

**AGENDA**  
**U.S. Environmental Protection Agency**  
**Science Advisory Board Hydraulic Fracturing Research Advisory Panel**  
**Public Meeting, October 28-30, 2015**  
Washington Plaza Hotel, 10 Thomas Circle, NW, Washington, DC 20005

**As of October 26, 2015**

**Purpose:** To conduct a peer review of the EPA draft report, *Assessment of the Potential Impacts of Hydraulic Fracturing for Oil and Gas on Drinking Water Resources (External Review Draft, EPA/600/R-15/047, June 2015)*

**Wednesday, October 28, 2015**

9:00 - 9:20 a.m.	<b>Convene Meeting</b>	Mr. Edward Hanlon <i>Designated Federal Officer</i>
	<b>Welcoming Remarks</b>	Mr. Thomas H. Brennan <i>Deputy Director</i> <i>EPA Science Advisory Board</i> <i>Staff Office</i>
	<b>Purpose of Meeting and Review of Agenda</b>	Dr. David A. Dzombak <i>Chair</i>
9:20 - 10:05 a.m.	<b>Remarks from EPA's Office of Research and Development</b>	Dr. Thomas Burke <i>EPA Science Advisor and</i> <i>Deputy Assistant</i> <i>Administrator for the EPA</i> <i>Office of Research and</i> <i>Development</i>
		Dr. Jeffrey Frithsen <i>National Center for</i> <i>Environmental Assessment,</i> <i>EPA Office of Research and</i> <i>Development</i>
10:05 - 10:15 a.m.	<b>Review of Charge Questions</b>	Dr. Dzombak and Panel Members
10:15 - 10:30 a.m.	<b>Break</b>	
10:30 - Noon	<b>Public Comments</b>	Registered Speakers

**Wednesday, October 28, 2015 (continued)**

Noon – 1:15 p.m.    **Lunch**

1:15 - 1:45 p.m.    **Public Comments (continued)**

Registered Speakers

**Discussion of Panel's Responses to EPA Charge Questions**

1:45 - 3:30 p.m.    **Charge Question 1 – Goals, Background and History of the Assessment**

Lead Discussants:  
Drs. Bloomfield, Bohlen,  
Boyer, Ensor, and Faustman

**Charge Question 2 – Water Acquisition Step in the Hydraulic Fracturing Water Cycle**

Lead Discussants:  
Dr. Boyer; Mr. Fontana; and  
Drs. Goode, Randtke and  
Saiers

3:30 - 3:45 p.m.    **Break**

3:45 - 5:30 p.m.    **Charge Question 3 – Chemical Mixing Step in the Hydraulic Fracturing Water Cycle**

Lead Discussants:  
Drs. Almond, Bohlen, Dunn-  
Norman, Ensor, Faustman,  
Goode, Honeyman, and Jack;  
Mr. Malouta; and Drs.  
Miller, Tutuncu and Young

3:45 - 5:30 p.m.    **Charge Question 4 – Well Injection Step in the Hydraulic Fracturing Water Cycle**

Lead Discussants:  
Drs. Bair, Davis, Dunn-  
Norman, and Ensor; Mr.  
Fontana; Drs. Goode and  
Honeyman; Messrs. Hufford  
and Malouta; and Drs.  
Miller, Pyrak-Nolte, Ryan,  
Tutuncu, Westerhoff and  
Young

5:30 p.m.    **Recess for the Day**

**Thursday, October 29, 2015**

8:30 a.m.                    **Reconvene**

**Discussion of Panel's Responses to EPA  
Charge Questions (continued)**

8:30 - 10:15 a.m.        **Charge Question 4 (continued) –  
Well Injection Step in the Hydraulic  
Fracturing Water Cycle**

**Charge Question 5 – Flowback and  
Produced Water Step in the Hydraulic  
Fracturing Water Cycle**

Lead Discussants:  
Drs. Almond, Bohlen,  
Brantley, Ducoste, and  
Dunn-Norman; Messrs.  
Fontana, Hufford and  
Malouta; and Drs. Miller,  
Tutuncu, Westerhoff and  
Young

