



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON D.C. 20460

OFFICE OF THE ADMINISTRATOR
SCIENCE ADVISORY BOARD

January 13, 2005

MEMORANDUM

SUBJECT: U.S. EPA Science Advisory Board Perfluorooctanoic Acid Risk Assessment (PFOA) Review Panel

FROM: Sue Shallal, Ph.D. /signed/
Designated Federal Official
Science Advisory Board Staff Office (1400F)

TO: Vanessa Vu, Ph.D.
Director
Science Advisory Board Staff Office (1400F)

THRU: Daniel Fort /signed/
SAB Ethics and FACA Policy Officer
Science Advisory Board Staff Office (1400F)

This memorandum documents the process and the set of determinations necessary for forming a Science Advisory Board Review Panel to conduct the review of the PFOA risk assessment. It provides background information on the subject SAB activity and addresses:

- 1) The charge developed for the Panel;
- 2) The type of panel that will be used to conduct the review, the name of the Panel, and identification of the Panel Chair; and the types of expertise needed to address the charge;
- 3) How individuals were identified as "Short List" candidates for the Panel;
- 4) Conflict of Interest and Appearance of Lack of Impartiality Considerations; and
- 5) How individuals were selected for the Panel.

A. Background

EPA's Office of Pollution Prevention and Toxics (OPPT) has requested that the Science Advisory Board (SAB) review its document entitled "Draft Risk Assessment of the Potential Human Health Effects Associated with Exposure to Perfluorooctanoic Acid (PFOA) and Its Salts". OPPT's assessment focused on the potential human health effects associated with exposure to PFOA and its salts. Several toxicological endpoints and hypothesized modes of action were considered. Internal dose metrics were estimated for animal toxicology studies

with pharmacokinetic modeling, and were obtained from human biomonitoring studies, assuming steady state. Margin of Exposure (MOE) values were calculated from the internal dose metrics.

B. Determinations

1) The charge to the Panel: The SAB PFOA Review Panel is being asked to comment on the scientific soundness of OPPT's *Draft Risk Assessment of the Potential Human Health Effects Associated with Exposure to Perfluorooctanoic Acid (PFOA) and Its Salts*. The SAB Staff Office, the Chair of Panel and the Office of Pollution Prevention and Toxics negotiated the following charge questions.

Issue 1: Rodent PPAR-alpha Mode of Action for Hepatocarcinogenesis

The postulated mode of action (MOA) of PPAR α -agonist induced liver toxicity and liver tumors in rodents involves four causal key events. The first key event is activation of PPAR α (which regulates the transcription of genes involved in peroxisome proliferation, cell cycle control, apoptosis, and lipid metabolism). Activation of PPAR α leads to an increase in cell proliferation and a decrease in apoptosis, which in turn leads to preneoplastic cells and further clonal expansion and formation of liver tumors. Of these key events, only PPAR α activation is highly specific for this MOA while cell proliferation/apoptosis and clonal expansion are common to other modes of action. There are also several "associative" events that are markers of PPAR α agonism but are not directly involved in the etiology of liver tumors. These include peroxisome proliferation (a highly specific indicator that this MOA is operative) and peroxisomal gene expression.

Information that provides evidence that any specific chemical is inducing liver toxicity and tumors via a PPAR α agonist MOA includes *in vitro* evidence of PPAR α agonism (i.e., evidence from an *in vitro* receptor assay), *in vivo* evidence of an increase in number and size of peroxisomes, increases in the activity of acyl CoA oxidase, and hepatic cell proliferation. The *in vivo* evidence should demonstrate dose-response and temporal concordance between precursor events and liver tumor formation. Other information that is desirable and may strengthen the weight of evidence for demonstrating that a PPAR α agonist MOA is operative includes data on hepatic CYP4A1 induction, palmitoyl CoA activity, hepatocyte hypertrophy, increase in liver weights, decrease in the incidence of apoptosis, increase in microsomal fatty acid oxidation, and enhanced formation of hydrogen peroxide.

OPPT has proposed that there is sufficient weight of evidence to establish that the mode of action for the liver tumors (and precursor effects) observed in rats following exposure to PFOA is PPAR α agonism.

Question 1 - Please comment on the weight of evidence and adequacy of the data available to identify the key events for the PPAR α agonist-induced rodent liver toxicity and hepatocarcinogenesis for PFOA. Discuss whether the uncertainties and limitations of these data have been adequately characterized.

Issue 2: Descriptor for Carcinogenic Potential

Carcinogenicity studies in Sprague-Dawley rats show that PFOA induces a “tumor triad” similar to a number of other PPAR agonists. This “tumor triad” includes liver tumors, Leydig cell tumors (LCT), and pancreatic acinar cell tumors (PACT). OPPT has proposed that there is sufficient evidence to conclude that the liver tumors are due to PPAR α -agonist MOA, and that this MOA is unlikely to occur in humans based on quantitative differences between rodents and humans. In addition, the LCT and PACT induced in the rat by PFOA probably do not represent a significant cancer hazard for humans because of quantitative toxicodynamic differences between the rat and the human. Overall, based on no adequate human studies and uncertain human relevance of the tumor triad (liver, Leydig cell and pancreatic acinar cell tumors) from the rat studies, OPPT has proposed that the PFOA cancer data may be best described as providing “*suggestive evidence of carcinogenicity, but not sufficient to assess human carcinogenic potential*” under the interim 1999 EPA Guidelines for Carcinogen Risk Assessment, as well as the 2003 draft EPA Guidelines for Carcinogen Risk Assessment.

Question 2 - Please comment on the proposed descriptor for the carcinogenic potential of PFOA.

Issue 3: Selection of Endpoints

OPPT has proposed the use of several endpoints from several life stages, species and gender for the risk assessment. For this draft assessment, OPPT has not made specific recommendations on the most appropriate endpoint/lifestage/species/gender. Rather, all have been presented to provide transparency.

For adults, endpoints were selected from the non-human primate and rat studies; the endpoints included liver toxicity and possibly mortality for the non-human primates and decreased body weight for rats.

For developmental endpoints, OPPT relied upon the definition of developmental toxicity outlined in the Agency’s Developmental Toxicity Risk Assessment Guidelines. These guidelines state that the period of exposure for developmental toxicity is prior to conception to either parent, through prenatal development and continuing until sexual maturation. (In contrast, the period during which a developmental effect may be manifested includes the entire lifespan of the organism). Based on this definition of developmental exposure, OPPT considered developmental effects in the rat two-generation reproductive toxicity study to include reductions in F1 mean pup body weight (sexes combined) on lactation days 1, 5 and 8, an increase in mortality during the first few days after weaning (both sexes), a delay in the timing of sexual maturation (both sexes), and a reduction in mean body weight postweaning (F1 males only).

Question 3 - Please comment on the selection of these toxicity endpoints for the risk assessment.

Question 4 - Given the available data to date, please comment on the most appropriate lifestage/gender/species for assessing human risk.

Question 5 - Please comment on the appropriateness of the available animal models. Please comment on whether additional animal models should be investigated, and if so, what information would better enable us to ascertain potential human risks.

Issue 4: Risk Assessment Approach

A margin of exposure (MOE) approach can be used to describe the potential for human health effects associated with exposure to a chemical. The MOE is calculated as the ratio of the NOAEL or LOAEL for a specific endpoint to the estimated human exposure level. The MOE does not provide an estimate of population risk, but simply describes the relative “distance” between the exposure level and the NOAEL or LOAEL. In this risk assessment there is no information on the sources or pathways of human exposure. However, serum levels of PFOA, which are indicative of cumulative exposure, were available from human biomonitoring studies. In addition, serum levels of PFOA were available for many of the animal toxicology studies or there was sufficient pharmacokinetic information to estimate serum levels. Thus, in this assessment internal doses from animal and human studies were compared; this is analogous to a MOE approach which uses external exposure estimates.

Issue 4a: Pharmacokinetic Modeling and Use of AUC as a Measure of Internal Dose

As noted above, internal dose metrics from animal toxicology studies and human biomonitoring studies were compared in this draft assessment. For humans, the area under the concentration curve (AUC) was calculated from measured PFOA serum levels in human biomonitoring studies, assuming steady state. For the rat toxicology studies, the area under the concentration curve (AUC) and C_{max} were estimated from a pharmacokinetic model. The pharmacokinetic analysis could be done using a number of approaches including non-parametric analysis, physiologically based pharmacokinetic (PBPK) modeling, and classical compartmental modeling. Each has strengths and limitations given the available data. Non-parametric analyses provide a description of the data that have been collected, but have fairly limited ability to make predictions across species or to account for variations in exposures. PBPK modeling is perhaps the ideal approach for addressing PFOA for purposes of cross-species extrapolation. Extensive pharmacokinetic studies have been undertaken in rodents demonstrating complex phenomena including high tissue concentrations in liver, kidney and serum and enterohepatic recirculation of the parent compound. These could be addressed using PBPK modeling for the rodents, but the more limited information in monkeys and humans would either require substantial assumptions or preclude use of this approach. Classical compartmental modeling can be used to analyze the existing data on blood concentrations in rats, monkeys, and humans. Currently, the available pharmacokinetic information for rodents and humans is sufficient to support compartmental modeling. Comparisons of serum protein binding across species indicated a high degree of binding in all species eliminating the apparent need to address this factor in the compartmental modeling. In light of the documented differences in clearance of PFOA across sexes in rats and across species, compartmental modeling of serum concentrations provides a sound approach for estimating internal dosimetry without exceeding the limits of the available data, so this approach was selected for this risk assessment.

Question 6 - Please comment on the use of the one compartment pharmacokinetic model.

Question 7 - Please comment on the use of the AUC as a measure of internal dose for rats and humans for calculation of the MOE.

Issue 4b: Cross Species Extrapolation

Judgments about the “adequacy” of a MOE are based on many considerations including uncertainty associated with cross species extrapolation. Typically, a value of 10 is considered which consists of a value of 3 for toxicodynamics and a value of 3 for toxicokinetics. Each of these can be decreased or increased if there are data to warrant it. In this draft assessment, internal doses from animal toxicology studies and human biomonitoring studies were compared. For humans, the internal doses were based on measured PFOA serum levels in human biomonitoring studies. For the non-human primate toxicology studies, internal doses associated with the NOAEL and/or LOAEL were based on measured PFOA serum levels. For the rat toxicology studies, pharmacokinetic modeling was used to estimate an internal dose metric associated with a NOAEL or LOAEL.

Question 8 - Please comment on the need to use or modify the default value of 10 for cross species extrapolation given the pharmacokinetic analysis.

Issue 4c: Human Biomonitoring Data

For this draft assessment, human biomonitoring data of PFOA serum levels were available for adults and children. Similar analytical methods were used to measure the PFOA levels in both sets of blood samples. The adult data included 645 U.S. adult blood donors (332 males, 313 females) from 2000-2001, ages 20-69, obtained from six American Red Cross blood banks located in: Los Angeles, CA; Minneapolis/St. Paul, MN; Charlotte, NC; Boston, MA; Portland, OR, and Hagerstown, MD. Each blood bank provided approximately 10 samples per 10-year age interval (20-29, 30-39, etc.) for each sex.

