

Radioactive Air Sampling Methods

**Mark L. Maiello, Ph.D.
R&D Environmental Health & Safety**

**April, 2006
Argonne National Laboratory
U.S. Department of Energy**

**Wyeth
Research**

Greetings

- **Thank you...**

- ▶ For making Radioactive Air Sampling Methods the Topic for the 18th AMUG Meeting
- ▶ For inviting me to your meeting
- ▶ For inviting me back to a DOE facility (1st time at Argonne Nat'l Lab)
- ▶ Former U.S. DOE employee...my wife is employed at US DHS/EML in NYC

- **Regrets:**

- ▶ Mark Hoover with us electronically only (but can do 3 days)
- ▶ Maiello here only for 2 days (both due to travel budget restrictions).

Mark Maiello

A Brief Introduction

- **Radiation Safety Officer – Pearl River, NY Facility**
- **Former US DOE physical scientist: 1986-1990**
 - ▶ Environmental Measurements Laboratory, New York City
- **Environmental Remediation**
 - ▶ CoPhysics Corporation, Orange County, NY
- **New York University**
 - ▶ Institute of Environmental Medicine, Ph.D., 1986
 - Radon Daughter Measurements w/ electrostatic collection & TLDs
- **Memberships:**
 - ▶ Health Physics Society (1981 (Student/Teacher Workshop Committee, History Comm), American Nuclear Society, Sigma Xi, NY Academy of Sci
- **Health Physics News**
 - ▶ Contributing Editor (currently)
 - ▶ Approx. 40 publications (radon, environmental background, homeland security, editorials)
- **Contributor to *Aerosols Handbook* by L. Ruzer and N. Harley (CRC, 2005)**

Wyeth Research

- **Wyeth Research**

- ▶ Pharmaceutical, biotech, consumer health care and animal health care R&D company & manufacturer
 - Centrum vitamins, Chap Stick, Robitussin, Anbesol
 - Mylortarg (cancer), Enbrel (arthritis), Effexor (depression)

- **Air Monitoring: Radiosynthesis Laboratories**

- ▶ Use of H-3 and Carbon-14 in organic chemistry procedures (syntheses)
- ▶ Experimental compounds are tagged with either isotope for metabolism studies
- ▶ Roughly 3.5 Ci of H-3 or 200 – 300 mCi of C-14 are used per synthesis
- ▶ Permitted emission point (New York State DEC) with emissions limits of 800 mCi (C-14), 5000 mCi H-3.
- ▶ Daily stack sampling required using gas bubbling system for C-14 and H-3 (augmented w/ H-3 ion chamber)

Radioactive Air Sampling Methods

The Book's History

- **1993 or 1994: Andrew Hull (BNL) put out a call for assistance w/ the updating of the Radioactive Air Methods Chapter of *Methods of Air Sampling and Analysis, 4th Ed.*, by James P. Lodge, Jr.**
 - ▶ Which Health Physics Meeting did he do that?
 - 38th in Atlanta or the 39th in San Fran?
- **July 13, 1994**
 - ▶ Maiello agrees to assist Andy Hull, then chair of Subcommittee 8 of the Intersociety Committee.
- **June 2, 1995**
 - ▶ Maiello made chair of Subcommittee 8 (Andy steps down)

Radioactive Air Sampling Methods

A Brief Long History

- **Intersociety Committee (ISC)**

- ▶ 3rd Ed. Sponsors of Book: Air Pollution Control Society, American Chemical Society, American Institute of Chemical Engineers, American Public Works Association, American Society of Civil Engineers, American Society of Mechanical Engineers, Association of Official Analytical Chemists, Instrument Society of America and the Health Physics Society.
- ▶ Previous Subcommittee 8 (Radioactive Compounds) Chairs:
 - Bernard Shleien, Donald C. Bogen (EML), and Andy Hull (BNL).

- **3rd and 4th edition Editor: James P. Lodge**

- **Executive Secretary (ISC): Richard J. Thompson**

Radioactive Air Sampling Methods

Brief Long History

- Work progressed on the book thru 1995 to 2001 with at least 2 mark-up sessions
- Hull passes away in March, 1999
- Lodge passes away December 14, 2001
- Exec. Sec., Dick Thompson, in poor health, passes torch to Dr. Judith Chow (Desert Research Inst, Las Vegas) and Dr. Delbert Eatough (Brigham Young University)
- March, 2001: torch still burning
- Along about December, 2003, indications that Chow and Eatough drop the torch (no further contact since that time)
- March 2004: Maiello inquires if CRC would be interested in publishing Radioactivity Methods as stand alone book...encouraged

Radioactive Air Sampling Methods

Brief Long History

- Spring 2004: Maiello informs Subcommittee 8 contributors of intention to send CRC a book proposal
- Spring 2004: Hoover jumps on board
- May 2004: Maiello writes book proposal and submits to CRC
- July 2004: reviews of proposal received and answered... **Good news:** book approved!
- End of 2004: contract w/ CRC signed
- **Bad news:** Thanksgiving 2005: Hoover & wife suffer car accident!!!
- **More “bad news:”** book to be finished in 2006!
- April 2006: 18th Annual AMUG Meeting
- **Moral: Almost 12 years of hanging on might pay off!**

Radioactive Air Sampling Methods

Deadline

- **Winter 2006: Deadline**

- ▶ *Reasons: Contractual agreement with CRC*
- ▶ *Marketing and promotion of the book affected*
- ▶ *Must show CRC we're reliable if we want to do a 2nd Ed.*

- **Objective:**

- ▶ The book is an introduction to the subject matter