of the document. After initial introductions and discussion of conflict of interest issues, the authors will make a short presentation on the document. The purpose of this presentation is not to give a comprehensive description of the document, but rather to highlight the salient points and issues, and to give the panel the opportunity to ask clarifying questions of the authors.

During the meeting, the meeting Chair, Dr. Michael L. Dourson of *TERA*, will lead the panel in their discussions, following the charge questions. The panel’s conclusions and recommendations for each charge question will be noted, as will any minority opinions. If a reviewer finds the work product lacking, he or she will be asked to explicitly identify what additional work would be needed.

Observers who have registered to make verbal comments will be called upon during times designated on the agenda.

### **Meeting Report**

*TERA* scientists will take notes of the discussions and prepare a summary of the meeting discussions and panel conclusions. This report will not be a transcript of the meeting. The summary report will be reviewed by the peer reviewers for accuracy and then be made available to the public at <http://www.tera.org/peer/wtc>. Written public comments will be part of the final summary report.





October 22, 2002

8:00 am	Registration Opens
8:30	Summary of Day 1 Conclusions
	Panel Discussion: Setting Health-Based Benchmarks (Charge Questions 6-8)
	Break
	Continue Discussion of Charge Questions 6-8
	Public Comments Charge Questions 6-8
12:00 pm	Lunch
12:45	Continue Discussion of Charge Questions 6-8
3:30	Adjourn Day 2

**Charge**  
Peer Review of  
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**Selecting Chemicals of Potential Concern (COPC)**

1. Were the sampling data (air monitoring, bulk samples, indoor sampling) used to select potential COPCs (pages 5-7) the most appropriate for assessing the potential for exposure in residences in Lower Manhattan? Are you aware of additional data that should be considered?
2. Comment on the screening methods that were used to select potential COPCs (including health standards, exposure scenarios, and exposure input parameters, Appendix B). As detailed in this report, does the screening process for COPCs appropriately inform the decision process for selecting COPCs within residences in Lower Manhattan?
3. As a result of the screening process, were the appropriate COPCs chosen?
  - Should any of the chemicals that were considered in the screening analysis, but finally excluded from the final COPC list, be selected as COPCs?
  - Are there any other compounds that should be considered in the screening analysis or selected as COPCs?
  - Should any chemicals that were selected as CPOCs be removed from the COPC list?

**Setting Benchmarks for COPC**

4. Comment on overall methods used to develop benchmarks for the selected COPCs.
  - Are the definitions of the three tiers reasonable (pages 9-10)?
  - Comment on the ability of the three tiers, as defined, to provide adequate protection of public health.
  - Benchmarks were developed based on either relevant and appropriate environmental standards, risk-based criteria, or adaptation of occupational health standards – are there any other approaches that would better meet the needs of this situation?
5. Benchmarks based on risk-based criteria for indoor air (PAH, Dioxin, Asbestos, pages 16-20):

**Chemical Specific Issues** - Were the appropriate Reference Concentrations (RfCs) and/or inhalation cancer potency estimates selected as the basis of the risk-based criteria?<sup>1</sup>

- PAHs – is the use of a relative potency approach for carcinogenicity-based benchmarks appropriate given the actual PAH compounds measured in site samples?
- Dioxins - Is the slope factor in the draft dioxin reassessment the appropriate value to use for development of the benchmark for dioxin? Is the dioxin benchmark appropriately protective in light of the background dietary exposure to dioxin?
- Asbestos and Fibrous glass – is it appropriate to base benchmarks on the Millet and Hays (1994) K factor analysis?

**Exposure Issues:**

- Comment on whether the exposure scenarios used will protect the public health of all potentially exposed populations.
- Are children adequately protected by the risk-based criteria as developed?
- Was the assumption of 1 year/30 year exposure period for Tier I/III reasonable for development of risk-based screening criteria for contaminants in air?
- Were appropriate exposure input parameters selected to develop the risk-based criteria?
- Would the use of existing environmental standards or occupational exposure limits have been a more appropriate method for analysis of residences near the WTC site?

6. Benchmarks based on risk-based criteria for settled dust (PAH, Dioxin, pages 17-20):

**Chemical Specific Issues** - Were the appropriate Reference Doses (RfDs) and/or oral cancer potency values applied to estimate risk from exposure to settled dust components?

**Exposure Specific Issues:**

- Comment on the appropriateness of developing risk-based criteria based on wipe sampling data for evaluating the potential health risks posed to residents living near the WTC site.
- Is estimating dose using a mass/area approach, as described in Appendix D, appropriate, or would estimating dose using a mass/mass approach provide better estimates of exposure to contaminants in settled dust?
- Were the appropriate exposure scenarios and exposure input parameters applied to analysis of residences near the WTC site? Are children adequately protected?
  - Would the use of existing health standards or occupational exposure limits have been a more appropriate method for analysis of residences near the WTC site?