The children’s data included a sample of 598 children, ages 2-12 years old, who had participated in a study of group A streptococcal infections. The samples collected in 1994-1995 from children residing in 23 states and the District of Columbia were analyzed for PFOA in 2002.

Question 9 - Please comment on the adequacy of the human exposure data for use in calculating a MOE.

2) Type of panel that will be used to conduct the review, the name of the panel, and identification of the panel chair, and the types of expertise needed to address the charge: The peer review will be conducted by a SAB *Ad Hoc* Review Panel. This Panel will be composed of SAB members and invited outside experts. The Panel is entitled, Perfluorooctanoic Acid (PFOA) Risk Assessment Review Panel. Dr. Deborah Cory-Slechta, a member of the chartered SAB, will chair this Review Panel. A federal register notice was published on March 29, 2004 (widecast) requesting nominations of individuals with the following expertise: (a) Toxicology of perfluorinated compounds and mechanism of toxicity; (b) Reproductive and Developmental Toxicity; (c) Toxicokinetics; (d) Carcinogenesis; (e) Public Health; (f) Epidemiology; and (g) Human Health Risk Assessment (Attachment 1).

3) How individuals were identified as “Short List” candidates for the Panel: Thirty three (33) individuals were nominated to serve on the PFOA Review Panel. On the basis of the candidates’ qualifications and interest in being considered for membership on the panel, the SAB Staff Office identified thirty one (31) nominees for the “short list” of candidates.

On November 17, 2004, the SAB Staff Office posted a notice on the SAB Web site inviting public comments on the “short list” of 31 prospective candidates to serve on the Panel (Attachment 2). In particular, the notice on the Web site stated that the Staff Office would welcome any information, analysis or documentation that the SAB Staff Office should consider in evaluating the candidates on the “Short List.” The notice also asked that any advice, observations or comments which would be helpful in selecting the final candidates be provided to the SAB Staff Office no later than December 7, 2004. *The SAB Staff Office received three submissions with comments on “short list” candidates for the PFOA Review Panel.* See Attachment 3 for the list of public commenters.

4) Conflict of Interest and Appearance of a Lack of Impartiality Considerations

Conflict of Interest Issues:

18 U.S.C. section 208 states that:

An employee is prohibited from participating ***personally and substantially*** in an official capacity in any ***particular matter*** in which he, to his knowledge, or any person whose interests are imputed to him under this statute has a financial interest, if the particular matter will have a ***direct and predictable effect*** on that interest [emphasis added].

For a conflict of interest to be present, all elements in the above provision must be present. If an element is missing, the issue does not involve a formal conflict of interest. However, the general provisions in the “appearance of a lack of impartiality guidelines” may still apply and need to be considered.

Personal and Substantial Participation:

Participating personally means participating directly. Participating substantially refers to involvement that is of significance to the matter. [5 C.F.R. § 2640.103(a)(2)]. For this review, panel members will be participating personally and substantially in the matter through attendance at meetings, teleconferences and other means as they will provide advice that might influence the Agency’s risk assessment of PFOA.

Direct and Predictable Effect:

A direct effect on a participant’s financial interest exists if “... a close causal link exists between any decision or action to be taken in the matter and any expected effect of the matter on the financial interest...A particular matter does not have a direct effect...if the chain of

causation is attenuated or is contingent upon the occurrence of events that are speculative or that are independent of, and unrelated to, the matter. A particular matter that has an effect on a financial interest only as a consequence of its effects on the general economy is not considered to have a direct effect.” [5 C.F.R. § 2640.103(a)(i)]. A predictable effect exists if, “...there is an actual, as opposed to a speculative, possibility that the matter will affect the financial interest.” [5 C.F.R. § 2640.103(a) (ii)].

Particular Matter:

A “particular matter” refers to matters that “...will involve deliberation, decision, or action that is focused upon the interests of specific people, or a discrete and identifiable class of people.” It does not refer to “...consideration or adoption of broad policy options directed to the interests of a large and diverse group of people.” [5 C.F.R. § 2640.103 (a)(1)].

The work of this SAB Review Panel qualifies as a particular matter because the resulting advice will be part of a deliberation, and under certain circumstances the advice could involve the interests of a discrete and identifiable class of people and does involve specific parties. That group of people is the set of people that are employed or have significant financial interests in organizations that could be considered part of the life-cycle of PFOA including, but not limited to, manufacture, use, treatment and disposal.

Additionally, 5 C.F.R. § 2637.102(a)(7) defines a particular matter involving specific parties to mean any judicial or other proceeding, application, request for ruling or other determination, contract, claim, controversy, investigation, change, accusation, arrest or other particular matter involving a specific party or parties in which the United States is a party or has a direct and substantial interest.

The number of manufacturers or users of PFOA are limited in number and represent a discrete and identifiable class of people or specific parties. Furthermore, the United States is currently a party in proceedings concerning PFOA. Therefore, the work to be done by the Panel meets the criteria for a particular matter involving specific parties.

Appearance of a Lack of Impartiality Considerations:

The Code of Federal Regulations [5 C.F.R. § 2635.502(a)] states that:

Where an employee knows that a *particular matter* involving specific parties is likely to have a *direct and predictable effect* on the financial interest of a member of his household, or knows that a person with whom he has a covered relationship is or represents a party to such matter, and where the person determines that the circumstances would cause a *reasonable person* with knowledge of the relevant facts to question his impartiality in the matter, the employee should not participate in the matter unless he has informed the agency designee of the appearance problem and received authorization from the agency designee.

Further, 5 C.F.R. § 2635.502(a)(2) states that:

An employee who is concerned that circumstances other than those specifically described in this section would raise a question regarding his impartiality should use the process described in this section to determine whether he should or should not participate in a particular matter.

As noted above, the PFOA risk assessment can be considered as a particular matter involving specific parties. Each potential advisory panel member was evaluated against the 5 C.F.R. 2635(a)(2) general requirements for considering an appearance of a lack of impartiality. Information used in this evaluation has come from information provided by potential advisory panel members (including, but not limited to, EPA 3110-48 confidential financial disclosure forms) and public comment.

For prospective advisory panel members who hold grants, cooperative agreements or contracts or are involved with organizations that can be considered specific parties, the “reasonable person” criterion is met in the following manner:

- i) Those who are or have previously been employed by the regulated community were considered to meet this criterion.
- ii) Those who have a pending grant, cooperative agreement, or contract whose funds could be directly received from organizations that could be considered specific parties to conduct scientific work related to the potential human health effects of PFOA were considered to meet the criterion.

To further evaluate any potentially appearance of a lack of impartiality, the following five (5) questions were posed to all prospective advisory panel members:

- a) Do you know of any reason that you might be unable to provide impartial advice on the matter to come before the Panel or any reason that your impartiality in the matter might be questioned?
- b) Have you had any previous involvement with the issue(s) or document(s) under consideration, including authorship, collaboration with the authors, or previous peer review functions? If so, please identify those activities.
- c) Have you served on previous advisory panels or committees that have addressed the topic under consideration? If so, please identify those activities.
- d) Have you made any public statements (written or oral) on the issue? If so, please identify those statements.
- e) Have you made any public statements that would indicate to an observer that you have taken a position on the issue under consideration? If so, please identify those statements.

Conflict of Interest and Appearance of a Lack of Impartiality Determination for Advisory Panel Members

Prospective advisory panel members were required to submit a confidential financial disclosure form (EPA Form 3110-48, “Confidential Financial Disclosure Form for Special

Government Employees Serving on Federal Advisory Committees at the U.S. Environmental Protection Agency). As a result of a review of these forms, the responses to the five questions above, along with other information provided by each prospective advisory panel member and public commenters, the Deputy Ethics Official of the Science Advisory Board, in consultation with the SAB Ethics and FACA Policy Officer, has determined that there are no conflict of interest or appearance of a lack of impartiality for the members of this panel.

5) How individuals were selected for the Panel: The SAB Staff Office Director - in consultation with the PFOA Panel Chair - makes the final decision about who serves on the Review Panel during the "Panel Selection" phase. Members of the Panel were selected from the "short list" candidates. Selection criteria included: scientific credentials and expertise; willingness to serve on the Panel, and availability to meet during the proposed time period; absence of conflict of interest, absence of any appearance of a lack of impartiality, balance of relevant expertise and diversity of scientific viewpoints. Based on the above specified criteria, the membership of the PFOA Review Panel includes the following experts:

1. Dr. Deborah Cory-Slechta, Rutgers University (Chair)
2. Dr. Melvin Andersen, CIIT Centers for Health Research
3. Dr. Ernest Abel, Wayne State University
4. Dr. Germaine Buck Louis, National Institute of Child Health and Human Development
5. Dr. George Corcoran, Wayne State University
6. Dr. Norman Drinkwater, University of Wisconsin
7. Dr. William Hayton, Ohio State University
8. Dr. Michael Kamrin, Michigan State University
9. Dr. James Kehrer, University of Texas
10. Dr. James Klaunig, Perdue University
11. Dr. Matthew Longnecker, National Institute of Environmental Health Sciences
12. Dr. Ronald Melnick, National Institute of Environmental Health Sciences
13. Dr. Frank Mink, Mink Associates, Inc.
14. Dr. David Ozonoff, Boston University
15. Dr. Stephen Roberts, Florida State University
16. Dr. Ann Sweeney, University of Texas
17. Dr. Thomas Zoeller, University of Massachusetts

Concurred,

January 13, 2005

Date

/signed/

Vanessa Vu, Ph.D., Director
Science Advisory Board Staff Office (1400F)

ATTACHMENTS

Attachment 1 Federal Register Notice- Request for Nominations for Experts for the Perfluorooctanoic Acid Human Health Risk Assessment Review Panel

Attachment 2 Invitation for Comments on the “Short List” Candidates

Attachment 3 List of Public Commenters on the “Short List” Candidates

ATTACHMENT 1

Science Advisory Board Staff Office; Request for Nominations for Experts for the Perfluorooctanoic Acid Human Health Risk Assessment Review Panel

[Federal Register: March 29, 2004 (Volume 69, Number 60)]
[Notices]
[Page 16249-16250]
From the Federal Register Online via GPO Access [wais.access.gpo.gov]
[DOCID:fr29mr04-54]

ENVIRONMENTAL PROTECTION AGENCY
[FRL-7641-3]

Science Advisory Board Staff Office; Request for Nominations for
Experts for the Perfluorooctanoic Acid Human Health Risk Assessment
Review Panel

AGENCY: Environmental Protection Agency (EPA).
ACTION: Notice.

SUMMARY: The EPA Science Advisory Board (SAB) Staff Office announces the formation of a new SAB review panel known as the Perfluorooctanoic Acid Human Health Risk Assessment Review Panel (PFOA Review Panel), and is soliciting nominations for members of the Panel.

DATES: The deadline for submitting nominations is three (3) weeks from publication of this notice.

