

**Food and Drug Administration  
Center for Drug Evaluation and Research**

**Summary Minutes of the Meeting of the Advisory Committee for Pharmaceutical  
Science and Clinical Pharmacology  
July 22, 2008**

*Topics: The committee did the following: (1) received presentations from the Office of Pharmaceutical Science (OPS) and discussed current thinking on issues pertaining to the use of nanotechnology in drug manufacturing, drug delivery, or drug products, and (2) received an update from OPS, discussed, and made comments on current strategies and directions for the testing of lead in pharmaceutical products.*

These summary minutes for the July 22, 2008 meeting of the Advisory Committee for Pharmaceutical Science and Clinical Pharmacology were approved on August 6, 2008.

I certify that I attended the July 22, 2008 meeting of the Advisory Committee for Pharmaceutical Science and Clinical Pharmacology meeting and that these minutes accurately reflect what transpired.

\_\_\_\_\_  
-s-  
Diem-Kieu H. Ngo, Pharm.D., BCPS  
(Acting Designated Federal Official)

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-s-  
Kenneth R. Morris, Ph.D.  
(Chair)

**Summary Minutes of the Meeting of the Advisory Committee for Pharmaceutical Science  
and Clinical Pharmacology  
July 22, 2008**

The following is the final report of the meeting of the Advisory Committee for Pharmaceutical Science and Clinical Pharmacology held on July 22, 2008. A verbatim transcript will be available in approximately six weeks, sent to the Division and posted on the FDA website at <http://www.fda.gov/ohrms/dockets/ac/cder08.html#PharmScience>

All external requests for the meeting transcripts should be submitted to the CDER Freedom of Information Office.

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The Advisory Committee for Pharmaceutical Science and Clinical Pharmacology of the Food and Drug Administration, Center for Drug Evaluation and Research, met on July 22, 2008 at the Food and Drug Administration, Center for Drug Evaluation and Research Advisory Committee Conference Room, Rm. 1066, 5630 Fishers Lane, Rockville, MD. Prior to the meeting, the members and temporary voting members were provided the background materials from the FDA. The meeting was called to order by Kenneth R. Morris, Ph.D. (Chair); the conflict of interest statement was read into the record by Diem-Kieu H. Ngo, Pharm.D., BCPS (Designated Federal Official). There were approximately eighty people in attendance for Topic #1 (nanotechnology in drug manufacturing, drug delivery, or drug products) and sixty people in attendance for Topic #2 (lead in pharmaceutical products). There was one Open Public Hearing (OPH) speaker.

**Issue:** On July 22, 2008, the committee did the following: (1) received presentations from the Office of Pharmaceutical Science (OPS) and discussed current thinking on issues pertaining to the use of nanotechnology in drug manufacturing, drug delivery, or drug products, and (2) received an update from OPS, discussed, and made comments on current strategies and directions for the testing of lead in pharmaceutical products.

**Attendance:**

**Advisory Committee for Pharmaceutical Science and Clinical Pharmacology members present (voting):** Kenneth R. Morris, Ph.D. (Chair); Carol A. Gloff, Ph.D.; Merrill Gozner (Consumer Representative); Marilyn E. Morris, Ph.D.; Anne S. Robinson, Ph.D.; Elizabeth M. Topp, Ph.D.; Jessie L-S. Au, Pharm.D., Ph.D. (participated in Topic #2 only; recused for Topic #1)

**Advisory Committee for Pharmaceutical Science and Clinical Pharmacology members absent (voting):** John F. Carpenter, Ph.D.

**Temporary Voting Members:** Jerry M. Collins, Ph.D.; Arthur H. Kibbe, Ph.D.; Melvin V. Koch, Ph.D.; Marvin C. Meyer, Ph.D.; Harriet B. Nembhard, Ph.D.

**Industry Representatives present (non-voting):** Richard J. Stec, Jr., Ph.D.; Patricia C. Tway, Ph.D.

**Industry Representatives absent (non-voting):** Mukul A. Agrawal, Ph.D.; Philip R. Mayer, Ph.D.

**FDA Participants (non-voting):** Helen Winkle; Keith Webber, Ph.D.; Norman Schmuff, Ph.D. (Topic #2 only)

**Open Public Hearing Speaker:** Connie Weaver, M.D.

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*The agenda was as follows:*

