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There are a number of books in the market about wind energy, turbine controllers, modelling and different aspects of integration of Wind Farm Power Plants (WPP) to grids. But none of these books meets the expectations of design and field engineers/technicians to address directly the setting and design philosophy of different Intelligent Electronic Devices (IED) of WPP networks. This book provides practical applications of numerical relays for protection and control of different parts of onshore & offshore WPP network namely wind turbine generator, collector feeder and EHV interconnection transmission line to grid. In addition required changes to existing special protection system (SPS) and run-back scheme by adding a new WPP are discussed. The topology and characteristics of WPP networks are different from conventional one for both onshore and offshore WPP. In addition the fault current contribution from wind farm generators are low (1.1-1.2 pu). These causes significant challenge for setting and design of IEDs of WPP in order to meet the common industry practice requirement with respect to reliability, sensitivity, stability, security and grading coordination. The author believes that this book may

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be unique with respect to addressing these challenges and provision of the mitigation techniques to rectify the deficiencies of existing industry practice which otherwise have not been discussed for real systems in any other book. The content of this book have been successfully applied in the field for various WPPs projects and consequently can be used as a practical guideline for implementation for future projects. The content of the book covers Principal of Operation of WPP , Modelling of different components of WPP, Short Circuit current and voltage characteristics of different type of wind turbine generators, Setting and Design of Protection systems of WPP Network , Design of Control systems of WPP, Lightning and Overvoltage Protection of WPP and Analysis of Disturbance on the WPP networks

Grounding design and installation is critical for the safety and performance of any electrical or electronic system. Blending theory and practice, this is the first book to provide a thorough approach to grounding from circuit to system. It covers: grounding for safety aspects in facilities, lightning, and NEMP; grounding in printed circuit board, cable shields, and enclosure grounding; and applications in fixed and mobile facilities on land, at sea, and in air. It's an indispensable resource for electrical and electronic engineers concerned with the design of electronic circuits and systems.

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Offshore Electrical Engineering Manual, Second Edition, is for electrical engineers working on offshore projects who require detailed knowledge of an array of equipment and power distribution systems. The book begins with coverage of different types of insulation, hot-spot temperatures, temperature rise, ambient air temperatures, basis of machine ratings, method of measurement of temperature rise by resistance, measurement of ambient air temperature. This is followed by coverage of AC generators, automatic voltage regulators, AC switchgear transformers, and programmable electronic systems. The emphasis throughout is on practical, ready-to-apply techniques that yield immediate and cost-effective benefits. The majority of the systems covered in the book operate at a nominal voltage of 24 y dc and, although it is not necessary for each of the systems to have separate battery and battery charger systems, the grouping criteria require more detailed discussion. The book also provides information on equipment such as dual chargers and batteries for certain vital systems, switchgear tripping/closing, and engine start batteries which are dedicated to the equipment they supply. In the case of engines which drive fire pumps, duplicate charges and batteries are also required. Packed with charts, tables, and diagrams, this work is intended to be of interest to both technical readers and to general readers. It covers

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electrical engineering in offshore situations, with much of the information gained in the North Sea. Some topics covered are offshore power requirements, generator selection, process drivers and starting requirements, control and monitoring systems, and cabling and equipment installation. Discusses how to perform inspections of electrical and instrument systems on equipment using appropriate regulations and specifications. Explains how to ensure electrical systems/components are maintained and production is uninterrupted. Demonstrates how to repair, modify, and install electrical instruments ensuring compliance with current regulations and specifications. Covers specification, management, and technical evaluation of offshore electrical system design. Features evaluation and optimization of electrical system options including DC/AC selection and offshore cabling designs.

This authoritative, best-selling guide has been extensively updated with the new technical requirements of the IET Wiring Regulations (BS 7671: 2008) Amendment No. 1:2011, also known as the IET Wiring Regulations 17th Edition. With clear description, it provides a practical interpretation of the amended regulations – effective January 2012 – offers real solutions to the problems that can occur in practice. This revised edition features: new material on hot topics such as electromagnetic compatibility

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(EMC), harmonics, surge protective devices, and new special locations including medical locations, and operative or maintenance gangways; highlights the changes that have been made in this latest Amendment and their impact in practice; examples of how to comply with the Wiring Regulations; fully-integrated colour including sixty brand new colour illustrations, twenty tables and new high-quality photographs. This essential guide retains its handy format, ideal for practicing electricians, trainee electricians and apprentices to carry with them for quick reference. It is a valuable resource for all users of BS 7671 who want to understand the background to the Regulations; electrical engineers and technicians, installation and design engineers, consulting and building services engineers, also dedicated inspectors and testers.