FOR FURTHER INFORMATION CONTACT: Nominations should be submitted in electronic format through the Form for Nominating Individuals to Panels of the U.S. Environmental Protection Agency (EPA) Science Advisory Board provided on the SAB Web site. The form can be accessed through a link on the blue navigational bar of the SAB Web site at: <http://www.epa.gov/sab>. To be considered, all nominations should include the information requested on that form. Anyone who is unable to access nominations on the SAB Web site can obtain a paper copy of the form by contacting Dr. Suhair Shallal, Designated Federal Officer (DFO), as indicated below.

Any member of the public requiring further information regarding this Request for Nominations, or a paper nomination form, may contact Dr. Shallal by telephone/voice mail at (202) 343-9977, via e-mail at shallal.suhair@epa.gov, or at the following address: Suhair Shallal, PhD., Science Advisory Board Staff Office, U.S. Environmental Protection Agency (Mail Code 1400F), 1200 Pennsylvania Avenue, NW., Washington, DC 20460. General information about the SAB can be found in the SAB Web site at: <http://www.epa.gov/sab>.

SUPPLEMENTARY INFORMATION:

Summary: The EPA SAB Staff Office is announcing the formation of a new review panel and soliciting nominations for members of the panel. This panel is being formed to help provide advice to the Agency, as part of the SAB's mission, established by 42 U.S.C. 4365, to provide independent scientific

and technical advice, consultation, and recommendations to the EPA Administrator on the technical bases for EPA policies and regulations. The work of this panel is expected to continue until the review is complete. The SAB is a chartered Federal Advisory Committee that reports directly to the Administrator. The PFOA Review Panel will provide advice through the SAB. The PFOA Review Panel will comply with the openness provisions of the Federal Advisory Committee Act (FACA) and all appropriate SAB procedural policies, including the SAB process for panel formation described in the Overview of the Panel Formation Process at the Environmental Protection Agency, Science Advisory Board (EPA-SAB-EC-COM-02-010), <http://www.epa.gov/sab/pdf/ecm02010.pdf>.

Background: EPA's Office of Pollution Prevention and Toxics has been studying perfluorooctanoic acid (PFOA) in order to understand the health and environmental impact of perfluorochemicals. PFOA is a synthetic (man-made) chemical and does not occur naturally in the environment. The term PFOA refers to not only perfluorooctanoic acid itself, but also its principal salts. The most commonly used chemical in this grouping is the ammonium salt, ammonium perfluorooctanoate, or APFO. PFOA is primarily used as a reactive intermediate, while its salts are used as processing aids in the production of fluoropolymers and fluoroelastomers and in other surfactant uses. Fluoropolymers are used in a wide variety of consumer and industrial applications. Although fluoropolymers are made using PFOA, the finished products themselves are not expected to contain PFOA. The EPA has completed its draft Risk Assessment of Potential Human Health Effects Associated with PFOA and Its Salts. The EPA Science Advisory Board (SAB) has been asked to review and comment on the scientific soundness of this assessment.

Request for Nominations: The EPA SAB Staff Office requests nominations of experts to serve as Panel members on the PFOA Review Panel. Areas of expertise sought include at least the following: (a) Toxicology of perfluorinated compounds and mechanism of toxicity; (b) Reproductive and Developmental Toxicity; (c) Toxicokinetics; (d) Carcinogenesis; (e) Public Health; (f) Epidemiology; and (g) Human Health Risk Assessment.

Process and Deadline for Submitting Nominations: Any interested person or organization may nominate qualified individuals to serve as panel members in the areas described above. The nominating form requests the following: (1) Contact information about the person making the nomination; (2) contact information about the nominee; (3) the disciplinary and specific areas of expertise of the nominee; (4) the nominee's resume; and (5) a general biosketch of the nominee indicating education, expertise, past research, recent service on other advisory committees or with professional associations, and recent grant and/or contract support. Anyone who is unable to submit nominations through the SAB Web site, or has questions concerning any aspect of the nomination process, may contact Dr. Shallal as indicated, above. Nominations should be submitted in time to arrive no later than three (3) weeks after publication of this notice.

From the nominees identified by respondents to this notice and through other sources (termed the ``Widecast''), the SAB Staff Office will develop a smaller subset (known as the ``Short List'') for more detailed consideration. Criteria used by the SAB Staff Office in developing this Short List are given at the end of the following paragraph. The SAB Staff Office will contact individuals who are considered for inclusion in the Short List to determine whether they are willing to serve on the Panel. The Short List will be posted on the SAB Web site at: <http://www.epa.gov/sab>, and will include, for each candidate, the nominee's name and their biosketch. The Short List also will be available from Dr. Shallal at the address listed above. Public comments will be accepted for 21 calendar days on the Short List. During this comment period, the public will be requested

to provide information, analysis or other documentation on nominees that the SAB Staff Office should consider in evaluating candidates for the Panel. For the EPA SAB, a balanced Panel is characterized by inclusion of candidates who possess the necessary domains of knowledge, the relevant scientific perspectives (which, among other factors, can be influenced by work history and affiliation), and the collective breadth of experience to adequately address the charge. Public responses to the Short List candidates will be considered in the selection of the Panel members, along with information provided by candidates and information gathered by EPA SAB Staff Office independently on the background of each candidate (e.g., financial disclosure information and computer searches to evaluate a nominee's prior involvement with the topic under review). Specific criteria to be used in evaluating individual nominees include: (a) Scientific and/or technical expertise, knowledge, and experience (primary factors); (b) absence of financial conflicts of interest; (c) scientific credibility and impartiality; (d) availability and willingness to serve; and (e) ability to work constructively and effectively in panels. Those Short List candidates ultimately chosen to serve on the Panel will be appointed as Special Government Employees (SGEs). Therefore, all Short List candidates will be required to fill out the ``Confidential Financial Disclosure Form for Special Government Employees Serving on Federal Advisory Committees at the U.S. Environmental Protection Agency'' (EPA Form 3110-48. This confidential form allows Government officials to determine whether there is a statutory conflict between that person's public responsibilities as an SGE and private interests and activities, or the appearance of a lack of impartiality, as defined by Federal regulation. The form may be viewed and downloaded from the following URL address: <http://www.epa.gov/sab/pdf/epaform3110-48.pdf>. As an SGE, EPA SAB members are required to abide by the letter and spirit of the ethical regulations to which all U.S. Government employees must adhere. SGEs are required to take annual ethics training in order to serve on the SAB.

Dated: March 23, 2004.

Richard Albores,

Acting Director, EPA Science Advisory Board Staff Office.

[FR Doc. 04-6926 Filed 3-26-04; 8:45 am]

BILLING CODE 6560-50-P

ATTACHMENT 2

Invitation for Comments on the "Short List" Candidates for the Perfluorooctanoic Acid (PFOA) Risk Assessment Review Panel EPA Science Advisory Board (SAB)

November 17, 2004

The EPA Science Advisory Board (SAB) Staff Office announced in 69 FR 16249-16250, March 29, 2004, that it was forming the Perfluorooctanoic Acid (PFOA) Risk Assessment Review Panel and requested nominations for potential panel members. Background on the details of this advisory activity and panel nomination process appear in the above referenced Federal Register notice and are also available at the SAB website (www.epa.gov/sab).

The SAB Staff Office has reviewed the nominations for the Panel, and has identified a list of nominees to a Short List of 31 candidates based on the qualifications and interest of the nominees. Brief biosketches of the candidates on the "Short List" are listed below. We invite comments from the public on these candidates. We welcome information, analysis or documentation that the Board should consider in evaluating the "Short List" remaining candidates.

The SAB Staff Office Director, in consultation with SAB leadership, as appropriate, makes the final decision about who will serve on the panel in the "Panel Selection" phase. In that phase, SAB Staff completes its review of information regarding conflict of interest, possible appearance of lack of impartiality, and appropriate balance and breadth needed to address the charge. They review all the information provided by the candidates, along with any information that the public may provide in response to the posting of information about the prospective panel on the SAB website during the "Short List Phase," and information gathered by SAB Staff independently on the background of each candidate.

Please provide any advice, observations or comments you might think would be helpful in selecting the final candidates no later than December 7, 2004. Please make your written comments to the attention of Dr. Sue Shallal, Designated Federal Officer, (shallal.suhair@epa.gov).

SHORT LIST FOR THE PFOA REVIEW PANEL

Abel, Ernest

Wayne State University

Dr. Ernest L. Abel is Director of Reproductive Toxicology and Professor of Obstetrics/Gynecology and Psychology at Wayne State University in Detroit, Michigan. He received his Ph.D. degree in Psychology from the University of Toronto, Canada, in 1971, and completed a post-doctoral fellowship in Pharmacology from the University of North Carolina in 1973. He is an expert in the areas of Reproductive Toxicology and Epidemiology. Dr. Abel is past President of the Behavioral Teratology Society and the Fetal Alcohol Study Group of the Research Society on Alcoholism. He is currently a Board member on the American Council on Science and Health and has served on the Advisory Committee for the Center for Substance Abuse Prevention/FAS Center for Excellence.

Andersen, Melvin

CIIT

Dr. Melvin Andersen is Director, Computational Biology Division, CIIT Centers for Health Research. Previously, he held positions in toxicology research and research management in the federal government (Department of Defense and EPA), Vice-President, ICF Kaiser Consulting, and Professor of Environmental Health, Colorado State University. He has developed biologically realistic models of the uptake, distribution, metabolism, and biological effects of drugs and toxic chemicals and has applied these physiologically based pharmacokinetic and pharmacodynamic models to safety assessments and quantitative health risk assessments. His current research interests include developing mathematical descriptions of genetic circuitry in the developing and adult organism and the dose response and risk assessment implications of these control processes. Dr. Andersen is board certified in industrial hygiene and in toxicology. He has served on numerous NRC committees including the Committee on Toxicology, Committee on Toxicological Effects of Mercury, Committee on Risk Assessment Methodology, and the Subcommittee on Pharmacokinetics. He presently serves on the Committee on Toxicity Testing and Assessment of Environmental Agents. He served as ad hoc member for Computational Framework SAB for EPA. He has a Ph.D. in biochemistry and molecular biology from Cornell University. Dr. Andersen and DoD colleagues were among the first groups to examine the toxicology and peroxisomal proliferating responses to perfluorinated fatty acids in the early 1980's. His recent grants have been from the US EPA STAR program (atrazine biomarkers), Dow-Corning Company (pharmacokinetics and risk assessments of siloxanes), American Chemistry Council (dioxin signaling in liver; estrogenic responses in the hypothalamus; and phthalate responses in the developing testes), and Syngenta (neuroendocrine effects of atrazine in rats). Dr. Andersen is an author or co-author of 240 papers, 33 book chapters and numerous reports and abstracts. He has received several awards for professional contributions. These awards include the Herbert Stokinger Award (American Conference of Industrial Hygienists, 1988), the Kenneth Morgareidge Award (International Life Sciences Institute, 1989), the George Scott Award (Toxicology Forum, 1993), and the Frank R. Blood (1982), Achievement (1984), and Arnold J. Lehman (2004) Awards from the Society of Toxicology. In June 2002, Dr. Andersen was recognized as a 'highly cited' scientist by the Institute for Scientific Information.

