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Nota di contenuto	Introduction -- Part I The Changing CBRN Risk Landscape -- The XXI Century: The Epoch of Advanced Military Systems and Growing Vulnerabilities -- The Dark Side of Nuclear Energy: Risks of Proliferation from Domestic Fuel Cycle Technologies -- Chemical and Biological Risks in the 21st Century -- Neuroscience-Based Weapons -- Hybrid Emerging Threats and AI Information Warfare: The Story of the Cyber-AI Deception Machine -- Artificial Intelligence and Warfare -- Artificial Intelligence in Autonomous Weapon Systems -- Understanding the Threat Posed by COTS and Small UAVs Armed with CBW -- Education and Training as a Disruptive Dual Use Technology -- Part II Evolving Risk Mitigation Strategies and Technologies -- Detection and Identification Technologies for CBRN Agents -- Chemical Forensics -- Recent Developments in Clinical Toxicology and the Use of Weaponized Nerve Agents -- Diagnosing the Cause of Disease – Interactive Teaching Approaches -- Evaluation Systems for Biological Security Risk Mitigation Training and Education -- Biological Forensics.

Sommario/riassunto

This book describes the evolving CBRN risk landscape and highlights advances in the “core” CBRN technologies, including when combined with (improvised) explosive devices (CBRNe threats). It analyses how associated technologies create new safety and security risks, challenging certain assumptions that underlie current control regimes. The book also shows how technologies can be enablers for more effective strategies to mitigate these risks. 21st-century safety and security risks emanating from chemical, biological, radiological and nuclear materials – whether resulting from natural events, accidents or malevolent use - are increasingly shaped by technologies that enable their development, production or use in ways that differ from the past. Artificial intelligence, the use of cyberspace, the revolution in the life sciences, new manufacturing methods, new platforms and equipment for agent delivery, hypersonic weapons systems, information tools utilised in hybrid warfare – these and other technologies are reshaping the global security environment and CBRN landscape. They are leading to a growing potential for highly targeted violence, and they can lead to greater instability and vulnerability worldwide. At the same time, technology offers solutions to manage CBRN risks. Examples are faster detection, more accurate characterisation of the nature and origin of CBRN agents, new forensic investigation methods, or new medical treatments for victims of CBRN incidents. New educational concepts help to foster a culture of responsibility in science and technology and strengthen governance. New training methods help develop practical skills to manage CBRN risks more effectively. The book concludes that there is a growing need for a holistic framework towards CBRN risk mitigation. Traditional arms control mechanisms such as global, regional or bilateral treaties and export controls are still needed, as they provide a necessary legal and institutional framework. But laws and technology denial alone will not suffice, and institutional mechanisms can at times be weak. Given the pace of technological progress and the diffusion of critical knowledge, tools and materials, policymakers must accept that CBRN risks cannot be eliminated altogether. Instead, society has to learn to manage these risks and develop resilience against them. This requires a “softer”, broadly based multi-stakeholder approach involving governments, industry, the research and development communities, educators, and civil society. Furthermore, educating policymakers that cutting-edge technologies may seriously affect global strategic stability could create incentives for developing a more creative and contemporary arms control strategy that fosters cooperation rather than incremental polarisation.