This new Routledge Pocket Book provides a user-friendly guide to the latest amendments to the 18th Edition of IET Wiring Regulations (BS 7671:2018). This Pocket Book contains topic-based chapters that link areas of working practice with the specifics of the Regulations themselves. The requirements of the Regulations are presented in an informal, easy-to-read style that strips away confusion. Packed with useful hints and tips that highlight the most important or mandatory requirements, the book is a concise reference on all aspects of the 18th edition of the IET Wiring Regulations. This handy guide provides an on-

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the-job reference source for Electricians, Designers, Service Engineers, Inspectors, Builders and Students.

In recent years, power electronics have been intensely contributing to the development and evolution of new structures for the processing of energy. They can be used in a wide range of applications ranging from power systems and electrical machines to electric vehicles and robot arm drives. In conjunction with the evolution of microprocessors and advanced control theories, power electronics are playing an increasingly essential role in our society. Thus, in order to cope with the obstacles lying ahead, this book presents a collection of original studies and modeling methods which were developed and published in the field of electrical energy conditioning and control by using circuits and electronic devices, with an emphasis on power applications and industrial control.

Researchers have contributed 19 selected and peer-reviewed papers covering a wide range of topics by addressing a wide variety of themes, such as motor drives, AC–DC and DC–DC converters, multilevel converters, varistors, and electromagnetic compatibility, among others. The overall result is a book that represents a cohesive collection of inter-/multidisciplinary works regarding the industrial applications of power electronics.

Handbook of Electrical Installation Practice covers all

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key aspects of industrial, commercial and domestic installations and draws on the expertise of a wide range of industrial experts. Chapters are devoted to topics such as wiring cables, mains and submains cables and distribution in buildings, as well as power supplies, transformers, switchgear, and electricity on construction sites. Standards and codes of practice, as well as safety, are also included. Since the Third Edition was published, there have been many developments in technology and standards. The revolution in electronic microtechnology has made it possible to introduce more complex technologies in protective equipment and control systems, and these have been addressed in the new edition.

Developments in lighting design continue, and extra-low voltage luminaries for display and feature illumination are now dealt with, as is the important subject of security lighting. All chapters have been amended to take account of revisions to British and other standards, following the trend to harmonised European and international standards, and they also take account of the latest edition of the Wiring Regulations. This new edition will provide an invaluable reference for consulting engineers, electrical contractors and factory plant engineers. This proceeding book consists of 10 topical areas of selected papers like: telecommunication, power systems, robotics, control system, renewable energy, power electronics, computer science and

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more. All selected papers represent interesting ideas and state of the art overview. Readers will find interesting papers of those areas about design and implement of dynamic positioning control system for USV, scheduling problems, motor control, backtracking search algorithm for distribution network and others. All selected papers represent interesting ideas and state of art overview. The proceeding book will also be a resource and material for practitioners who want to apply discussed problems to solve real-life problems in their challenging applications. It is also devoted to the studies of common and related subjects in intensive research fields of modern electric, electronic and related technologies. For these reasons, we believe that this proceeding book will be useful for scientists and engineers working in the above-mentioned fields of research applications.