Brecher, Ronald

Global Tox International Consultants Inc.

Dr. Brecher obtained a B.Sc. (Hon.) in biochemistry from Carleton University in 1980, and a Ph.D. in Medicinal Biochemistry from Sussex University, England in 1987. He became a Diplomate of the American Board of Toxicology (DABT) in 1991. In 1992, he became a voting member of the Canadian Standards Association. He is a member of several professional societies and institutes, including the Society of Toxicology of Canada (STC), the American Society of Toxicology and the University of Waterloo's Institute for Risk Research. Dr. Brecher has over eleven years of experience as a senior consultant in toxicology, with an emphasis on assessing and communicating human health impacts of chemicals, particularly contaminants commonly found in drinking water and in air. He has supervised more than 350 contracts involving professionals from a wide variety of scientific and engineering disciplines. Dr. Brecher has been recognized in Canada and internationally for a strong expertise in Quantitative Risk Assessment. He has undertaken exposure, hazard and risk assessment work for a wide variety of clients in the public and private sectors, including the Public Defenders office for the Territory of Guam (USA), the Metropolitan Toronto Department of Works, the Regional Municipality of Waterloo, the City of Edmonton, the CBC Journal, and Health and Welfare Canada. He is experienced with both point- and distribution-based exposure modelling techniques. He is an effective communicator, and has presented risk assessment and other technical information at numerous public meetings and scientific conferences, including the 1992 annual meeting of the Society of Toxicology and workshops organized by the Canadian Network of Toxicology Centres. He has also organized and taught numerous educational seminars and courses, and developed consensus-building programs between industrial labour and management organizations. Dr. Brecher has acted as an expert witness in both Canada and the US.

Buck Louis, Germaine

National Institutes of Health

Dr. Germaine M. Buck is currently the Chief of the Epidemiology Branch, Division of Epidemiology, Statistics & Prevention Research, National Institute of Child Health & Human Development, National Institutes of Health. Dr. Buck was formerly a professor for 13 years in the Department of Social & Preventive Medicine, University at Buffalo, prior to assuming her current position in 2000. She is an Adjunct Professor in the Schools of Public Health at the George Washington University, University of Buffalo (including the Roswell Park Cancer Division) and University of Albany. Dr. Buck earned a Master's and Doctoral Degree in Epidemiology from the University of Buffalo, State of New York. Dr. Buck's research interests primarily focus on the interplay between environmental exposures, behavior and human reproduction and development. She has conducted several studies focusing on environmental contaminants and sensitive reproductive and developmental outcomes. In addition, Dr. Buck engages in methodological research aimed at the assessment of mixtures and health outcomes, parental interactions of exposure, modeling dependent pregnancy outcomes, and use of technologies for field-based research. Dr. Buck has been an active member of several epidemiologic societies (SPER, SER, ISEE, ACE, AES) including her service as Secretary then President of the Society for Perinatal & Pediatric Research and Board Member of the American College of Epidemiology. She has served on a number of committees, panels and boards for The National Academies. Relevant current appointments include: Member of the Epidemiology Technical Implementation Panel, American Chemistry Council; Temporary Advisor, WHO/IPCS Environmental Health Criteria Document: Principles for Evaluating Health Risks in Children Associated with Exposure to Chemicals, World Health Organization; and the

Center for the Evaluation of Risks to Human Reproduction, National Toxicology Program. Dr. Buck is an intramural scientist with the National Institute of Child Health & Human Development, which provides support for her research.

Conolly, Rory

CIIT

Dr. Conolly's research focuses on the development of computer simulation models of mechanisms of toxic action. These models are used for data analysis and experimental design and serve as natural bridges between laboratory research and human health risk assessment. When the models are used for data analysis and experimental design, they become an integral part of the research process. Dr. Conolly has participated in a number of collaborative projects where his expertise in simulation modeling has contributed in this manner. These include mechanistic and pharmacokinetic studies of chloroform, diisopropylfluorophosphate, 2-methoxyethanol, 2,4,4-trimethyl-2-pentanol and methylene chloride. Key mechanistic issues examined in these studies included the definition of the target tissue dose surrogate most predictive of chloroform cytotoxicity and the role of protein binding in the kinetics and toxicity of 2,4,4-trimethyl-2-pentanol. Dr. Conolly has also developed stochastic simulation models of the formation and growth of hepatic foci of altered cells that arise during initiation-promotion experiments. This latter approach has been used for analysis of datasets describing putative preneoplastic lesions after promotion with PCB and TCDD. For both of these analyses the modeling has provided insights into the quantitative roles of mutation, cell division and apoptosis in focus formation. Dr. Conolly has also contributed to human health risk assessments in which simulation models have played central roles. These include cancer risk assessments for chloroform and formaldehyde. The work on formaldehyde involved linking anatomically accurate models of nasal airflow and regional flux into tissue with a multistage clonal growth model. This is one of the first cancer risk assessments to incorporate both cytotoxicity and direct mutagenicity as modes of action that together contribute to tumor incidence. The analysis showed that formaldehyde-induced tumor incidence in the rat nose is a strong function of the cytotoxic effect of formaldehyde and only a weak function of the cytotoxicity of formaldehyde. Most recently, Dr. Conolly has used computational modeling to examine how adaptive responses, such as induction of DNA repair and cell cycle checkpoint control, may affect the shapes of dose-response relationships for chemical carcinogens. This interest in adaptive responses has led an effort funded by the DOE where Dr. Conolly's group is developing a detailed computational model of the relationship between DNA damage and cell cycle checkpoint control. We are also using a computational model of the MAPK signal transduction pathway to investigate how bistability and switching occur and to understand the implications of these behaviors for toxicant dose-response.

Cook, Jon

Pfizer Inc.

Dr. Jon C. Cook has been a Research Fellow for the past five years at Pfizer Global Research and Development in Groton, CT. His principle activities are managing the toxicology issues for the COX-2 Alliance between Pharmacia and Pfizer. In addition, he is involved in investigative studies supporting product registration. Jon received a B.S. in Physiology from the University of California at Davis in 1979 and M.S. (1982) and Ph.D. (1985) degrees in Toxicology from North Carolina State University under the direction of Dr. Ernest Hodgson. He went on to a postdoctoral fellowship at the Chemical Industry Institute of Toxicology under the direction of Dr. William F. Greenlee. Jon joined DuPont in 1987 as a study director and went on to develop an active research program investigating endocrine-mediated mechanisms of carcinogenesis (mammary gland, pancreas, testis, and thyroid) and has 55 publications to date. While at DuPont, he led a research program whose goal was to develop screening tools for identifying endocrine active compounds. This research program was partially funded by the Chlorine Chemistry Council and the Chemical Manufacturing Association. In 1998, he received the Robert A. Scala Award in Toxicology in honor of his work as a toxicologist in an industry laboratory. Jon has been an active member of the SOT (Council, Continuing Education Committee, member and chair; Editorial board of Toxicological Sciences) as well as active in regional (Mid-Atlantic) and specialty sections (Carcinogenesis, Mechanisms, Reproductive and Developmental) of the SOT. He just completed being the President of the SOT Carcinogenesis Specialty Section. Dr. Cook has no current grant or contract supported research.

Corcoran, George

Wayne State University

Dr. George Corcoran is Chairman, Department of Pharmaceutical Sciences, and Professor of Pharmaceutical Sciences at the Eugene Applebaum College of Pharmacy and Health Sciences, Wayne State University in Detroit, MI. He is also Adjunct Professor of Pediatrics in the School of Medicine of Wayne State University. Dr. Corcoran earned his B.A. in Chemistry from Ithaca College (1970), M.S. in Chemistry from Bucknell University (1973), and Ph.D. in Pharmacology and Toxicology from George Washington University (1980), before completing Post-Doctoral training in Toxicology at Baylor College of Medicine and The Methodist Hospital (1981). Prior to his appointment at Wayne State University in 1996, Dr. Corcoran served as Assistant Professor of Pharmaceutics at the State University of New York at Buffalo, followed by 9 years at the University of New Mexico in Albuquerque, NM as Associate Professor and later Professor, and Director of the Toxicology Graduate Program. Throughout his professional career, Dr. Corcoran has been active in numerous professional societies, including as Secretary of the Society of Toxicology, Scientific Council Member and Chairman of the Division of Toxicology of the American Society for Pharmacology and Experimental Therapeutics, and Member of the Research and Graduate Affairs Committee of the American Association of Colleges of Pharmacy. He is also a member of the Michigan Society of Toxicology and the Michigan Pharmacists Association. In addition, Dr. Corcoran is currently Associate Editor of Toxicology and Applied Pharmacology and a member of the editorial board of Pharmacology and Toxicology, and he has served on the editorial boards of Toxicology Letters and the Journal of Toxicology and Environmental Health. He has been very active in the national peer review of research, as Member of the NIH Alcohol Toxicology-1 Study Section, Member or Chairman of several NIH Special Emphasis Panel Study Sections, and Member and later Chairman of the National Research Council Hughes Howard Pre-Doctoral Fellowship Panel in Neurology and Physiology. His research program, which focuses on mechanisms underlying cell death in the liver caused by drugs and environmental chemicals, has resulted in over 70 peer-reviewed and other publications. His work has been supported primarily by NIH, with small amounts of supplemental foundation and pharmaceutical industry funding.

Cory-Slechta, Deborah

University of Medicine and Dentistry of New Jersey and Rutgers State University

Dr. Deborah Cory-Slechta received her Ph.D. degree from the University of Minnesota in 1977 and worked as a junior staff fellow of the National Center for Toxicological Research beginning in 1979. She was appointed to the faculty of the University of Rochester Medical

School in 1982 and rose through the ranks. In 1998, she was appointed Chair of the Department of Environmental Medicine and Director of the NIEHS Environmental Health Sciences Center at the University of Rochester. From July 2000- July 2002, she was the Dean for Research and Director of the AAB Institute for Biomedical Sciences, a newly established post at the University and as such, became the first female dean in the history of the Medical School. Dr. Cory-Slechta has served on numerous national research review and advisory panels, including committees of the National Institutes of Health, the National Institute of Environmental Health Sciences, the Food and Drug Administration, the National Center for Toxicological Research, the Environmental Protection Agency, the National Academy of Sciences, the Institute of Medicine, and the Agency for Toxic Substances and Disease Registry, Centers for Disease Control. In addition, Dr. Cory-Slechta has served on the editorial boards of several journals including Neurotoxicology, Toxicology, Toxicological Sciences, Fundamental and Applied Toxicology, Neurotoxicology and Teratology, and American Journal of Mental Retardation. She has held the elected positions of President of the Neurotoxicology Specialty Section of the Society of Toxicology, President of the Behavioral Toxicology Society, and been named a Fellow of the American Psychological Association. Her research has focused largely on environmental neurotoxicants as risk factors for behavioral disorders and neurodegenerative disease. Specifically this has included work on the impact of lead on learning and attention and associated neurochemical mechanisms, and, more recently on the role of pesticides as risk factors for Parkinson's Disease. These research efforts have resulted in over 90 papers and book chapters to date.

