1. Record Nr. UNINA9910254052603321

Autore	de Graaf Coen
Titolo	Magnetic Interactions in Molecules and Solids / / by Coen de Graaf, Ria Broer
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2016
ISBN	3-319-22951-6
Edizione	[1st ed. 2016.]
Descrizione fisica	1 online resource (XVI, 246 p. 75 illus., 32 illus. in color.)
Collana	Theoretical Chemistry and Computational Modelling, , 2214-4714
Disciplina	541.378
Soggetti	Chemistry, Physical and theoretical Chemistry, Inorganic Building materials Theoretical and Computational Chemistry Inorganic Chemistry Structural Materials
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes Index.
Nota di contenuto	1. Basic Concepts -- 2. One Magnetic Center -- 3. Two (or more) Magnetic Centers -- 4. From Orbital Models to Accurate Predictions -- 5. Towards a Quantitative Understanding -- 6. Magnetism and Conduction.
Sommario/riassunto	This textbook is the second volume in the Theoretical Chemistry and Computational Modeling series and aims to explain the theoretical basis of magnetic interactions at a level that will be useful for master students in physical, inorganic and organic chemistry. The book gives a treatment of magnetic interactions in terms of the phenomenological spin Hamiltonians that have been such powerful tools for chemistry and physics in the past half century, starting from the simple Heisenberg and Ising Hamiltonians and ending with Hamiltonians that include biquadratic, cyclic or anisotropic exchange. On the other hand, it also explains how quantum chemical methods, reaching from simple mean field methods to accurate models that include the effects of electron correlation and spin-orbit coupling, can help to understand the magnetic properties. Connecting the two perspectives is an essential

aspect of the book, since it leads to a deeper understanding of the relation between physical phenomena and basic properties. It also makes clear that in many cases one can derive magnetic coupling parameters not only from experiment, but also from accurate ab initio calculations. The book starts with introducing a selection of basic concepts and tools. Throughout the book the text is interlarded with exercises, stimulating the students to not only read but also verify the assertions and perform (parts of) the derivations by themselves. In addition, each chapter ends with a number of problems that can be used to check whether the material has been understood.

2. Record Nr. UNINA9910482867603321

Autore	Naletoski Ivancho
Titolo	Nuclear and Radiological Emergencies in Animal Production Systems, Preparedness, Response and Recovery
Pubbl/distr/stampa	Springer Nature, 2021 Berlin, Heidelberg : , : Springer Berlin / Heidelberg, , 2021 ©2021
ISBN	3-662-63021-4
Descrizione fisica	1 online resource (206 pages)
Classificazione	MED003010MED078000MED089000SCI007000SCI020000
Altri autori (Persone)	LuckinsA. G ViljoenGerrit
Soggetti	Contaminació radioactiva Producció animal Veterinària preventiva Veterinary medicine Public health & preventive medicine Accident & emergency medicine Animal ecology Biochemistry Llibres electrònics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia

Nota di contenuto

Intro -- Foreword -- Acknowledgements -- Introduction -- Contents -- About the Contributors -- Abbreviations -- Chapter 1: National Veterinary Services Roles and Responsibilities in Preparing for and Responding to Nuclear and Radiological Emergencies -- References -- Chapter 2: Short Refresher of Radiobiology -- 2.1 Atoms and Isotopes -- 2.2 Definition of Radiation -- 2.3 Types of Ionizing Radiation -- 2.3.1 ß Decay -- 2.3.2 ß+ Decay -- 2.3.3 Electron Capture -- 2.4 Physical Half-Life of Radioactive Isotopes -- 2.5 Biological Half-Life of the Radioactive Isotopes -- 2.6 Effective Half-Life of the Radioactive Isotopes in the Body of Animals -- 2.7 Decay Chains and Ingrowth -- 2.8 Units of Radioactivity -- 2.9 Specific Radioactivity -- 2.10 Radiation Dose -- 2.11 Effective Dose Equivalent -- 2.12 Lethal Dose -- 2.13 Interaction of the Ionizing Radiation with the Matter -- 2.14 The Sources of Man-Made Environmental Contamination -- References -- Chapter 3: Measurement of Radioactivity -- 3.1 Measuring Instruments -- 3.1.1 Personnel Dosimeters -- 3.2 Measuring Contamination Levels in Live Farm Animals -- References -- Chapter 4: Preparedness and Response to Nuclear and Radiological Emergencies in Animal Production Systems in the Context of IAEA Safety Standards -- 4.1 Relevant IAEA Publications on Emergency Preparedness and Response for Animal Production Systems -- 4.2 Phases of a Nuclear or Radiological Emergency -- 4.2.1 The Preparedness Stage -- 4.2.1.1 Hazard Assessment -- 4.2.1.2 Development, Justification and Optimisation of a Protection Strategy -- 4.2.1.3 International Trade of Food Following a Nuclear or Radiological Emergency -- 4.2.1.4 OILs for Triggering Food, Milk and Drinking Water Restrictions -- 4.2.1.5 Emergency Planning Zones and Emergency Planning Distances -- 4.2.2 Emergency Exposure Situation -- 4.2.2.1 The Urgent Response Phase. 4.2.2.2 The Early Response Phase -- 4.2.2.3 The Transition Phase -- 4.2.2.4 Radioactive Waste Management -- 4.2.2.5 Dealing with Non-radiological Consequences -- 4.2.3 The Termination of a Nuclear or Radiological Emergency -- 4.2.4 Planned or Existing Exposure Situation -- 4.2.4.1 Restrictions on Food, Milk and Drinking Water After the Termination of an Emergency -- References -- Chapter 5: Environmental Pathways of Radionuclides to Animal Products in Different Farming and Harvesting Systems -- 5.1 Major Nuclear or Radiological Emergencies Causing Animal and Animal Product Contamination -- 5.2 Key Environmental Processes Controlling Animal Product Contamination -- 5.2.1 Vegetation Interception -- 5.2.2 Chemical Form of the Released Radionuclides -- 5.2.3 Radionuclide Behaviour in Soils -- 5.2.4 Radionuclide Transfer from Soil to Crops -- 5.2.5 Quantification of Radionuclide Transfer to Plants and Fodder Crops -- 5.2.6 Intake and Absorption of Radionuclides by Animals -- 5.2.7 Gastrointestinal Absorption -- 5.2.8 Quantification of Radionuclide Transfer to Animal Products -- 5.2.9 Quantification of the Time Dependency of Radionuclide Activity Concentrations in Animal Products -- 5.2.10 Biological Half-Life () in Animal Tissues -- 5.2.11 Ecological and Effective Half-Lives -- 5.3 Monitoring Animal Food Products -- 5.4 Radionuclide Transfer to Intensively Farmed Agricultural Animals -- 5.4.1 Soil and Plant Aspects -- 5.4.1.1 Radioiodine -- 5.4.1.2 Radiocaesium -- 5.4.1.3 Radiostrontium -- 5.4.1.4 Other Radionuclides -- 5.4.2 Dairy Production -- 5.4.2.1 Radioiodine -- 5.4.2.2 Radiocaesium -- 5.4.2.3 Radiostrontium -- 5.4.3 Meat and Offal Production -- 5.4.3.1 Transfer of Radionuclides to Meat -- 5.4.3.2 Other Accumulating Tissues -- 5.4.3.3 Target Tissues for Different Radionuclides -- 5.5 Radionuclide Transfer in Non-intensive Animal Production.