Chemical Engineering Design: Principles, Practice and Economics of Plant and Process Design is one of the best-known and most widely adopted texts available for students of chemical engineering. The text deals with the application of chemical engineering principles to the design of chemical processes and equipment. The third edition retains its hallmark features of scope, clarity and practical emphasis, while providing the latest US codes and standards, including API, ASME and ISA design codes and ANSI standards, as well as coverage of

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the latest aspects of process design, operations, safety, loss prevention, equipment selection, and more. The text is designed for chemical and biochemical engineering students (senior undergraduate year, plus appropriate for capstone design courses where taken), and professionals in industry (chemical process, biochemical, pharmaceutical, petrochemical sectors). Provides students with a text of unmatched relevance for chemical process and plant design courses and for the final year capstone design course Written by practicing design engineers with extensive undergraduate teaching experience Contains more than 100 typical industrial design projects drawn from a diverse range of process industries NEW TO THIS EDITION Includes new content covering food, pharmaceutical and biological processes and commonly used unit operations Provides updates on plant and equipment costs, regulations and technical standards Includes limited online access for students to Cost Engineering's Cleopatra Enterprise cost estimating software

Publisher's Note: Products purchased from Third Party sellers are not guaranteed by the publisher for quality, authenticity, or access to any online entitlements included with the product. A complete guide to the earthing and bonding requirements of the latest United Kingdom wiring regulations This on-the-job reference offers complete coverage of all

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technical aspects of electrical earthing and bonding. The book provides you with the commentary and guidance you need to interpret and apply the earthing and bonding requirements of the 17th Edition of the IET Wiring Regulations (BS 7671:2008 incorporating Amendment No. 3:2015)—the electrical code used throughout the United Kingdom. McGraw-Hill's Guide to UK Wiring Standards for Earthing & Bonding features in-depth discussions of each of the code's standards, section by section, along with high-quality illustrations and detailed examples. The handbook also includes answers to frequently asked questions. Coverage Includes: • Below Grade Earthing • Scope and Principles • Definitions • General Characteristics • Protection for Safety • Selection and Erection of Equipment • Inspection and Testing • Electrode Calculations • Economic and Legal Analysis • Managing an Earthing Project If you are looking for clear, expertly written coverage of electrical earthing as it relates to the latest IET codes, McGraw-Hill's Guide to UK Wiring Standards for Earthing & Bonding belongs on your desk.

Tim Williams has worked for a variety of companies as an electronic design engineer over the last 20 years. He has monitored the progress of the EMC Directive and its associated standards since it was first made public. He is a member of the Institution of Electrical Engineers and now runs his own consultancy, specialising in EMC design and training. *Save money on consultancy bills with this book
*Practical guide to implementing EMC within the product

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design process *The leading professional guide to the EMC Directive -100% up-to-date and reliable

Now in its 7th edition, Auerbach's Wilderness Medicine continues to help you quickly and decisively manage medical emergencies encountered in any wilderness or other austere setting! World-renowned authority Dr. Paul Auerbach and 2 new associate editors have assembled a team of experts to offer proven, practical, visual guidance for effectively diagnosing and treating the full range of issues that can occur in situations where time and resources are scarce. This indispensable resource equips physicians, nurses, advanced practice providers, first responders, and rescuers with the essential knowledge and skills to effectively address and prevent injuries and illnesses – no matter where they happen! Face any medical challenge in the wilderness with expert guidance from hundreds of outstanding world experts edited by Dr. Auerbach and 2 new associate editors, Drs. Tracy Cushing and N. Stuart Harris. New and expanded chapters with hundreds of new photos and illustrative drawings help increase your visual understanding of the material. Acquire the knowledge and skills you need with revised chapters providing expanded discussions of high-altitude medicine, improvisation, technical rescue, telemedicine, ultrasound, and wilderness medicine education. Ten new chapters cover Acute High-Altitude Medicine and Pathophysiology; High Altitude and Pre-Existing Medical Conditions; Cycles, Snowmobiles, and other Wilderness Conveyances; Medical Wilderness Adventure Races (MedWAR); Canyoneering and Canyon Medicine; Evidence-Based Wilderness Medicine; National Park Service Medicine; Genomics and Personalized Wilderness Medicine; Forestry; and Earth Sciences.