DePierre, Joseph

Stockholm University

Dr. Joseph DePierre received a BS in chemistry from Stanford University in 1965 and a PhD in biochemistry from Harvard University in 1972. Dr. DePierre is Professor of Biochemistry, with a special emphasis on enzymological toxicology since 1988. For the past 3 decades his research, documented in more than 200 scientific articles, has been focused on the effects of foreign chemicals (xenobiotics) on fish and mammals. He has been especially interested in the metabolism of these compounds, the hormonal regulation of this metabolism and the first steps leading to the toxic and genotoxic effects of environmental pollutants. For the past decade much of his research has centered on the effects of perfluorinated chemicals on mammalian cells, in particular the immunotoxicity and metabolic changes they cause. His research has been supported by the National Institutes of Health, the Swedish Natural Science Research Council, the Swedish Environmental Protection Board, the Swedish Cancer Society and the Swedish Agency for Working Life, among other agencies. He has acted as European managing editor of the international journal Chemo-Biological Interactions and served on the editorial boards of Carcinogenesis and AMBIO. DePierre has also exerted considerable time and effort to informing the general public about basic research in environmental biochemistry. He has been the recipient of 3 environmental prizes from the Swedish organization for chemical industries.

Drinkwater, Norman

University of Wisconsin Medical School

Dr. Norman Drinkwater is the Chair of the Department of Oncology at the University of Wisconsin Medical School. He is also the Director of the McArdle Laboratory for Cancer Research and Associate Director for Laboratory Programs of the University of Wisconsin Comprehensive Cancer Center. Dr. Drinkwater received his B.S. in Biochemistry from the University of Wisconsin in 1974 and a Ph.D. in Oncology from that institution in 1980. After postdoctoral training at Michigan State University, he joined the faculty of the Department of Oncology at the University of Wisconsin in 1982, becoming Professor and Chair of the department in 1992. Over the years, Dr. Drinkwater's research has focused on various aspects of chemical carcinogenesis, including the metabolic activation of carcinogens, molecular mechanisms of chemical mutagenesis, and, most recently, on the genetics of susceptibility to carcinogenesis. His support for this research has been derived entirely from the National Institutes of Health. Dr. Drinkwater has served on numerous review and advisory panels. Recent activities include membership on the Board of Scientific Counselors for the National Toxicology Program (1999-2002), the CE Study Section for NIH (1999-present; Chair, 2002-2004), the American Cancer Society Council on Extramural Grants (2001-present), and the External Advisory Boards for the M. D. Anderson Cancer Center (2000-present) and Oklahoma University Cancer Center (2001-present).

Giesy, John P.

Michigan State University

Professor Giesy received his B.S. degree, Summa cum laude with honors in Biology from Alma College in Alma, Michigan in 1970. Prof. Giesy obtained Masters and Doctor of Philosophy Degrees in Limnology from Michigan State University in 1971 and 1974, respectively. From 1974 until 1981 he was affiliated with the Savannah River Ecology Laboratory and a faculty member in the Institute of Ecology and Department of Zoology at the University of Georgia. Currently, he is Distinguished Professor of Zoology at Michigan State University in East Lansing, Michigan, where he is also a Professor of Veterinary Medicine and on the faculties of the Institute for Environmental Toxicology and National Food Safety and Toxicology Center. He is a NIEHS Preceptor and member of the National Institutes of Health Faculty. Prof. Giesy is a Fellow of the Cooperative Institute for Limnology and Ecosystems Research. Prof. Giesy considers himself an aquatic toxicologist with interests in many aspects of this field, including both the fates and effects of potentially toxic compounds and elements, particularly in the area of ecological risk assessment. He has conducted research into the movement, bioaccumulation and effects of toxic substances at different levels of biological organization, ranging from biochemical to ecosystem. Prof. Giesy has done extensive research in the areas of metal speciation, multispecies toxicity testing, biochemical indicators of stress in aquatic organisms, fate and effects of PAHs, halogenated hydrocarbons, including chlorinated dibenzo-dioxins and -furans, PCBs and pesticides. In addition to his work in aquatic toxicology, Prof. Giesy has become world-famous for his wildlife toxicology studies, particularly in the area of endocrine modulating compounds. In addition to his work as an ecologist, biochemical toxicologist he is a world-class environmental chemist, having developed and applied both analytical and bio-analytical techniques to environmental issues. He discovered the phenomenon of photo-enhanced toxicity of organic compounds, such as PAHs. His studies include both laboratory and field as well as mesocosm studies and apply tools from molecular biology to ecosystem-level. He was the first to discover perfluorinated compounds in the environment, an important new class of environmental contaminants. Currently, Prof. Giesy and his research group are actively studying the toxicity and reproductive effects of organic compounds, with special emphasis on herbicides, chlorinated dioxins and perfluorinated compounds. Studies are being conducted in the field and laboratory on fish, fish-eating birds and mammals in the Great Lakes region, including mink and raptors such as hawks and eagles and in marine mammals. Prof. Giesy is an expert in ecological risk assessments of both industrial and agricultural chemicals. Prof. Giesy has been active in the development and application of methods for the assessment of the toxicity of contaminated sediments, especially in the North American Great Lakes. Prof. Giesy has received research funding from local, state, federal and international agencies and organizations. His research has resulted in the publication of 517 peer-reviewed articles and 826 lectures, world-wide. Three times,

(1997 & 1999, 2002) a paper on which he was a co-author has been selected as the best paper published in Environ. Toxicol. & Chem. during that year. In 2001, a paper he co-authored on probabilistic risk assessments was selected as the best paper by Human and Environmental Risk Assessment. He has authored five books and edited six books. Two of his books Microcosms in Ecological Research and Sediments: The Chemistry and Toxicology of In-Place Pollutants have become classics. His research is much used and cited by other researchers--Prof Giesy is in the top 0.5% of active authors (ISI Current Contents: ISIHighlyCited.com) and was the 6th most cited author in the field of Environmental Science over the period 1993-2003 (In-Cites; www.in-cites.com/scientists/env-eco.html). His research has been featured in a number of magazine and newspaper articles. Prof. Giesy is the member of many editorial boards and is the editor of the Environmental Toxicology and Risk Assessment section of Chemosphere. Prof. Giesy works frequently in Europe with many universities, research establishments and governments. He has served as a member of US EPA Science Advisory Boards and a member of five National Academy of Sciences panels, including: 1) Endocrine Disruptors, 2) Remediation of PCB-Contaminated Sediments and 3) Bioavailability of Residues from Sediments and Soils. Prof. Giesy has received a number of distinctions and awards including: In 1990 he was the recipient of the Sigma Xi Meritorious Research Award. In 1993 he received the title of Distinguished Professor from Michigan State University. Prof. Giesy is also the recipient of the Chevron Distinguished Lectureship Award for his research on the toxic effects of environmental contaminants on wildlife and the CIBA-GEIGY Agricultural Recognition Award for his work on microcosms and pesticides and the Willard F. Shepard Award from the Michigan Water Pollution Control Assoc. In 1994 Prof. Giesy received the prestigious Vollenweider Medal for Aquatic Sciences from the National Water Research Institute of Canada for his work on contaminants in the North American Great Lakes. In 1995 Dr. Giesy received the Founders Award, which is the highest award given by the Society of Environmental Toxicology and Chemistry for continued excellence in research and education. In 2002 he received the SETAC/Menzie-Curra Environmental Education Award from for his many activities in environmental education, including hi undergraduate and graduate training. Dr. Giesy was selected as the International Man of the Year-Environmental Toxicology in 1993 and received the QUINTESSENCE Award: Excellence in Environmental Contamination & Toxicology for a paper published in 1994. Prof. Giesy received the Distinguished Alumni Award from Alma College in 1996. Prof. Giesy was a member of the Boards of Directors of the International Association for Sediment and Water Science and the International Association of Great Lakes Research. Prof. Giesy was president of the Michigan State University chapter of Sigma Xi The Research Society in 1994. Prof. Giesy has served on the Board of Directors of the Society of Environmental Toxicology and Chemistry (SETAC) from 1986 until 1992 and as President of the Great Lakes Regional chapter in 1984 and of the international SETAC organization in 1990-1991. He was Chairman of the Board of Directors of the SETAC Foundation for Environmental Education in 1992-93 and Vice President from 1993-2000. Prof. Giesy is a major donor to and sponsor of Michigan State University and Alma College. At Alma College he has been a member of the Alumni Board and President of the Alumni Organization in 1995-96 and a member of the Board of Directors from 1994-97. Prof. Giesy is listed in 38 biographical listings, including Who's Who in the World.

Goodman, Jay

Michigan State University

GOODMAN, JAY I. Ph.D. in Pharmacology, 1969, The University of Michigan; Postdoctoral Fellow, 1969-1971, McArdle Laboratory for Cancer Research, University of Wisconsin. current position Professor (Interim Chairperson, 2001-2002), Department of Pharmacology and Toxicology, Michigan State University. certification Diplomate of the American Board of Toxicology, Inc.; Fellow, The Academy of Toxicological Sciences. associate editor Toxicological Sciences, 1997-. Society of Toxicology President, 1999-2000. advisory board/panel memberships (examples) Various instances of service as a reviewer of research grant proposals for the National Institutes of Health, particularly the National Institute of Environmental Health Sciences, and the Canadian and Australian governments; Member of the Board of Scientific Counselors of the National Toxicology Program, 1989-1992; Member of the Siloxane Science Advisory Board, Dow Corning Corp., 1993-2003; Expert Reviewer, U.S. Environmental Protection Agency Workshop on Cancer Risk Assessment Guidelines Issues, July-September 1994; Member of the Expert Panel, Flavor and Extract Manufacturers' Association of the U.S., 1995-; Member of the International Life Sciences Institute/U.S. Environmental Protection Agency's Expert Panel to Evaluate Chloroform and Dichloroacetic Acid as Case Studies for the Application of EPA's Proposed Guidelines for Carcinogen Risk Assessment, 1996-1997; Member of the Alternatives to Carcinogenicity Testing Technical Committee, Health and Environmental Sciences Institute, International Life Sciences Institute, 1997-2003; Member of the Subcommittee on Upper Reference Levels of Nutrients, Committee on the Scientific Evaluation of Dietary Reference Intakes, Food and Nutrition Board, Institute of Medicine, National Academy of Sciences, 1998-1999; Member of Council, International Society of Regulatory Toxicology and Pharmacology, 2001-2005; Alumni Steering Committee, Department of Pharmacology, The University of Michigan, 2001 -; Member of Council, The Academy of Toxicological Sciences, 2001-2003; Chairperson of the Board of Trustees, International Life Sciences Institute, Health and Environmental Sciences Institute, 2002-2004, currently serving as a member of the Executive Committee; Member of the Pharmacology and Toxicology Subcommittee of the Pharmaceutical Sciences Advisory Committee, U.S. Food and Drug Administration, 2003-; graduate education Chairperson of the Graduate Committee which administers the Ph.D. Program in Pharmacology and Toxicology, Michigan State University, 1979-1997, currently serving as a member of the committee. honors and awards Distinguished Alumnus Award, Long Island University College of Pharmacy, 1998; Elected to be President of the Society of Toxicology, 1999-2000; Distinguished Alumnus Award, Doctoral Program in Pharmacology, The University of Michigan, 2000. Dr. Goodman's research interests are in the area of carcinogenesis, addressed specifically towards discerning the role(s) of altered DNA methylation in facilitating the aberrant gene expression which is involved in carcinogenesis. He has emphasized the view that altered DNA methylation is a nongenotoxic, epigenetic mechanism underlying tumor promotion. His working hypothesis is that susceptibility to carcinogenesis is related inversely to the capacity to maintain normal patterns of DNA methylation. Support for his research has come from the NIH, National Institute of Environmental Health Sciences, industry and the International Life Sciences Institute, Health and Environmental Sciences Institute.

