

1. Record Nr.	UNINA9910827708203321
Titolo	Human exposure assessment for airborne pollutants : advances and opportunities // Committee on Advances in Assessing Human Exposure to Airborne Pollutants, Board on Environmental Studies and Toxicology, Commission on Geosciences, Environment, and Resources, National Research Council
Pubbl/distr/stampa	Washington, D.C., : National Academy of Sciences, 1991
ISBN	1-280-21238-1 9786610212385 0-309-54353-3 0-585-03020-0
Edizione	[1st ed.]
Descrizione fisica	1 online resource (337 p.)
Disciplina	628.5/3/0287
Soggetti	Air - Pollution - Evaluation Health risk assessment - Methodology Pollutants - Analysis
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references (p. 259-309).
Nota di contenuto	Human Exposure Assessment for Airborne Pollutants -- Copyright -- Preface -- Contents -- Executive Summary -- INTRODUCTION -- THE CHARGE TO THE COMMITTEE -- THE COMMITTEE'S APPROACH TO ITS CHARGE -- RATIONALE FOR PERFORMING EXPOSURE ASSESSMENTS -- FRAMEWORK FOR ASSESSING EXPOSURES TO AIR CONTAMINANTS -- SAMPLING AND PHYSICAL-CHEMICAL MEASUREMENTS -- Quality Control and Quality Assurance -- Sampling Techniques and Strategy -- Instrumental Techniques -- USE OF BIOLOGICAL MARKERS IN ASSESSING HUMAN EXPOSURE TO AIRBORNE CONTAMINANTS -- SURVEY RESEARCH METHODS AND EXPOSURE ASSESSMENT -- MODELS USED IN ASSESSING HUMAN EXPOSURE TO AIRBORNE CONTAMINANTS -- Concentration Models -- Exposure Models -- FUTURE DIRECTIONS FOR EXPOSURE ASSESSMENT -- 1 Principles of Exposure Assessment -- INTRODUCTION -- BACKGROUND -- Exposure Assessment in Environmental Epidemiology -- Exposure Assessment in Occupational

Epidemiology and Risk Management -- Conceptual Framework for Human Exposure Assessment -- Types of Studies -- Community Studies -- Epidemiological Studies -- Industrial Hygiene Studies -- Clinical Case Studies -- Engineering Studies -- Animal Studies -- Pharmacokinetic and Pharmacodynamic Studies -- Behavioral Studies -- SUMMARY -- 2 Framework for Assessing Exposures to Air Contaminants -- INTRODUCTION -- MATHEMATICAL RELATIONSHIPS -- MEASUREMENT AND ESTIMATION TECHNIQUES EMPLOYED IN EXPOSURE ASSESSMENT -- Direct Measures of Exposure -- Personal Monitoring -- Biological Markers -- Indirect Measures of Exposure -- Microenvironmental Measurements -- Questionnaires -- Models -- Mitigation Measures -- INTEGRATION OF EXPOSURE-ASSESSMENT TECHNIQUES -- SUMMARY -- 3 Sampling and Physical-Chemical Measurements -- INTRODUCTION -- QUALITY ASSURANCE -- ERRORS -- Site-Selection Errors -- Collection Errors -- Analytical Errors -- Data-Handling Errors -- AIRBORNE ANALYTES. CRITERIA FOR METHOD SELECTION -- Sensitivity -- Selectivity -- Rapidity -- Comprehensiveness -- Portability -- Cost -- METHODOLOGY -- The Measurement Process -- Sampling -- Passive Sampling -- Active Sampling -- Separation -- Chromatography -- Gas Chromatography -- Liquid Chromatography -- Supercritical Fluid Chromatography -- Permselective Membranes (Microfiltration) -- Sequential Solvent Extraction -- Supercritical Fluid Extraction -- Liquid Chromatography for Sample Preparation -- Detection -- Chromatography Detection Devices -- Nonspecific Detectors -- Selective Ionization Detectors -- Thermal Conduction Devices -- Organoleptic Methods -- Mass Spectrometry -- Mass Spectrometry-Mass Spectrometry -- Ion Mobility Spectrometer -- Electrochemical Detectors -- Potentiometry -- Conductimetry -- Amperometry -- Spectroscopic Detectors -- Infrared Detection -- Microsensors -- Electron Microscopy -- Instrumental Neutron Activation Analysis (INAA) -- Radon and Radon Progeny Measurements -- Radon -- Radon-Decay Products -- Chemometrics -- SUMMARY -- Quality Control/Quality Assurance -- Sampling Techniques and Strategy -- Instrumental Techniques -- Field-Study Instruments -- 4 Use of Biological Markers in Assessing Human Exposure to Airborne Contaminants -- INTRODUCTION -- FROM EXPOSURE TO HEALTH EFFECTS: KINDS OF MARKERS -- APPLICATIONS OF HUMAN BIOLOGICAL MARKERS -- Markers of Exposure -- Markers of Effect -- UTILITY OF BIOLOGICAL MARKERS -- Advantages -- Improved Exposure Assessments -- Validation of Pharmacokinetic Models -- Improvement of Risk Extrapolation -- Timely Identification of Persons or Groups at Increased Risk of Disease -- Improved Epidemiological Study Design and Inference -- Disadvantages and Limitations -- Lack of Validation -- Ambiguity of Many Markers -- Variability of Markers. Difficulty of Establishing Links Between Exposure and Markers of Effect -- Confounding Influences on Biological Markers -- Complexity and Resource Intensiveness -- Use of Exposure Markers in Conjunction with Traditional Measures -- CRITERIA GOVERNING THE VALIDATION AND USE OF BIOLOGICAL MARKERS -- Validation and Selection of Biological Markers -- Exposure Assessment -- Understanding of Pharmacokinetics and Temporal Relevance -- Understanding of "Background" Variability and Confounding Variables -- Reproducibility, Sensitivity, and Specificity -- Feasibility -- Study Design -- Adequate Sample Size -- Appropriate Control Populations -- Control of Potential Confounding Variables -- Use of Batteries of Biological Markers -- Analysis -- ETHICAL ISSUES -- SUMMARY -- 5 Survey Research Methods and Exposure Assessment -- INTRODUCTION -- SAMPLE

