

1. Record Nr.	UNINA9910464424103321
Autore	Fox Michael H
Titolo	Why we need nuclear power : the environmental case // Michael H. Fox
Pubbl/distr/stampa	New York : , : Oxford University Press, , 2014 ©2014
ISBN	0-19-756289-2 0-19-934459-0 0-19-934458-2
Descrizione fisica	1 online resource (322 p.)
Collana	Oxford scholarship online
Disciplina	333.792/4
Soggetti	Nuclear energy - Environmental aspects Global warming - Prevention Nuclear industry - Safety measures Nuclear industry - Accidents Radioactive waste disposal Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Previously issued in print: 2014.
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Cover; Why We Need Nuclear Power; Copyright; Dedications; CONTENTS; ACKNOWLEDGMENTS; Introduction; PART ONE Global Warming and Energy Production; 1 Global Climate Change: Real or Myth?; WHAT IS THE DEBATE ABOUT?; The IPCC and International Conventions; The Greenhouse Effect; Skeptical Politicians and Pundits; Skeptical Scientists; HISTORICAL TEMPERATURE AND GREENHOUSE GAS RECORD; The Last 10,000 Years of Climate: The Holocene; RECENT CHANGES IN TEMPERATURE AND CO <sub>2</sub> ; MELTING GLACIERS AND RISING SEAS; MODELS; RESPONSE TO SINGER AND AVERY PREDICTIONS OF FUTURE GLOBAL WARMING AND CONSEQUENCESSea Level and Acidification; Global Weirding; 2 Where Our Energy Comes From; A BRIEF HISTORY OF ENERGY; Coal; Oil and Natural Gas; Uranium; HOW MUCH ENERGY DO WE USE AND WHERE DOES IT COME FROM?; World Energy Usage; WHAT CAN BE DONE TO REDUCE OUR CARBON-INTENSIVE ENERGY ECONOMY?; 3 The Good, Bad, and Ugly of Coal and

Gas; COAL; Anatomy of a Coal-Fired Plant; Carbon Dioxide Emissions and Other Pollutants; Mining and Health Hazards; How Much Is There?; Carbon Capture and Storage; NATURAL GAS; How Much Is There?; Greenhouse Gas Emissions  
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.

---