Hayton, William L.

Ohio State University

Dr. William L. Hayton is a Professor of Pharmacy in the Division of Pharmaceutics at The Ohio State University where he also serves as the Associate Dean for Graduate Studies and Research. Dr. Hayton's expertise is pharmacokinetics, particularly construction and validation of mathematical models that describe or explain the kinetics of complex biological systems. One current research interest is characterization of the Fc receptor-mediated transport and catabolism of albumin and IgG in wild type and FcR knockout mice. A second project is the quantitative modeling of the female hypothalamus-pituitary-gonad (HPG) axis in the female rainbow trout (*Oncorhynchus mykiss*). The model is based on and integrates the biology of gonadotropin, estrogen, androgen and maturational hormone signaling systems, and it includes key intermediate steps in the signaling pathways; viz., gonadotropin and sex steroid synthesis, hormone receptors and their

corresponding mRNA levels. Dr. Hayton's expertise extends to interspecies scaling of pharmacokinetic model parameter values and xenobiotic metabolism. Dr. Hayton holds a B.S. in Pharmacy degree from the University of Washington and a Ph.D. degree in Pharmaceutics from the State University of New York at Buffalo. He was a member of the Washington State University College of Pharmacy faculty for 19 years before coming to Ohio State in 1990 as Chair of the Division of Pharmaceutics. Dr. Hayton is author or co-author of about 100 peer-reviewed scientific publications and has held peer-reviewed grant support from the NIH, EPA, AFOSR, FDA, and USFWS.

Kamrin, Michael

Michigan State University

Dr. Michael A. Kamrin, Professor Emeritus of the Institute of Environmental Toxicology at Michigan State University, is currently a consultant in Toxicology and Risk Analysis. He received a B.A. in Chemistry from Cornell University and a M.S. and Ph.D. in Biophysical Chemistry from Yale University. He had postdoctoral appointments at Oak Ridge National Laboratory and Stanford University. His areas of expertise are toxicology, risk assessment, and risk communication. He has published a variety of work in the area of risk assessment, especially related to environmentally persistent compounds, and in risk communication. Professor Kamrin has served on a number of EPA grant and fellowship review panels, has been a science advisor to the State of Michigan legislature and has served on a number of State of Michigan advisory committees as a risk assessment expert. He has been active in both the Society of Toxicology (SOT) and the Society of Toxicology and Environmental Chemistry (SETAC), serving as President of the local chapters of each society. At the national level, he has been an officer in the Risk Assessment Specialty Section of SOT, and also served on the Government Affairs Committee of SETAC. His most recent grant support was provided by the National Institute of Environmental Health Sciences Superfund Basic Research Program.

Kehrer, James

University of Texas at Austin

Dr. James P. Kehrer is a Professor of Toxicology, and Head of the Division of Pharmacology and Toxicology in the College of Pharmacy at the University of Texas at Austin. Dr. Kehrer received his B.S. in pharmacy from Purdue University (1974) and his Ph.D. in pharmacology/toxicology from the University of Iowa College of Medicine (1978). He did postdoctoral work in toxicology in the Biology Division of Oak Ridge National Laboratory (1978-1980). Dr. Kehrer began his academic career at the University of Texas at Austin in 1980. During 1986 he took a 1 year Faculty Development Leave at the University of Düsseldorf where he returned in 1990 and 1997 for 2 month periods of research. Dr. Kehrer has been active in numerous professional societies, and is currently a member of the American Association for the Advancement of Science, American Association for Cancer Research, American Society for Pharmacology and Experimental Therapeutics, Society of Toxicology (where he served as President of the Mechanisms Specialty Section), Society for Free Radical Biology and Medicine, and the International Society for Free Radical Research. Dr. Kehrer received a Research Career Development Award from the National Heart, Lung and Blood Institute and the Achievement Award from the Society of Toxicology. He serves the Editor for the Americas and Japan for Toxicology Letters and currently serves as a Deputy Chairman for The Biochemical Journal. He also serves on the editorial board of Toxicology and Applied Pharmacology and Archives of Biochemistry and Biophysics. Other service has included the NIH Toxicology Study Section, and numerous NIH review panels. Dr. Kehrer maintains a large research program with numerous grants from the National Institutes of Health. He has over 125 publications, many in the areas of free radical toxicology, apoptosis, pulmonary fibrosis and cell signaling.

Klaunig, James E.

Indiana University

Dr. James E. Klaunig is Professor of Toxicology and Director of Toxicology in the Department of Pharmacology and Toxicology at Indiana University School of Medicine. He received his BS degree from Ursinus College in Collegeville Pa., an MA from Montclair State University, Montclair, NJ, and his PhD from the University of Maryland in Baltimore, MD. He is the recipient of numerous awards including fellow of the Academy of Toxicological Sciences, the Otis R. Bowen, M.D. Distinguished Leadership Award, Indiana University School of Medicine and the Kenneth P. DuBois Award from the Midwest Society of Toxicology and the Sagamore of the Wabash from the Governor of Indiana. He serves as associate editor of Toxicological Sciences and on the editorial board of Toxicological Pathology. He is a Member of the NIH/NIEHS National Toxicology Program Board of Scientific Counselors. He also has served as President of the Carcinogenesis Specialty Section, President of the Ohio Valley Society of Toxicology, Member and Chair of the SOT Education Committee, and Member of the Finance and Program Committees of SOT. He is currently the Treasurer of the Society of Toxicology. He also serves the State of Indiana on the Indiana Pesticide review Board, the Governor's Council on Impaired and dangerous driving and on the Indiana Controlled Substances Advisory Board. He has trained over 50 graduate students and postdoctoral fellows. His research interests are dedicated to understanding the mechanisms of chemically induced carcinogenesis specifically the mode of action of nongenotoxic carcinogens, role of oxidative stress in carcinogenesis and cell injury, and understanding of the multistage nature of the cancer process.

Longnecker, Matthew P.

National Institute of Environmental Health Sciences

Dr. Longnecker's research program is focused on the health effects of persistent organic pollutants. He is particularly interested in the effects of intrauterine exposure to persistent organic pollutants (e.g., the DDT metabolite p,p'-DDE, and polychlorinated biphenyls) in relation to intrauterine growth, preterm birth, birth defects, neurologic findings at birth, growth, neurodevelopment, intelligence, and hearing. His main projects include: 1) a study of in utero exposure to DDE in relation to preterm birth, intrauterine growth, and anthropometry among DDT-exposed newborns in Mexico; and 2) studies of in utero exposure to persistent organic pollutants in relation to numerous outcomes, based on the U.S. Collaborative Perinatal Project (CPP). He is also involved in the development of the National Children's Study (<http://nationalchildrensstudy.gov/>), and is a member of that study's Interagency Coordinating Committee. Dr. Longnecker received a BS in Biochemistry from Antioch College and an MD from Dartmouth Medical School. He completed a residency in internal medicine at Temple University Hospital in Philadelphia. After receiving an ScD in Epidemiology from Harvard School of Public Health, he was an Assistant Professor in the Department of Epidemiology at the University of California, Los Angeles, School Of Public Health. Dr. Longnecker came to NIEHS Epidemiology Branch in 1995, as a tenure-track investigator. He also serves as Adjunct Associate Professor in the Department of Epidemiology, School of Public Health, University of North Carolina at Chapel Hill.

Luderer, Ulrike

University of California at Irvine

Dr. Ulrike Luderer is Assistant Professor of Medicine in the Division of Occupational and Environmental Medicine at the University of California at Irvine. She also holds joint appointments in the Departments of Developmental and Cell Biology and Environmental Toxicology. Dr. Luderer's research focuses on mechanisms of action of reproductive toxicants and on protective mechanisms against those toxicants. She is a recipient of a National Institute of Environmental Health Sciences research grant (2002-2007) entitled "Glutathione: Protecting Ovarian Follicles from Oxidant Injury" and a co-investigator on an EPA grant "Latent Effects of Gestational Exposure to Heptachlor". She has published peer-reviewed journal articles and book chapters and presented research at national and international scientific conferences on such topics as the effects of solvent exposure on reproductive endocrine function, the functions of and regulation of glutathione in the ovary, the differential regulation of follicle-stimulating hormone and luteinizing hormone secretion, and reviews of reproductive and developmental and endocrine toxicology. She has served on the National Toxicology Program/NIEHS Center for the Evaluation of Risks to Human Reproduction Expert Panel on 1- and 2-Bromopropane and on the National Research Council subcommittee on methyl bromide. She is currently a member of the EPA SAB's Environmental Health Committee. Dr. Luderer has a Ph.D. in reproductive endocrinology and M.D. from Northwestern University and is board-certified in Internal Medicine and in Occupational and Environmental Medicine. She has a Sc.B. in biomedical engineering from Brown University.

Marsh, Gary

University of Pittsburgh

Dr. Gary M. Marsh is Professor of Biostatistics at the University of Pittsburgh, Graduate School of Public Health. He received his B.S. degree in Mathematics (cum laude) in 1973 from the University of Pittsburgh and his M.S. (Hyg.) and Ph.D. degrees in Biostatistics in 1974 and 1977 from the University of Pittsburgh, Graduate School of Public Health (GSPH). Dr. Marsh has more than 150 publications in the areas of biostatistics, occupational/environmental epidemiology, quantitative risk assessment, statistical computing and health services evaluation. He is the senior author of the computer software package, OCMAP (Occupational Cohort Mortality Analysis Program), which is used as a standard analytic tool by more than 150 domestic and 40 foreign institutions involved in occupational health research. Dr. Marsh is also developer of the Mortality and Population Data System (MPDS), a repository and retrieval system for National Center for Health Statistics (NCHS) and U.S. Census Bureau data, which is regularly accessed by scores of domestic occupational and environmental health researchers. Dr. Marsh directs occupational epidemiologic studies to investigate the long-term health effects of exposure to such agents as man-made mineral fibers, formaldehyde, acrylamide, acrylonitrile, arsenic, chloroprene, petrochemicals, aromatic amines and pharmaceuticals. In addition, he conducts environmental epidemiologic studies of communities exposed to industrial pollutants or to hazardous waste site materials and is involved in basic methodological research related to longitudinal data analysis and quantitative risk assessment. He also directs programs of biostatistical support for the health outcome research and quality improvement areas of large health maintenance organizations, and for the occupational and environmental health areas of corporations and trade organizations. Dr. Marsh teaches graduate-level courses in applied biostatistics, sampling theory and meta-analysis and directs several masters and doctoral level students. Within the GSPH, he established the Biostatistics Consulting Laboratory and directs the National Center for Health Statistics data sharing program. Dr. Marsh is a Fellow of the American College of Epidemiology, and an active member of the American Statistical Association, the Biometric Society, the Society for Occupational and Environmental Health, the International Society for Environmental Epidemiology, the Society for Epidemiologic Research, the International Commission on Occupational Health and British Occupational Health Society. He served as a charter member of the National Institute for Occupational Safety and Health (NIOSH) Safety and Occupational Health Study Section, the National Academy of Sciences/ Institute of Medicine Committee to Evaluate the Health Consequences of the Persian Gulf War, and the International Agency for Research on Cancer (IARC) Working Group to evaluate the carcinogenicity of man-made vitreous fibers. Dr. Marsh also holds prominent positions on several governmental, academic and corporate scientific advisory boards and committees.