7. Benchmarks based on existing environmental standards (lead, page 15):

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<sup>1</sup> Note that this discussion also applies to the discussion of these chemicals in risk-based criteria for settled dust.

- Were the standards used applied in a manner that is appropriate given their derivation/purpose?
- Are other existing standards available that would be more appropriate for the analysis of residences near the WTC site?
- Does using environmental standards for this exposure situation adequately protect children?
- Would the use of risk-based criteria or occupational exposure limits have been a more appropriate method for analysis of residences near the WTC site?

8. Benchmarks based on occupational exposure values (Fibrous Glass, Crystalline silica, pages 21-24):

- Was the method of deriving benchmarks from occupational health standards (divide by 10 for Tier I and 100 for Tier III) appropriate?
- Can you recommend a more appropriate method for applying occupational standards to environmental exposures?
- Would the use of existing health standards or risk-based criteria have been a more appropriated method for analysis of residences near the WTC site?
- Does using environmental standards for this exposure situation adequately protect children?

## **Conflict of Interest Disclosures**

Peer Review of

“World Trade Center Indoor Air Assessment:

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An essential part of panel selection is the identification and disclosure of conflicts of interest to ensure credible results and confidence in the panel’s recommendations. Prior to selecting the panel, *TERA* determined that a conflict of interest that would prevent a person from being considered for the panel would include authorship or previous review of this document, anyone employed by agencies or departments that have developed this document, and those with direct personal financial interests in the outcome of the review. Each panel member was asked to complete a questionnaire ([www.tera.org/peer/wtc](http://www.tera.org/peer/wtc)) to determine whether their involvement in certain activities could pose a conflict of interest or could create the appearance that the peer review lacks impartiality. An answer of “yes” to any of these questions does not necessarily mean that the individual has a conflict of interest, but that additional information needed to be gathered. *TERA* staff carefully reviewed these forms and discussed the answers with the panel members to ascertain whether conflicts of interest might exist. *TERA* determined that none of the panel members has a conflict of interest as defined above. However, some of the panel members were selected due to their unique knowledge and experience with WTC issues. Information from each panel member relevant to previous involvement with WTC is summarized below to make sure the other panel members and the public are fully aware of these activities. While these activities are not conflicts of interest, they are disclosed here as they may create an appearance that a panel member lacks impartiality because they have previously reached conclusions on similar issues or questions. The panel members are asked to objectively evaluate the materials for this review, along with their personal knowledge and expertise, to independently reach conclusions on this document. If a panel member feels at any time that another member is trying to influence the outcome of the review in an inappropriate way, he or she should bring this to the attention of the Chair so that it may be addressed. These disclosures will be discussed by the panel at the beginning of the meeting and panel members will be asked whether they have any additional information to add.

The peer reviewers have donated their time and talents to this effort. They are selected based upon their expertise and qualifications and are employed by many types of organizations. *TERA* strives to create a balance of expertise and affiliations for each meeting. However, individual peer reviewers are representing their own expertise and views, not those of their employer, of any group who may have nominated them, or any group with which they may be associated. This peer review panel is a distinguished group, with many years experience in a wide range of disciplines. Curriculum vitae, detailing each panel member’s education, employment, publications, and committees is available at ([www.tera.org/peer/wtc](http://www.tera.org/peer/wtc)).

**Jerrold L. Abraham, M.D.** Dr. Abraham is the Director of Environmental and Occupational Pathology, and a Professor of Pathology, Preventative Medicine, and Family Medicine at the SUNY

Health Science Center in Syracuse, NY. Dr Abraham was selected for the panel due to his expertise in asbestos and fine particulate matter analysis and exposure evaluation, as well as his experience in residential indoor environmental quality. He does not have any conflicts and *TERA* recommends that he participate fully in all discussions and panel recommendations.

**John P. Christopher, Ph.D., DABT.** Dr Christopher is a Toxicologist with the Department of Toxic Substances Control, California Environmental Protection Agency. Dr. Christopher was selected for the panel due to his expertise in risk assessment and exposure assessment. He does not have any conflicts and *TERA* recommends that he participate fully in all discussions and panel recommendations.

**Michael L. Dourson, Ph.D., DABT.** Dr. Dourson is the Director of Toxicology Excellence for Risk Assessment and will serve as the Chair for this panel. Dr. Dourson was selected for the panel due to his expertise in risk assessment and experience in chairing peer review panels. Dr. Dourson worked for the EPA from 1980 to 1995. He does not have any conflicts and *TERA* recommends that he participate fully in all discussions and panel recommendations.

**Annette Guiseppi-Eli, Ph.D.** Dr Guiseppi-Eli is an Environmental Engineer with Dupont Engineering. She is also a member of the Science Advisory Panel for the Micky Leland National Urban Air Toxics Research Center. Dr. Guiseppi-Eli was selected for the panel due to her expertise in residential exposure assessment. She does not have any conflicts and *TERA* recommends that she participate fully in all discussions and panel recommendations.