8:30 a.m.	Call to Order and Opening Remarks	<b>Ken R. Morris, Ph.D.</b> Chair Advisory Committee for Pharmaceutical Science and Clinical Pharmacology (ACPS-CP)
	Introduction of Committee	
	Conflict of Interest Statement	<b>Diem-Kieu H. Ngo, Pharm.D., BCPS</b> Acting Designated Federal Official
8:45 a.m.	Welcome, Introductory Remarks, and OPS Update	<b>Helen Winkle</b> Director, Office of Pharmaceutical Science (OPS) Center for Drug Evaluation and Research (CDER), FDA
9:15 a.m.	<b>Topic 1: Nanotechnology in Drug Manufacturing, Drug Delivery, and Drug Products</b>	
	Topic Introduction	<b>Keith Webber, Ph.D.</b> Deputy Director, OPS, CDER, FDA
	CYT-6091 (Aurimune™): A Model Nanomedicine	<b>Lawrence Tamarkin, Ph.D.</b> President & CEO CytImmune Sciences, Inc.
10:15 a.m.	<b>BREAK</b>	
10:30 a.m.	Nanoparticle Technology: Leveraging Rapid Dissolution to Improve Performance of Poorly Water-soluble Drugs	<b>Stephen B. Ruddy, Ph.D.</b> Senior Director, Pharmaceutical Development Elan NanoSystems
	Nanotools for Toxicity Assessment of Nanomedicines	<b>Darin Y. Furgeson, Ph.D.</b> Assistant Professor of Pharmaceutical Sciences and Biomedical Engineering, Biomedical Engineering Center for Translational Research University of Wisconsin-Madison
	<b>Committee discussions and recommendations</b>	
12:00 p.m.	<b>LUNCH</b>	
1:00 p.m.	Open Public Hearing	
2:00 p.m.	<b>Topic 2: Lead in Pharmaceutical Products</b>	
	Historical Background and Introduction	<b>Norman Schmuft, Ph.D.</b> Branch Chief, Division of Pre-Marketing Assessment II, Office of New Drug Quality Assessment (ONDQA), OPS, CDER, FDA
	Effects of Lead Exposure in Adults, Children, and Special Populations	<b>Susan Cummins, M.D., M.Ph.</b> Senior Science Advisor

Pediatric and Maternal Health Staff (PMHS)  
Office of New Drugs (OND), CDER, FDA

FDA Drug Product Survey

**John Kauffman, Ph.D.**

R&D Team Leader, Division of Pharmaceutical  
Analysis (DPA), Office of Testing and Research  
(OTR), OPS, CDER, FDA

3:15 p.m. **BREAK**

3:30 pm USP Controls on Lead in Pharmaceutical  
Products

**Darrell Abernethy, M.D., Ph.D.**

Chief Science Officer  
United States Pharmacopeia

CFSAN's Approach to Setting Lead Limits

**Michael E. Kashtock, Ph.D.**

Supervisory Consumer Safety Officer  
Division of Plant and Dairy Food Safety,  
Office of Food Safety, Center for Food Safety and  
Applied Nutrition (CFSAN), FDA

Topic Summary and Questions

**Norman Schmuff, Ph.D.**

*Committee discussions and recommendations*

5:00 p.m. **ADJOURNMENT**

### **Topic #1: Nanotechnology in Drug Manufacturing, Drug Delivery, and Drug Products**

#### **Questions to the Committee:**

1. Is specific CDER guidance needed for the development of nanotechnology derived drug applications?  
(Yes/No/Abstain)

#### **Committee Discussion:**

*Some of the committee members stated that the Agency does not have enough information about nanotechnology drug products to provide guidance on the topic at this time and that some current guidance for conventional drug products may be applicable to nanotechnology drug products. The committee noted that Quality by Design (QbD) concepts should always apply. Other members stated that guidance will inform firms of issues that should be anticipated (presupposing that industry will adequately share relevant data with the FDA). (See Transcript for Complete Discussion)*

**Yes: 5      No: 5      Abstain: 1**

2. If guidance is needed from CDER, what areas should these guidances focus on?

#### **Committee Discussion:**

*The committee came to a consensus that if CDER guidance is needed, that it focus on the following: the unique characteristics of nanotechnology drug products to include stability of the compound and the device, and the products' biodistribution; the impact of safety of these products (particularly, how safety may be different than that of conventional drug products); and the environmental consequences of the compound and the technology used. (See Transcript for Complete Discussion)*

3. For regulatory purposes, what elements or factors should CDER consider incorporating into a definition of nanotechnology?

**Committee Discussion:**

*The committee recommended that CDER consider the following elements or factors in defining nanotechnology: intended and unintended functionality of the product; the difference between altering an existing product versus a new material; and changes that may occur if modifications are made to the equipment or process of manufacturing. The committee also noted that a product that has a previous form or a simple function should not exclude it as being defined as a nanotechnology product. (See Transcript for Complete Discussion)*

**Topic #2: Lead in Pharmaceutical Products**

**Question to the Committee:**

1. What additional information would be necessary for us to gather to appropriately determine the next steps?

**Committee Discussion:**

*The committee recommended that FDA and USP should work together to progress this issue. They further recommended that the following information be gathered in order to determine the next steps: toxicology limits based on exposure for different populations or demographics (i.e., patients with End Stage Renal Disease, pediatric population), and the synergistic effects of other products and components on lead. Additionally, the committee recommended that acceptable lead limits should not be set based on the limits of detection of an analytical procedure. There was concern voiced about the inadequacy of the USP Heavy Metals monograph test. (See Transcript for Complete Discussion)*

The meeting was adjourned at approximately 5:00 p.m.