Safety or protective grounding is of vital importance for the protection of individuals from electric shock and structures and industrial concerns from potentially damaging lightning

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and electrostatic discharges. To many electrical engineers the notion of grounding is nebulous and safety grounding is quite often confused with neutral grounding of the power supply. The main objective of this book is to give the reader a better understanding of safety grounding, why it is needed, where it is needed, and what are the requirements which must be met in order to have an effective grounding system. The text as a whole serves to provide the reader with the necessary background for a better appreciation of the various National and International Standards concerned with safety grounding. This book gives the reader a good understanding of the fundamentals of safety grounding. It is a practical guide that provides a comprehensive coverage of all types of grounding requirements and is intended for students and practicing electrical engineers alike. Summarizes the physiological effects of current on the human body and the effect of current duration Gives the various methods of measuring soil resistivity and measuring the resistance to ground of an electrode or grounding system Reviews different types of ground electrodes and the effect of their geometry and numbers on the resistance to ground Presents the components of a ground system, methods of improving soil resistivity, the types of welds and joints, the criteria for determining conductor cross-sections, galvanic corrosion, and a survey of the different grounding practices used at substations and the different types of grounding systems used for the protection of consumers Deals with electrostatic and lightning hazards that can cause serious damage and the measures used to protect against such damage Throughout the text frequent reference is made to various National and International Standards and their requirements as compliance with these standards is highly advised Asser A. Zaky, Ph.D., FIET, F.Inst.P., FIEEE, is Emeritus Professor of Electrical Engineering at University of Alexandria, Egypt.

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A reliable and secure protection and control system is a paramount requirement for any electrical network. This book discusses protection and control schemes of various parts of Solar Power Plants (SPP) namely solar generator, inverter, and SPP network connected to the grid. For this purpose small, medium, and large size of solar power energy sources have been considered. This includes residential, commercial buildings and large power plants. There are significant literature about solar energy, modeling and different aspects of integration of SPP to grids. But there is no book to address directly the setting/design of protection and control schemes, testing techniques and fault findings of solar generators and its networks. The topology and characteristics of solar generators and their networks are different from conventional ones. This has caused the following issues: - Conventional protection & control scheme may fail to detect different type of faults which may occur on solar cells/panels/arrays, DC cables, and inverters. This necessitated the requirement of special schemes for the detection of faults in blind spots, - Fault findings required tests, and testing equipment for solar generators are different from conventional ones, - The fault current contribution from solar generators is low (1.1-1.2 pu) as compared to conventional ones. The above problems have caused significant challenges for appropriate setting and design of protection & control scheme of SPP network which in some cases have resulted to several major plants shut down, safety risks and fire incidents. This book discusses the above challenges and proposes mitigation techniques to rectify the deficiencies of existing industry practices for the protection and control systems of solar generators. Most of the content of this book has been observed or successfully applied in the field for various SPPs projects worldwide and consequently can be used or considered as a practical guideline for future projects. Main Objectives of the Book The

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main objectives of the book are: - To familiarize engineers, technical officers, testers, and project managers with required power system protection and control schemes of solar power plants (SPP). - To provide a guideline for preparation of standards, technical specification, business case, functional scope, test, and commissioning plan as applicable to the installation of new SPP; - To provide adequate information to electricity companies, consultants, contractors, relay manufacturers, and SPP owners about the requirement of protection and control systems of SPP. Acknowledgment The author wishes to acknowledge that the contents of this book are based on utilizing the following resources: 1) Extensive research of the author for design, specifications, and commissioning of SPPs 2) Experiences of other individuals, electricity companies, and consultants Disclaimer The author is not responsible for the accuracy, completeness, up-to-dateness, or quality of the information provided. The author is therefore not liable for any claims regarding damage caused by the use of any information provided. The information in the book should only be used as a guideline and may not be suitable for a specific case. Copyright The material made available is intended for the customer's personal use only. Author reserves all rights to the book. Therefore the book can not be reproduced or replicated or processed or distributed without the author's written permission.

The first edition published in 2010. The response was encouraging and many people appreciated a book that was dedicated to quality management in construction projects. Since it published, ISO 9000: 2008 has been revised and ISO 9000: 2015 has published. The new edition will focus on risk-based thinking which must be considered from the beginning and throughout the project life cycle. There are quality-related topics such as Customer Relationship, Supplier Management, Risk Management, Quality Audits, Tools for Construction

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Projects, and Quality Management that were not covered in the first edition. Furthermore, some figures and tables needed to be updated to make the book more comprehensive.