**Lynn R. Goldman, Ph.D., M.D.** Dr. Goldman is an Adjunct Professor at The Johns Hopkins University School of Public Health where she is Principal Investigator of the Children's Health, Pew Commission on Environmental Health; Science Advisor to the Director, National Toxicology Program; and Visiting Scientist, U.S. Centers for Disease Control and Prevention. Dr. Goldman served as Assistant Administrator of EPA's Office of Prevention, Pesticides and Toxic Substances from October 1993 to December 1998. Dr. Goldman was selected for the panel due to her expertise in risk assessment and children's health issues. She does not have any conflicts and *TERA* recommends that she participate fully in all discussions and panel recommendations.

**(Robert) Hugh Granger, Ph.D., CIH.** Dr Granger is a Toxicologist and Laboratory Director at HP Environmental, Inc. and Research Scientist HP-Woods Research Institute, Inc., a not-for-profit research institute focused on healthy indoor environments. Dr. Granger was selected for the panel due to his expertise in asbestos toxicology and applied environmental hygiene. Dr. Granger had done work on characterizing surface residues in buildings related to the collapse of the WTC; however, this work did not address residential structures. In addition, Dr. Granger has made seven presentations on WTC particle residue characterization and preliminary health hazard assessment to the following groups: WTC On-Site Safety Meeting at Stuyvesant High School, the American Industrial Hygiene Association, the Environmental Information Association, and the ASTM Johnson Conference. Dr. Granger states that, although he has worked on WTC issues, he is neither personally or professionally an advocate for any particular position, or for any governmental,

private, or public entity or group. *TERA* recommends that Dr. Granger participate fully in all discussions and panel recommendations.

**John R. Kominsky, M.Sc., CIH, CSP, CHMM, ROH .** Mr. Kominsky is a Vice President and Director of the Industrial Hygiene and Safety Division of Environmental Quality Management, Inc. Mr. Kominsky was selected for the panel due to his expertise in asbestos and lead management as well as his experience in conducting indoor environmental quality assessments. At the request of the Ground Zero Elected Officials Task Force, HE CONDUCTED A STUDY TO DETERMINE THE ENVIRONMENTAL IMPACT OF THE CONTAMINANTS (ASBESTOS, INORGANIC METALS, PCDDs, PCDFs, AND PCBs) RELEASED BY THE COLLAPSE OF THE WTC ON THE ADJACENT RESIDENTIAL STRUCTURES. MR. KOMINSKY ALSO PRESENTED THE RESULTS OF THIS STUDY AT THE ASTM JOHNSON CONFERENCE. MR. KOMINSKY SERVED ON A PANEL ESTABLISHED BY THE NEW YORK ACADEMY OF MEDICINE TO REVIEW EPA'S PLAN FOR THE ASSESSMENT AND REMEDIATION OF INDOOR AIR QUALITY IN LOWER MANHATTAN; HOWEVER, MR. KOMINSKY HAD NO ROLE IN PREPARING OR REVIEWING THE DOCUMENT BEING REVIEWED AT THIS MEETING. *TERA* recommends that Mr. Kominsky participate fully in all discussions and panel recommendations.

**Dennis J. Paustenbach, Ph.D., CIH, DABT.** Dr. Paustenbach is the Vice President of Exponent, Inc. and was selected for the panel due to his expertise in the areas of risk assessment and exposure evaluation. Dr. Paustenbach has done work for a private client reviewing dust data collected from a building near the WTC. As part of this work, Dr. Paustenbach recommended clean-up criteria for dioxins, but had no role in carrying out that recommendation. In addition, he is a co-author on one of the references cited by EPA in the document under review (Michaud et al., 1994). *TERA* recommends that Dr. Paustenbach participate fully in all discussions and panel recommendations.

**Bertram Price, Ph.D.** Dr. Price is President of Price Associates, Inc. Dr. Price was selected for the panel due to his expertise in the use of statistical methods to develop sampling plans and evaluate exposures, particularly for asbestos and lead. He does not have any conflicts and *TERA* recommends that he participate fully in all discussions and panel recommendations.

**Charles B. Salocks, Ph.D., DABT.** Dr. Salocks is a Toxicologist with the Office of Environmental Health Hazard Assessment, California Environmental Protection Agency. Dr. Salocks was selected for the panel due to his expertise in estimating exposure from dermal contact to chemical contaminants. He does not have any conflicts and *TERA* recommends that he participate fully in all discussions and panel recommendations.

**Susan H. Youngren, Ph.D.** Dr Youngren is an Senior Scientist with the Bergeson & Campbell law firm. Dr. Youngren was selected for the panel due to her expertise with residential exposure assessment and evaluating health risks posed to children. She does not have any conflicts and *TERA* recommends that she participate fully in all discussions and panel recommendations.