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Fracking4 The Siren Song of Renewable Energy; SOLAR; Photovoltaic (PV) Solar Power; Concentrated Solar Power (CSP); Solar Heating; Limitations of Solar Power; WIND; Limitations of Wind Power; SUMMARY; 5 Back to the Future: Nuclear Power; ANATOMY OF A REACTOR; ADVANTAGES OF NUCLEAR POWER; Baseload Power; Greenhouse Gas Emission; Location and Footprint; Cost; Subsidies for Nuclear and Renewables; ADVANCED REACTOR TECHNOLOGY; CAN NUCLEAR REPLACE COAL?; ARGUMENTS AGAINST NUCLEAR POWER; PART TWO Radiation and Its Biological Effects; 6 The World of the Atom; WHAT IS RADIATION? BLACK BODY RADIATION: THE QUANTUMTHE NUCLEAR ATOM; THE QUANTUM ATOM; THE NUCLEUS; RADIOACTIVITY: DECAY PROCESSES; FISSION; SUMMARY; 7 How Dangerous Is Radiation?; INTERACTIONS OF RADIATION WITH MATTER; Electromagnetic Radiation (Photon) Interactions; Charged Particle Interactions; Neutron Interactions; WHAT IS A DOSE OF RADIATION?; EFFECTS OF RADIATION ON DNA AND CELLS; How Does Radiation Cause Cancer?; WHAT ARE THE RISKS?; Death from Radiation; Cancer from Radiation; Hereditary Effects of Radiation; HOW BAD IS PLUTONIUM?; SUMMARY; 8 What Comes Naturally and Not So Naturally
NATURAL BACKGROUND RADIATIONCosmic Radiation; Primordial Terrestrial Radiation; MEDICAL EXPOSURE; HOW DANGEROUS IS BACKGROUND RADIATION?; PART THREE The Risks of Nuclear Power; 9 Nuclear Waste; WHAT IS NUCLEAR WASTE?; THE LONG AND THE SHORT OF WASTE STORAGE; YUCCA MOUNTAIN; WASTE ISOLATION PILOT PLANT (WIPP); RECYCLING SPENT NUCLEAR FUEL; MAKING NEW FUEL FROM RECYCLED "WASTE"; SUMMARY; 10 About Those Accidents; THE SCARE, MARCH 16, 1979; THREE MILE ISLAND, MARCH 28, 1979; How the Accident Happened; Consequences of TMI; CHERNOBYL, APRIL 26, 1986; How the Accident Happened
The Hazardous Radioisotopes

Sommario/riassunto

The issue of nuclear power has become a polarizing one, especially in light of the increasing need for sustainable energy sources, and events like the 2011 nuclear disaster in Japan. The public has been largely wary and even fearful of a reliance on nuclear power, pointing to the reactor meltdown in Chernobyl or the Three-Mile Island accident as evidence that nuclear power is an unfeasible and dangerous source of energy. In this book, experienced radiation biologist Michael H. Fox replaces the misconceptions about nuclear power with real science, and argues that it may be the best source of energy both for large-scale use and slowing the effects of global warming.