5.5.1 Dairy Production in Low-Productivity Areas -- 5.5.2 Meat Production in Low-Productivity Areas -- 5.6 Radionuclide Transfer to Game Animals -- 5.6.1 Forest Environments -- 5.7 Impacts on the Health of Livestock Exposed to Nuclear Contamination -- 5.8 Routes of Radionuclide Intake via Aquatic Pathways -- 5.8.1 Radionuclides in Freshwater Fish -- 5.9 The Risk for Public Health (Placement on the Market for Human Consumption) -- 5.9.1 Radioiodine -- 5.9.2 Radiocaesium -- 5.9.3 Other Radionuclides -- References -- Chapter 6: Management Options for Animal Production Systems: Which Ones to Choose in the Event of a Nuclear or Radiological Emergency? -- 6.1 Introduction -- 6.2 Management Options -- 6.3 Radionuclides of Importance -- 6.4 Seasonality and Radioecological Zoning -- 6.5 Decision-Aiding Handbooks for Food Production Systems -- 6.5.1 Decision-Aiding Framework -- 6.5.2 Selection Tables (Step 2) -- 6.5.3 Applicability of Management Options for Different Radionuclides (Step 3) -- 6.5.4 Key Constraints Affecting Management Options (Step 4) -- 6.5.4.1 Technical Feasibility and Capacity -- 6.5.4.2 Timescales for Implementation -- 6.5.4.3 Waste Generation -- 6.5.4.4 Environmental Impact -- 6.5.4.5 Cost -- 6.5.5 Effectiveness of Management Options (Step 5) -- 6.5.6 Management Options Incurring an Additional Dose to Implementers (Step 6) -- 6.5.7 Consideration of the Datasheets (Step 7) -- 6.5.8 Selecting and Combining Options to Develop the Management Strategy (Step 8) -- References -- Chapter 7: Information Systems in Support of the Decision-Making Tools -- 7.1 The IAEA Unified System for Information Exchange in Incidents and Emergencies (USIE) -- 7.2 Decision Support System for Nuclear Emergencies Affecting Food and Agriculture (DSS4NAFA) -- 7.3 iVetNet -- References. Correction to: Nuclear and Radiological Emergencies in Animal Production Systems, Preparedness, Response and Recovery -- Correction to: I. Naletoski et al. (eds.), Nuclear and Radiological Emergencies in Animal Production Systems, Preparedness, Response and Recovery, https://doi.org/10.1007/978-3-662-63021-1 -- Annexes -- Annex A: Datasheets on the Management Options -- Annex B: Worked Examples to Illustrate Decision-Aiding Framework.

Sommario/riassunto

This Open Access volume explains how major nuclear and radiological emergencies (NREs) can have implications at local, national and international level. The response to NREs requires a competent decision-making structure, clear communication and effective information exchange. National veterinary services have the responsibility to plan, design and manage animal production system in their countries. These activities cover animal health, animal movement control, production control and improvement, and control of the products of animal origin before their placement on the market. Release of radionuclides after NREs can cause substantial contamination in the animal production systems. Critical responsibility of veterinary authorities is therefore to prevent such contamination, establish early response mechanisms to mitigate the consequences and prevent placement of contaminated products of animal origin on the market for human consumption. This work summarizes the critical technical points for effective management of NREs for national veterinary services.