

Computer Controlled Aerosol Generator With Multi-Walled Carbon Nanotube Inhalation Testing Capabilities

Description of Technology: This invention pertains to a CDC-NIOSH developed sonic aerosol generator that provides a controllable, stable concentration of particulate aerosol over a long period of time for aerosol exposure studies. Specifically, in situ testing data indicate uniform aerosol stability can be maintainable for greater than 30 hours at concentrations of 15 mg/m³ or more. Additionally, the technology was specifically developed for, and validated in, animal studies assessing exposure to airborne multi-walled carbon nanotubes (MWCNT). It has been suggested that workers may be at risk for exposure to nanosized particles during the manufacture, handling, and cleanup of engineered nanomaterials. Compared to other technologies, this NIOSH aerosol generator is particularly helpful when used for generating high testing concentrations of MWCNT aerosols that more accurately represent particulate levels that may be seen in a workplace environment.

Potential Commercial Applications:

- Studying the size and shape of the aerosolized particles produced from simple vibrations of bulk material
- Toxicological investigations and risk assessment of aerosol exposures, especially those related to nanoparticle manufacturing.
- Any aerosolization application where the aggregating “bird’s nest” tendencies of airborne multi-walled carbon nanotubes must be overcome

Competitive Advantages:

- Fully automated system with integrated feedback control for optimized stability in testing
- Maintains concentration of aerosols for >30 hours at concentrations of 15 mg/cubic meter or more
- Capable of generating high concentrations of aerosols that more accurately represent the levels seen in a workplace environment
- System insures that each run produces a constant particle concentration, air flow, pressure, temperature and humidity within a testing chamber

Development Stage:

- In vitro data available
- In vivo data available (animal)
- In situ data available (on-site)
- Prototype

Inventors: Walter G. McKinney, David G. Frazer, Bean Chen (all of CDC)

Publications:

1. McKinney W, et al. Computer controlled multi-walled carbon nanotube inhalation exposure system. *Inhal Toxicol.* 2009 Oct;21(12):1053–61. [PMID 19555230]
2. Porter DW, et al. Acute pulmonary dose-responses to inhaled multi-walled carbon nanotubes. *Nanotoxicology.* 2013 Nov;7:1179–94. [PMID 22881873]
3. Porter DW, et al. Mouse pulmonary dose- and time course-responses induced by exposure to multi-walled carbon nanotubes. *Toxicology.* 2010 Mar 10;269(2–3):136–47. [PMID 19857541]
4. Chen BT, et al. Multi-walled carbon nanotubes: sampling criteria and aerosol characterization. *Inhal Toxicol.* 2012 Oct;24(12):798–820. [PMID 23033994]

Intellectual Property: HHS Reference No. E–156–2013/0—U.S. Patent Application No. 12/871,453 filed 30 Aug 2010.

Licensing Contact: Whitney Blair, J.D., M.P.H.; 301–435–4937; whitney.blair@nih.gov.

Dated: March 10, 2014.

Richard U. Rodriguez,

Director, Division of Technology Development and Transfer, Office of Technology Transfer, National Institutes of Health.

[FR Doc. 2014–05472 Filed 3–12–14; 8:45 am]

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DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

Eunice Kennedy Shriver National Institute of Child Health & Human Development; Notice of Meeting

Pursuant to section 10(d) of the Federal Advisory Committee Act, as amended (5 U.S.C. App.), notice is hereby given of the following meeting.

The meeting will be open to the public, with attendance limited to space available. Individuals who plan to attend and need special assistance, such as sign language interpretation or other reasonable accommodations, should notify the Contact Person listed below in advance of the meeting.

Name of Committee: National Institute of Child Health and Human Development Special Emphasis Panel; Collaborative Perinatal Project (CPP) Mortality Linkage Study Data Coordinating Center.

Date: April 8, 2014.

Time: 2:00 p.m. to 5:00 p.m.

Agenda: To provide concept review of proposed concept review.

Place: National Institutes of Health, 6100 Executive Boulevard, Rockville, MD 20852, (Telephone Conference Call).

Contact Person: Sathasiva B. Kandasamy, Ph.D., Scientific Review Officer, Division of Scientific Review, National Institute of Child Health and Human Development, 6100 Executive Boulevard, Rockville, MD 20892–

9304, (301) 435–6680, skandasa@mail.nih.gov.

(Catalogue of Federal Domestic Assistance Program Nos. 93.864, Population Research; 93.865, Research for Mothers and Children; 93.929, Center for Medical Rehabilitation Research; 93.209, Contraception and Infertility Loan Repayment Program, National Institutes of Health, HHS).

Dated: March 7, 2014.

Michelle Trout,

Program Analyst, Office of Federal Advisory Committee Policy.

[FR Doc. 2014–05474 Filed 3–12–14; 8:45 am]

BILLING CODE 4140–01–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

National Heart, Lung, and Blood Institute; Notice of Closed Meetings

Pursuant to section 10(d) of the Federal Advisory Committee Act, as amended (5 U.S.C. App.), notice is hereby given of the following meetings.

The meetings will be closed to the public in accordance with the provisions set forth in sections 552b(c)(4) and 552b(c)(6), Title 5 U.S.C., as amended. The grant applications and the discussions could disclose confidential trade secrets or commercial property such as patentable material, and personal information concerning individuals associated with the grant applications, the disclosure of which would constitute a clearly unwarranted invasion of personal privacy.

Name of Committee: National Heart, Lung, and Blood Institute Special Emphasis Panel; Resource-Related Research Projects in Lung Diseases.

Date: April 8, 2014.

Time: 8:30 a.m. to 4:30 p.m.

Agenda: To review and evaluate grant applications.

Place: Embassy Suites Chevy Chase Pavilion, 4300 Military Road NW., Washington, MD 20015.

Contact Person: Susan Wohler Sunnarborg, Ph.D. Scientific Review Officer, Office of Scientific Review/DERA, National Heart, Lung, and Blood Institute, 6701 Rockledge Drive, Room 7182, Bethesda, MD 20892 sunnarborgsw@nhlbi.nih.gov.

Name of Committee: National Heart, Lung, and Blood Institute Special Emphasis Panel; Ancillary Studies in Clinical Trials.

Date: April 11, 2014.

Time: 8:00 a.m. to 3:00 p.m.

Agenda: To review and evaluate grant applications.

Place: Hilton Garden Inn Washington DC/Bethesda, 7301 Waverly St., Bethesda, MD 20814.

Contact Person: Kristen Page, Ph.D., Scientific Review Officer, Office of Scientific Review/DERA, National Heart, Lung, and