SELECTION -- Target Population -- Response Rate -- Sampling Error -- Other Features -- MEASUREMENT APPROACHES -- Direct Approach -- Indirect Approach -- Integrating Personal-Monitor and Diary Information -- Questionnaire Approach -- Factual Questions -- QUESTIONNAIRE FRAMING AND WORDING -- IMPROVING SURVEY QUESTIONS -- INCORPORATING SURVEY-RESEARCH METHODS INTO EXPOSURE ASSESSMENT -- SUMMARY -- 6 Models -- INTRODUCTION -- IMPORTANT MODEL CHARACTERISTICS -- CONCENTRATION MODELS -- Outdoor Models-Contaminant Source Emissions -- Validation -- Contaminant Dispersion -- Atmospheric Chemistry -- Receptor Models -- INDOOR CONTAMINANT CONCENTRATIONS -- Industrial Environments -- Nonindustrial Environments -- Variability in Emission Rates -- Mixing Within and Between Rooms -- Deposition -- Air Cleaning -- Recent Advances -- EXPOSURE-ASSESSMENT MODELS -- Individual Exposures -- Population Exposures -- Temporal Aspects -- SUMMARY -- Concentration Models -- Outdoor -- Indoor -- Indoor-Air Chemistry -- Exposure Models. Source Models -- Validation -- 7 Current and Anticipated Applications -- INTRODUCTION -- VOLATILE ORGANIC COMPOUNDS -- Introduction -- Current Approaches to Exposure Assessment Under the Clean Air Act -- Total Exposure-Assessment Methodology Study -- Overview -- Measurement Methods -- Biological Markers -- Questionnaires -- Models -- Benzene -- Recommendations -- ENVIRONMENTAL TOBACCO SMOKE -- Introduction -- Air-Contaminant Measurement -- Biological Markers -- Questionnaires -- Future Applications -- POLYCYCLIC AROMATIC HYDROCARBONS -- Introduction -- Hypothesis and Study Design -- Measurement Methods -- Biological Markers -- Questionnaires -- Models -- Future Needs -- LEAD -- Introduction -- Lead from Gasoline -- Airborne Lead from Stationary Sources -- Lead in Dusts and Soils -- Outdoor-Air Measurements -- Biological Markers -- Questionnaires -- Models -- Conclusions -- ACIDIC PARTICULATE MATTER -- Introduction -- Hypothesis -- Measurements -- Methods -- Conclusions -- SICK-BUILDING SYNDROME -- Introduction -- Hypothesis and Study Design -- Measurement Techniques (Analytical and Sampling) -- Biological Markers -- Questionnaires -- Models -- Conclusions -- TOXICS RELEASE INVENTORY -- Introduction -- Applications to Exposure Assessment -- Implications -- RADON -- Introduction -- Hypothesis and Study Design -- Measurement Methods -- Models -- Advances -- Glossary -- References -- Appendix A: Basic Standard Environmental Inventory Questionnaire -- Appendix B: Exposure Assessment Workshop Participants and Presentations -- WORKSHOP PARTICIPANTS -- WORKSHOP PRESENTATIONS -- Session I: Application of Methodology in Assessing Human Exposure to Air Contaminants -- Session II: Biomarkers of Exposure -- Session III: Modeling -- Session IV: Measurement Techniques -- Session V: Time-Activity Patterns and Questionnaires. Appendix C: Commission on Physical Sciences, Mathematics, and Resources -- STAFF.

---