

Radioactive Air Sampling Methods: 2009 Progress Report

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NIOSH - Centers for Disease Control

May 4-6 2009

21st AMUG Meeting

Las Vegas Nevada

Wyeth
Research

Special Mention: Thanks for Helping

- **Our Reviewers**

- ▶ Dr. Hung Cheng Chiou, Sandia National Lab, NM
- ▶ Dennis Brown, ECC, Colorado

Progress on the Book Continues

Book Components

Part I - Objectives, Safety Issues, Standards, and a Methods Development Approach for Sampling Airborne Radioactivity

*Chap 1 - Objectives for Sampling Airborne Radioactivity – Mark D. Hoover & Mark L. Maiello **Done!***

*Chap 2 - Radiation Safety Issues for Air Sampling – Mark L. Maiello & Mark D. Hoover **Done!***

*Chap 3 - Standards, Guidelines, Regulations, and Recommendations for Measuring Airborne Radioactivity – Mark D. Hoover, Morgan Cox, Cyndi G. Jones, Liliane Grivaud, Mark L. Maiello, Michelle L. Johnson, George J. Newton **Done!***

*Chap 4 - Life Cycle Approach to Development and Application of Air Sampling Instruments and Methods – Mark D. Hoover & Morgan Cox **Done!***

Progress on the Book

Part II - Fundamentals of Radioactivity and Radioactive Aerosols

Chap 5 - Review of Radioactivity, Detection and Measurement

– Mark L. Maiello **FINAL R**

*Chap 6 - Aerosol Physics – Erno Sajo **Done!***

Chap 7 - Behavior of Radioactive Aerosols and Gases – Mark D. Hoover



Chap 8 - Principals of Filtration – Mark D. Hoover



*Chap 9 - Radon and Radon Decay Product Issues For Radioactive Air Sampling – Philip Jenkins **Done!***

Chap 10 - Internal Dosimetry of Inhaled Radioactive Aerosols

– Charles A. Potter **FINAL R**

- **FINAL R** = reviewed

- **Done!** = completed since

last AMUG meeting



= Mark Hoover is working on it

Progress on the Book

Part III - Fundamentals of Sampling System Design and Operation for Airborne Radioactivity

Chap 11 - Basic Air Sampling Equipment – Mark L. Maiello **FINAL R**

Chap 12 - Calibration of Air Sampling Equipment – James T. Voss and Jeffrey J. Whicker **Final R**

Appendix – Calibration of Rotometers – Mark D. Hoover



Chap 13 - Principles for Air Sampler Placement in the Workplace – Jeffrey J. Whicker **FINAL R**

Chap 14 - The Practice of Continuous Air Monitoring for Alpha-Emitting Radionuclides – John C. Rodgers **FINAL R**

Chap 15 - Principles for Sampling Airborne Radioactivity from Stacks – John Glissmeyer **FINAL R**

Chap 16 - Other Aerosol Characterization Techniques – Mark D. Hoover



Progress on the Book

Part IV - Non-Routine Radioactive Air Sampling

Chap 17 - Emergency Situation Air Sampling – Robert B. Hayes **FINAL R**

Appendix First Responder Radiological Monitoring - Thomas F. O'Connell and Stephen Clendenin **FINAL R**

Chap 18 - Monitoring Nuclear Fallout – Harold Beck **FINAL R**

Chap 19 - Air Sampling In Extreme Environments – Mark D. Hoover



Appendix – Radionuclide Characteristics – Mark Maiello **FINAL R**

Glossary – Mark Maiello and Morgan Cox **FINAL R**

Publication Date: 2010

- **According to CRC, had we completed the manuscript and submitted it in March, we had a 2009 publication date.**
- **Because we missed it, we are looking at sometime in 2010.**

Mark's Remaining Work & Status

(E-mail of 4/30/09)



Expected NIOSH approval date: **June 5**

- Ch 6. Aerosol Behavior - (90% completed)
- Ch 8. Filtration - (95%)
- Ch 16. Special Characterization Techniques - (90%)
- Ch 19. Extreme Environments - (80%)
- Method - Rotometers - (80%)

▶ Mark told me he is on leave this week at home intending to write...

Some Book Statistics

As Of 4/27/09

Number of Contributors*

- *Total:* **28**
- *Chapter Authors:* **18**
- *Method Reviewer/Writers:* **10**
- *Book Reviewers:* **2**

* *Not including Mark M. & Mark H.*

Some Book Statistics: Chapters

As Of 4/28/09

Number of Tables

- **Total: 27**

Number of Figures

- **Total: 96**

Number of Pages

- **Chapters: 612 manuscript* = 306 printed pages**
- **Longest Chapters**
 - ▶ 6-Aerosols-Sajo (24,872 words, 116 mp)
 - ▶ 10-CAM- Rodgers (15,520w, 55 mp)
 - ▶ 5 – Radioactivity – Maiello (11,727w, 50 mp)
 - ▶ 11 –Air Sampling Equip – Maiello (9641w, 43 mp)
 - ▶ 15-Stack – Glissmeyer (8,015w, 45 mp)
 - ▶ 18 –Fallout – Beck (7842w, 27 mp)
 - ▶ 13– Placement –Whicker (5611, 22 mp)

Some Book Statistics

As Of 4/28/09

Definitions In Glossary

280+ definitions

31 manuscript pages

Some Book Statistics: Methods & Grand Totals

As Of 4/28/09

Number of Tables

- **Total: 8**

Number of Figures

- **Total: 18**

Number of Pages

- **Methods: 254 = 127 printed pages**
- **Longest Methods**
 - ▶ 8 – Radon – Jenkins (53 mp)
 - ▶ 9- Pu – Hoover (30 mp)



Grand Number of Tables

- **Total: 35**

Grand Number of Figures

- **Total: 114**

Number of Pages

- **Book (including Intro Material, Glossary, Appendix but not index): 876 mp = 438 printed pages**
(with 4 chapters and 1 appendix or “method” to go)

mp = manuscript pages

CRC Press Website Listing

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Radioactive Air Sampling Methods

Mark Maiello, Wyeth Research, Pearl River, New York, USA; Mark Hoover, Morgantown, West Virginia, USA

Price: ~~\$129.95~~ **\$116.96** ← Price cut!?

Cat. #: 9717
ISBN: 9780849397172
ISBN 10: 0849397170
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Summary Table of Contents Author/Author Affiliation Reviews Downloads & Updates

Summary

Designed for industrial hygienists, air quality experts, and health physicists, **Radioactive Air Sampling Methods** presents specific techniques for sampling radioactivity in the air. The authors discuss radionuclides found in nature, develop during industrial operations, and those that appear in the aftermath of a catastrophe, such as a nuclear reactor release. They detail step-by-step methods for measuring airborne radioactive substances and include information on sensitivity, possible interferences, and safety precautions for each method and provide the tools needed to perform complete safety analyses.