A 5-Day Short Course

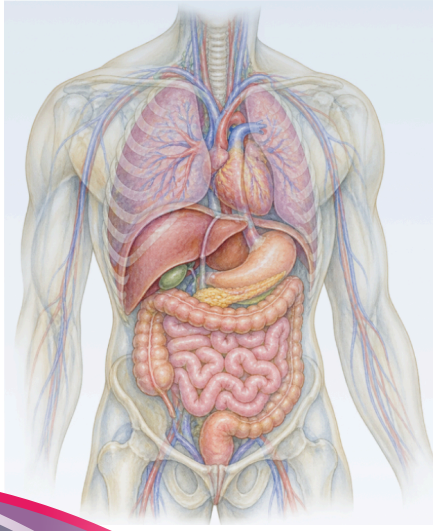
Technical Management Services, Inc.

The training leader for nuclear industry professionals

Internal Dose Assessment

PRACTICAL APPROACHES FOR ASSESSING INTERNAL EXPOSURE

---------- December 7-11, 2026 | Live Instruction Online (Zoom) ----------



COURSE DESCRIPTION

This 5-day course has been developed for health physicists, Radiation Safety Officers, regulators, program auditors and anyone having responsibilities relating to personnel dose assessment.

This course takes the student through the fundamentals of internal dosimetry, including historical and current dose models, to the analysis of actual intakes. The focus of this course is the utilization of both in vitro and in vivo bioassay results in the determination of intake and dose. Significant time is devoted to practical calculations based on realistic intake scenarios. Practical applications of data and interpretation of bioassay results are stressed. Discussions include identifying the source term, collection of pertinent data, application of retention functions, and determination of required bioassay technique sensitivities and identification of analytical parameters which impact the validity of in vivo and in vitro bioassay results. Emphasis is placed on consistency with the EURADOS IDEAS methodology.

The students will become familiar with current documents and references used in internal dosimetry. The course will also address bioassay program development, quality assurance practices, and the application of internal dosimetry software. For on-site training, the course may be customized to address site-specific applications. Please contact TMS for additional information.

The course has application to commercial power reactors, pharmaceutical manufacturers, regulatory agencies, university programs, government laboratories, private industry, fuel fabricators, in short; any program involved in handling dispersible radioactive materials where there is a potential for intakes. Students are encouraged to provide scenarios to the instructor prior to or during the course for review and discussion during the course.

LEARNING OBJECTIVES

Upon completion of this course, participants will be able to....

- Understand what you are really signing when you put your signature on the "reviewed by" line on the in vivo or in vitro bioassay report or that dose assessment.
- Identify appropriate bioassay techniques and analytical sensitivities based on the source term and bioassay counting/ sampling schedule.
- Apply dose models, retention functions and dose coefficients to the estimated radioactive material intake and resulting dose.
- Interpret real-world bioassay data, including the analytical parameters that affect the validity of the results.
- Understand and apply NRC and/or DOE regulatory guidance in estimating radiation dose.
- Design an appropriate site-specific bioassay program, including selection of bioassay methods, establishment of monitoring frequencies, evaluation of potentially missed doses, reporting requirements and identification of data quality objectives and quality assurance measures.

Course Outline

Fundamentals

Dose Models

- Historical models and the central theme of internal dosimetry
- ICRP 26 and ICRP 60 guidance

The current internal dosimetry system: ICRP 30, 60, 66, 67, 78, 100 and the future!

- Structure of the models
- Application of the models
- Interpretation of Bioassay Measurements and application of intake retention factors
- Regulatory guidance

Internal Dosimetry Software Applications

- Examples, examples, examples

Bioassay programs

- Approaches to in vivio and vitro sampling and analysis
- Detection Limits and Sensitivity
- Bioassay Programs
- Calibrations
- QA/QC

COURSE INSTRUCTOR

Dr. Richard Brey

Dr. Richard Brey is an experienced health physicist and consultant specializing in internal dosimetry, radiation protection, and radiation detection and measurement. He earned his Ph.D. and M.S. in Health Physics from Purdue University and is a Certified Health Physicist and Fellow of the Health Physics Society.

He was a professor of Health Physics and Director of the Idaho State University Health Physics Academic Program for over 30 years.

Dr. Brey has extensive experience in research, teaching, and consulting, including internal dose assessment, radioactive material transport modeling, and environmental radioanalysis. He has held numerous academic and leadership positions and has provided professional training in health physics and dosimetry throughout North America. He is also a recipient of the prestigious Elda E. Anderson Award.

COURSE FEE

$1,295 per person

$50 discount for two or more registrants from the same company

Additional registration discount: $50 each if registered 30 or more days prior to the course

HOW TO REGISTER

Visit our website at

www.tmscourses.com

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