Maston, Scott

National Institute of Environmental Health Sciences

Dr. Scott A. Masten is a Staff Scientist in the Environmental Toxicology Program at the National Institute of Environmental Health Sciences (NIEHS) where he serves as Director of the Office of Chemical Nomination and Selection. Dr. Masten received his Ph.D. in Pharmacology and Toxicology from the University of Florida in 1995. He came to NIEHS in 1995 as a post-doctoral fellow in the Laboratory of Computational Biology and Risk Analysis and has served in his present capacity since 2001. In his present position, Dr. Masten is responsible for managing the formal process by which substances are identified and selected for toxicological evaluation by the National Toxicology Program (NTP). This process involves liaison with federal agencies, the scientific community and the public to identify deficiencies in the toxicological database for environmental substances to which people are exposed, the oversight of contract resources to develop supporting technical documents, coordinating internal and external public reviews of substances and issues under consideration, and the design and implementation of research programs to address these deficiencies. Research efforts have focused on biomarkers of human exposure, response, and susceptibility to dioxins and other environmental agents in molecular epidemiology and biomonitoring studies.

Melnick, Ronald

National Institute of Environmental Health Sciences

Dr. Melnick is a Senior Toxicologist and Director of Special Programs in the Environmental Toxicology Program at the National Institute of Environmental Health Sciences (NIEHS), National Institutes of Health in Research Triangle Park, North Carolina. Prior to this position he was Group Leader of the Toxicokinetic and Biochemical Modeling Group in the Laboratory of Computational Biology and Risk Analysis at NIEHS. Dr. Melnick obtained his B.S. degree from Rutgers University and his Ph.D. in food science/biochemistry from the University of Massachusetts at Amherst. He was a postdoctoral research fellow in the Department of Physiology-Anatomy at the University of California in Berkeley and then an assistant professor of life sciences at the Polytechnic Institute of New York. At NIEHS he has been involved in the design, monitoring and interpretation of NTP toxicity and carcinogenesis studies, as well as mechanistic studies to characterize the behavior of environmental carcinogens. He spent one year as an agency representative to the White House Office of Science and Technology Policy to work on interagency assessments of health risks of environmental agents and on risk assessment research needs in the Federal government. Dr. Melnick has organized several national and international symposiums and workshops on health risks associated with exposure to environmental and occupational toxicants. He has also served on numerous scientific review and advisory panels. Dr. Melnick

has served on several committees at NIEHS, including Chair of the Toxicokinetic Faculty and member of the NIEHS review group for the NTP Report on Carcinogens. Dr. Melnick is a Fellow of the Collegium Ramazzini and is cited in Who's Who in America. As a federal employee, he does not receive any grant or contract support.

Mink, Frank

MAI

Dr. Frank Mink received an Associates degree in Environmental Science in 1977, a Bachelor's degree in biochemistry in 1979, a Master's degree in Environmental Engineering in 1980 and a PhD in toxicology in 1986, all three from the University of Cincinnati. Dr. Mink is the only two-time distinguished alumnus (Science and Engineering) in the history of the University of Cincinnati. Dr. Mink has also been active in scientific research and administration for over 25 years, during which time he has contributed to the development of government regulations, public policy, and fundamental research primarily concerning adverse occupational/environmental health affects. Dr. Mink was awarded the U.S. Senate's highest civilian honor, the Medal of Freedom, in March of 2002. He continues to be recognized for his past and continued contributions to public policy in the field of environmental health research. As President and Principal Toxicologist at MAI (Mink & Associates, Inc. – 1989 -1998, 2000 – 2004) he directed all corporate expert testimony (over 30 depositions/trials), toxicology/public health research, and risk/endangerment assessment functions. MAI focused on public health assessments, industrial waste sites research, and related regulatory environmental health issues with industry and law firms throughout the United States. At MAI Dr. Mink has worked on a number of projects involving C8 and its various forms, including PFOA and PFOS. Dr. Mink has recently served as an Associate Dean at the nation's largest single-campus medical school (Wayne State, Detroit, MI, 2001-2002) and during 2002-2004 as a consultant to Oakland University on pre-symptom medicine and advanced predictive medicine statistical techniques. In April of 2004 Dr. Mink was named as president of Great Lakes University. Dr. Mink has an extensive list of volunteer and teaching contributions made over the last two decades.

Ozonoff, David M.

Boston University

Dr. David Ozonoff is Professor of Public Health and Chair Emeritus in the Department of Environmental Health at Boston University School of Public Health. He graduated with a BS in mathematics from the University of Wisconsin in 1962, from Cornell University Medical College with an MD degree in 1967 and from Johns Hopkins School of Hygiene and Public Health with an MPH degree in 1968. He spent one year as a Macy Fellow in the History of Science Department of Harvard University in 1975 and a year as a Mellon Fellow at MIT in 1976. His primary area of research is in environmental epidemiology, where he has conducted extensive studies of communities exposed to hazardous wastes and water contaminated with chlorinated ethylenes. He also works on new mathematical techniques for analyzing epidemiological data. He has been Director of the Boston University Superfund Basic Research Program for the last eight years. He is past-President of the Massachusetts Public Health Association, a Fellow of the Johns Hopkins Society of Scholars and a Fellow of the Collegium Ramazzini. Dr. Ozonoff has served on numerous Federal Advisory Committees, including the Advisory Committee for Energy Related Epidemiological Research to the Secretary of HHS, the Disinfection By-Products Negotiated/Microbial Contamination Rulemaking Committee to the EPA, several environmentally-related NRC committees and NIH grant review committees. He is a Member of the Massachusetts Bioterrorism Preparedness and Response Program Advisory Committee, February 2002 - present. He is on the External Advisory Committees of the Harvard Environmental Health Sciences Center, and the Harvard School of Public Health Environmental Statistics Program, as well as advisory committees of the American Water Works Association Research Foundation and advisory committees on environmental matters to state and local governments. His research is funded by NIEHS, CDC, and the International Joint Commission on the Great Lakes.

Roberts, Stephen

University of Florida

Dr. Steve Roberts is Director of the Center for Environmental & Human Toxicology at the University of Florida, and is a Professor with joint appointments in the Department of Physiological Sciences in the College of Veterinary Medicine and the Department of Pharmacology and Therapeutics in the College of Medicine. He received his Ph.D. from the University of Utah College of Medicine in 1977, and subsequently completed a National Institutes of Health (NIH) individual postdoctoral fellowship in pharmacokinetics at SUNY Buffalo. He has previously served on the faculties of the College of Pharmacy at the University of Cincinnati and the College of Medicine at the University of Arkansas for Medical Sciences. Dr. Roberts has an active research program funded by the NIH to examine mechanisms of toxicity, primarily involving the liver and immune system. His teaching responsibilities at the University of Florida include graduate courses in toxicology and risk assessment, as well as invited lectures in other graduate and professional courses. Dr. Roberts serves as an advisor to the Florida Department of Environmental Protection on issues pertaining to toxicology and risk assessment. He has served on the committee on Bioavailability of Contaminants in Soils and Sediments for the National Research Council and he currently serves on the Board of Scientific Counselors of the National Toxicology Program.

Schnatter, Robert

ExxonMobil Biomedical Sciences, Inc.

Dr. Robert Schnatter is the Senior Scientific Advisor at ExxonMobil Biomedical Sciences, Inc. (EMBSI) in Annandale, NJ. He is also a Senior Researcher at the Joint Sino-US Clinical and Molecular Laboratory at Fudan University in Shanghai, China. Dr. Schnatter received his B.S. in Biology from Rutgers University (1977), his M.S. in Biostatistics from the University of Pittsburgh (1979), his M.S. in Operations Research from Florida Institute of Technology (1980), and his Dr.PH in Epidemiology at Columbia University (1990). Prior to coming to EMBSI in 1987, Dr. Schnatter was the Corporate Biostatistician at Union Carbide Corporation since 1980, and worked for the National Center for Health Statistics in 1979. Dr. Schnatter's interests are in occupational health surveillance systems, retrospective exposure assessment, health effects of benzene and other hydrocarbons, genetic determinants of disease, and the use of epidemiologic data in risk assessments. He has been active in numerous professional societies, including the Society for Epidemiologic Research, the American College of Epidemiology (ACE), the American Industrial Hygiene Association, and the Society for Risk Analysis. He was chairman of the American Industrial Health Council's Epidemiology sub-committee from 1994 through 1997. He has published several articles on benzene health effects from a risk assessment perspective including industry's comprehensive benzene risk assessment under the EU's existing substances directive. He also serves as a reviewer for several scientific journals. He has served as a member of several advisory panels including the World Health Organization, the EPA, and the International Programme for Chemical Safety (IPCS) on benzene. He has organized or chaired

symposia for ACE, SRA, and ECETOC on the use of human epidemiological data in risk assessment. More recently, Dr. Schnatter receives funding from the University of Colorado's Health Sciences Center (UCHSC) to participate in a five year study in Shanghai, China on molecular epidemiology studies of benzene workers. Besides his annual salary from EMBSI, (part of which is covered by the UCHSC), Dr. Schnatter also has received small stipends from the Agency for Toxic Substances and Disease Registries for participating in expert panels and study reviews.

Sweeney, Anne

Texas A&M University

Dr. Anne Sweeney is an Associate Professor of Epidemiology at the Texas A&M University System School of Rural Public Health in Bryan, Texas. She received a B.S. degree in Nutrition and Dietetics in 1975 from Marywood College. She earned both her MPH and Ph.D. degrees in Epidemiology from the University of Pittsburgh, Graduate School of Public Health in 1988 and 1991, respectively. Dr. Sweeney served as a member of the Institute of Medicine's Gulf War and Health Study Committee, on the expert panel assessing the health effects of pesticides. She is also a member of the Fertility and Early Pregnancy Committee, assigned to the National Longitudinal Cohort Study Planning Committee, sponsored by the National Institute of Child Health and Human Development, the National Institute for Environmental Health Sciences, the Centers for Disease Control and Prevention, and the U.S. EPA. Her research interests include environmental and occupational exposures to toxic agents and the relation to adverse reproductive effects, particularly infertility, early pregnancy loss, and congenital anomalies. Dr. Sweeney has had extensive experience conducting large population-based studies of cohorts exposed to endocrine active compounds, including PCBs, PBBs, dioxin, and phthalates, and their effects on pregnancy outcome. She is currently the Principal Investigator on a project under the FRIENDS Children's Environmental Health Center, awarded to the University of Illinois at Urbana-Champaign, by the National Institute for Environmental Health Sciences and the U.S. EPA, as well as a project to assess PCBs and OCs and fecundity and fertility, awarded by the National Institute for Child Health and Human Development.