10:15 - 10:30 a.m.      **Break**

10:30 - 12:15 p.m.     **Charge Question 5 (continued) –  
Flowback and Produced Water Step in  
the Hydraulic Fracturing Water Cycle**

**Charge Question 6 – Wastewater  
Treatment and Waste Disposal Step in  
the Hydraulic Fracturing Water Cycle**

Lead Discussants:  
Drs. Ducoste, Randtke and  
Westerhoff

12:15 - 1:30 p.m.      **Lunch**

1:30 - 3:30 p.m.        **Charge Question 7 – Chemicals Used or  
Present in Hydraulic Fracturing Fluids**

Lead Discussants:  
Drs. Almond, Bloomfield,  
Bruckner, DeGeorge,  
Faustman, Jack and Li

**Charge Question 8 – Synthesis of Science  
on Potential Impacts of Hydraulic  
Fracturing on Drinking Water Resources,  
and Executive Summary**

Lead Discussants:  
Drs. Bair, Bruckner, Davis,  
DeGeorge, Li, Pyrak-Nolte,  
Ryan and Saiers

**Thursday, October 29, 2015 (continued)**

3:30 - 3:50 p.m.	<b>Brief Clarifying Comments from Members of the Public</b>	
3:50 - 4:00 p.m.	<b>Recap and Preparation for Writing Session</b>	Dr. Dzombak
4:00 - 5:30 p.m.	<b>Writing Session by Panel Subgroups</b>	Dr. Dzombak and Panel
	Charge Question 1 – Goals, Background and History of the Assessment	Drs. Bloomfield, Bohlen*
	Charge Question 2 – Water Acquisition Step in the Hydraulic Fracturing Water Cycle	Dr. Boyer* <sup>1</sup> , Mr. Fontana, Dr. Goode
	Charge Question 3 – Chemical Mixing Step in the Hydraulic Fracturing Water Cycle	Drs. Honeyman*, Miller, Young
	Charge Question 4 – Well Injection Step in the Hydraulic Fracturing Water Cycle	Drs. Davis, Dunn-Norman, Ensor, Mr. Malouta*, Drs. Pyrak-Nolte, Tutuncu
	Charge Question 5 – Flowback and Produced Water Step in the Hydraulic Fracturing Water Cycle	Drs. Almond, Brantley*, Mr. Hufford
	Charge Question 6 – Wastewater Treatment and Waste Disposal Step in the Hydraulic Fracturing Water Cycle	Drs. Ducoste, Randtke, Westerhoff*
	Charge Question 7 – Chemicals Used or Present in Hydraulic Fracturing Fluids	Drs. Bruckner, DeGeorge, Faustman, Jack, Li*, Ryan
	Charge Question 8 – Synthesis of Science on Potential Impacts of Hydraulic Fracturing on Drinking Water Resources, and Executive Summary	Drs. Bair, Dzombak, Saiers*
5:30 p.m.	<b>Recess for the Day</b>	

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<sup>1</sup> \* = Lead Writer

**Friday, October 30, 2015**

8:30 a.m.	<b>Reconvene</b>	
8:30 - 10:30 a.m	<b>Discussion of Key Points in Responses to Charge Questions</b>	Dr. Dzombak and Panel Members
	Charge Question 1	Dr. Bohlen
	Charge Question 2	Dr. Boyer
	Charge Question 3	Dr. Honeyman
	Charge Question 4	Mr. Malouta
	Charge Question 5	Dr. Brantley
	Charge Question 6	Dr. Westerhoff
	Charge Question 7	Dr. Li
	Charge Question 8	Dr. Saiers
10:15 - 10:30 a.m.	<b>Break</b>	
10:30 a.m.-12:30 p.m	<b>Discussion of Key Points in Responses to Charge Questions (continued)</b>	Dr. Dzombak and Panel Members
12:30 - 12:45 p.m.	<b>Summary and Next Steps</b>	Dr. Dzombak
12:45 p.m.	<b>Adjourn</b>	Mr. Hanlon