Thayer, Kristina

National Institute of Environmental Health Sciences

Dr. Thayer currently serves as the Executive Secretary of the National Institutes of Environmental Health Sciences. She holds a doctorate from the University of Missouri-Columbia, Division of Biological Sciences, with specialization in Reproductive Endocrinology. Dr. Thayer conducted post-doctoral work at U.C. San Francisco on the effect of estrogen on the prostate. She has authored several reports on perfluorinated-compound toxicity and human health risk (Perfluorinated chemicals (PFCs): A family of chemicals that contaminate the planet. Available online at <http://www.ewg.org/reports/pfcworld/>, and BodyBurden: The Pollution in People. Available online at <http://www.ewg.org/reports/bodyburden/>). Dr. Thayer was also the lead author of an extensive petition to the Centers for Disease Control and Prevention requesting biomonitoring of a suite of perfluorinated compounds, which can be found at <http://www.ewg.org/issues/pfcs> on December 2002. Dr. Thayer is perhaps the nation's leading independent authority on PFOA and perfluorinated compound toxicity, exposure, and human health risk. She is one of the few experts on PFOA who has not received any money, directly or in the form of research support, from any of the manufacturers or users of the compound. Prior to joining NIEHS, Dr. Thayer conducted a detailed toxicological review of PFOA and related compounds that included, but was not limited to, an analysis of the hundreds of toxicity studies on perfluorinated compounds that were submitted to EPA docket AR 226, many of which were unpublished industry studies. Apart from a handful of toxicologists at the EPA and the regulated industries, we believe that Dr. Thayer has examined a wider body of scientific literature and has a deeper and more thorough understanding of the toxicity of PFOA and related compounds than any other scientist in the country.

Timchalk, Charles

Battelle

Dr. Charles Timchalk received a B. S. in Biology in 1978 from the State University of New York, and a Ph.D. in 1986 from the Department of Pharmacology and Toxicology, The Albany Medical College. He is currently certified as a Diplomat of the American Board of Toxicology (1994; recertified 1998). In 1986 he joined the Dow Chemical Company as a post-doctoral fellow within the Biotransformation and Molecular Toxicology Group of the Toxicology Research Laboratory. At Dow he was a Research and Technical Leader within the Pharmacokinetics and Metabolism group prior to accepting his current position. In 1997 he joined the Center for Biological Monitoring and Modeling within Battelle Pacific Northwest Laboratory as a Staff Scientist. In this position he is continuing to pursue his interest in the application of pharmacokinetics for evaluation of human health risk. His research is currently focused around 3 themes: 1) The development of new technologies and approaches for non-invasive biological monitoring. 2) Advancing pharmacokinetic and pharmacodynamic modeling to focus on the assessment of risk to potentially sensitive populations, such as children, and to evaluate the health risk implications of low dose chemical mixture exposure. 3) The utilization of advanced imaging and 3-dimensional modeling approaches to develop new dosimetry and biological response models.

Vanden Heuvel, John

Penn State University

Dr. John Vanden Heuvel is currently Associate Professor of Molecular Toxicology at the Pennsylvania State University in the Department of Veterinary Science and Center for Molecular Toxicology and Carcinogenesis. Other positions currently held include Co-Director of the PSU Center of Nutrigenomics and Program Coordinator of the Toxicology undergraduate program within the College of Agricultural Sciences. He obtained his B.S. in Pharmacology/Toxicology and Ph.D. in Environmental Toxicology from the University of Wisconsin-Madison. He received post-doctoral training at the National Institute of Environmental Health Sciences (NIEHS) in the Laboratory of Biochemical Risk Analysis. Prior to joining the faculty at Penn State, Dr. Vanden Heuvel was an Assistant Professor of Toxicology at Purdue University. His main research and technical activities are directed at understanding the mechanism by which xenobiotics alter gene expression and cause toxicity, in particular cancer. Expertise includes molecular and cellular biology, polymerase chain reaction, drug discovery, a variety of high-throughput screening assays and new technologies such as gene expression microarray. Additionally, his work has included the development of biomarkers to assess the presence of pharmaceuticals and pollutants, including dioxins, herbicides and metals, in environmental samples. His work has been supported by the National Institutes of Health (National Institute of Diabetes and Digestive and Kidney Diseases, National Institute of Environmental Health Sciences), as well as, Pennsylvania Department of Environmental Protection, Pennsylvania Department of Agriculture, National Dairy Council, National Cattlemen's Beef Association and the US Department of

Agriculture.

Wiedow, M. Alfred

Ciba Specialty Chemicals

As a board certified toxicologist, Dr. Wiedow has gained over 30 years of consecutive technical and managerial expertise in the field of toxicology, environmental health science/ecology, and industrial hygiene, with an emphasis on developing and negotiating advocacy positions between industry, government and academia. He received a B.S. degree in Marine Science from Long Island University and spent several years as a Marine Biologist studying the effects of pollution on marine and riverine ecosystems. Dr. Wiedow continued his academic career by joining the staff of New York University Medical Center's Institute of Environmental Medicine as a Research Associate completing a Master's Degree in Comparative Animal Physiology in 1979. Subsequently, he pursued a combined Doctoral Degree in Environmental Medicine and Biology through the University's Schools of Medicine and Arts and Sciences, respectively. By combining his knowledge of marine pollution and newly acquired toxicology and environmental health sciences training, he completed in 1981 a doctoral thesis on the biochemical toxicology of cadmium to shellfish and the human health aspects associated with consuming heavy metal contaminated seafood, thereby quantitatively addressing the long-term health aspects related to recreational fishing in polluted waters. He further pursued these research endeavors as a post-doctoral fellow in biochemical toxicology at the Johns Hopkins University Medical Center's School of Hygiene and Public Health, continuing to focus on basic mammalian and aquatic toxicology relating to issues of public health. Dr. Wiedow broadened his toxicology knowledge by collaborating with other university scientists and physicians studying the neurological aspects of metal diseases in humans, reproductive and endocrine effects of industrial chemicals on workers and children, the role microsomal metabolism plays in assessing environmental carcinogens, and developing an industrial hygiene scheme for monitoring selected chemical manufacturing processes. After completing his two and one half years as a post-doctoral fellow, Dr. Wiedow joined the U. S. Environmental Protection Agency in Washington, DC in 1983. His main function was to evaluate the health effects associated with TSCA related compounds, especially those submitted under the TSCA 8(e) statute. Also, he became the lead technical reviewer for the Agency's Chemical Hazard Information Profile by conducting hazard assessments on substances that ranged in effects from direct human health problems to overall ecological impacts. Nine months before leaving the Agency, Dr. Wiedow was promoted as a senior toxicologist to the Agency's Office of Science Policy. There his talents were called upon to scientifically address the various policies employed in implementing the risk assessment process throughout all the Agency's offices. From EPA, he became a member, as a toxicologist, of the SH&E Department within the Ciba-Geigy Corporation in 1987. Subsequently, promoted to a Manager of Toxicology in the newly formed Toxicology, Regulatory Auditing and Compliance Department, Dr. Wiedow was mainly noted in the environmental arena for the technical conduct of a number of the Company's risk assessments and as a technical advisor on other environmental related matters. He was also responsible for conducting OSHA health hazard assessments on Ciba-Geigy products and raw materials, developing and overseeing product toxicology testing, negotiating with regulatory agencies on the terms of possible consent decrees, evaluating worker health related issues, and maintaining close liaisons with other toxicologists through trade association affiliations for the benefit of the company. Also in that position, Dr. Wiedow was the company's expert on evaluating the health impacts associated with exposure to materials commonly called environmental estrogens or endocrine disrupters, like DDT, PCBs, Dioxin, etc.. In that capacity, he chaired the Wildlife Endocrine Issues Task Group for the Chlorine Chemistry Council and sat on the Chemical Manufacturers Association's Ecological Risk Assessment and Endocrine issues Science Workgroup. Furthermore, he was also a member of the American Industrial Health Council Subgroup on Wildlife Endocrine Issues. In 1996, with the merger of Ciba-Geigy Corporation and Sandoz, Dr. Wiedow was elevated to the position of Director of Toxicology, Product Stewardship, and Risk Assessment in the newly formed, spin-off industrial chemical company called Ciba Specialty Chemicals Corporation. In his new role in the Environment, Health, and Safety Department, Dr. Wiedow is responsible for product stewardship, Responsible Care, TSCA, toxicology and risk assessment reviews, policy settings, and liaisons from the corporate perspective, both within the United States and internationally. Served as a Member of the Board of the American Industrial Health Council from 1998-2000. Still within this role, he remains active with the trade associations on emerging toxicology issues, is currently a member of ACC's Public Health Science Policy and Children's Health Teams, and remains the company's expert on endocrine effects, biomonitoring, nanotechnology, fluorochemicals, toxicogenomics and biocides.

Zoeller, Thomas

University of Massachusetts at Amherst

Dr. R. Thomas Zoeller is Professor and Chairman of the Department of Biology at the University of Massachusetts-Amherst. Dr. Zoeller received his Bachelor's degree in Biology at Indiana University-Bloomington, followed by a Master's of Science and Ph.D. degrees at Oregon State University. He pursued postdoctoral studies in molecular endocrinology and neuroendocrinology at the National Institutes of Mental Health and Neurological Disorders and Stroke in Bethesda, MD. His first academic appointment was as Assistant Professor in the Department of Anatomy and Neurobiology, University of Missouri-Columbia School of Medicine. He later joined the Biology Department at the University of Massachusetts-Amherst, becoming appointed as Professor and later as Chairman. Dr. Zoeller is on the Editorial Board of Endocrinology and Environmental Toxicology and Pharmacology. He was a member of the U.S. EPA's EDSTAC Screening and Testing Workgroup as well as on the peer review panels for EPA's risk assessment for Perchlorate. Dr. Zoeller was named "Scientist of the Year – 2002" by the Learning Disabilities Association of America and won the Samuel F. Conti Award for Research Excellence at the University of Massachusetts-Amherst. His research is funded by the U.S. EPA, the NSF, and the National Institute of Environmental Health Science.

ATTACHMENT 3

List of Commenters on the “Short List” Candidates

1. Dr. Robert Rickard, Dupont Fluoroproducts
2. Dr. Larry Zobel, 3M Center
3. Dr. Timothy Kropp, Environmental Working Group
4. Mr. Merrill Goozner, Center for Science in the Public Interest