Chemical Engineering Design: SI Edition is one of the best-known and most widely used textbooks available for students of chemical engineering. The enduring hallmarks of this classic book are its scope and practical emphasis which make it particularly popular with instructors and students who appreciate its relevance and clarity. This new edition provides coverage of the latest aspects of process design, operations, safety, loss prevention, equipment selection, and much more, including updates on plant and equipment costs, regulations and technical standards. Includes new content covering food, pharmaceutical and biological processes and the unit operations commonly used Features expanded coverage on the design of reactors Provides updates on plant and equipment costs, regulations and technical standards Integrates coverage with Honeywell's UniSim® software for process design and simulation Includes online access to Engineering's Cleopatra cost estimating software

The market and policy impetus to install increasingly utility-scale solar systems, or solar farms (sometimes known as solar parks or ranches), has seen products and applications develop ahead of the collective industry knowledge and experience. Recently however, the market has matured and investment

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opportunities for utility-scale solar farms or parks as part of renewable energy policies have made the sector more attractive. This book brings together the latest technical, practical and financial information available to provide an essential guide to solar farms, from design and planning to installation and maintenance. The book builds on the challenges and lessons learned from existing solar farms, that have been developed across the world, including in Europe, the USA, Australia, China and India. Topics covered include system design, system layout, international installation standards, operation and maintenance, grid penetration, planning applications, and skills required for installation, operation and maintenance. Highly illustrated in full colour, the book provides an essential practical guide for all industry professionals involved in or contemplating utility-scale, grid-connected solar systems.

The Health and Safety, Premises and Environment Handbook 2012 provides you with all the essential information you need on legislation, regulation, policy, case law and best practice. Information is presented in plain English, and broken down into separate A-Z sections containing legislative summaries, key points, handy fact boxes and sources of further information. All the guidance is written and compiled by our team of expert authors, including top law firms, surveyors, safety consultants and regulatory bodies. Workplace Law's Health and

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Safety, Premises and Environment Handbook is aimed at all those with an interest in the health and safety, premises and environmental management aspects of the workplace, and so our readership consists mainly of Health and Safety managers, officers and directors, Facilities Managers, as well as General Managers and Directors of small businesses.

THE MOST COMPLETE AND CURRENT GUIDE TO ELECTRICAL ENGINEERING For more than a century, the Standard Handbook for Electrical Engineers has served as the definitive source for all the pertinent electrical engineering data essential to both engineering students and practicing engineers. It offers comprehensive information on the generation, transmission, distribution, control, operation, and application of electric power. Completely revised throughout to address the latest codes and standards, the 16th Edition of this renowned reference offers new coverage of green technologies such as smart grids, smart meters, renewable energy, and cogeneration plants. Modern computer applications and methods for securing computer network infrastructures that control power grids are also discussed. Featuring hundreds of detailed illustrations and contributions from more than 75 global experts, this state-of-the-art volume is an essential tool for every electrical engineer. Standard Handbook for Electrical Engineers, 16th

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Edition, covers: Units, symbols, constants, definitions, and conversion factors * Electric and magnetic circuits * Measurements and instruments * Properties of materials * Generation * Prime movers * Alternating-current generators * Direct-current generators * Hydroelectric power generation * Power system components * Alternate sources of power * Electric power system economics * Project economics * Transmission systems * High-voltage direct-current power transmission * Power system operations * Substations * Power distribution * Wiring design for commercial and industrial buildings * Motors and drives * Industrial and commercial applications of electric power * Power electronics * Power quality and reliability * Grounding systems * Computer applications in the electric power industry * Illumination * Lightning and overvoltage protection * Standards in electrotechnology, telecommunications, and information technology

Die moderne Hochspannungstechnik ist nicht nur eine Schlüsseltechnologie für die sichere, wirtschaftliche und umweltfreundliche Energieversorgung, sondern ihr Anwendungsspektrum umfaßt nahezu alle Bereiche der Technik. Das Buch gibt einen praxisorientierten, geschlossenen Überblick über die theoretischen Grundlagen, die modernen Technologien und die praktischen Anwendungen der Hochspannungstechnik.

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BS EN IEC 62305-1. Protection Against LightningPart 1. General principlesBS EN IEC 62305-3. Protection Against LightningPart 3. Physical damage to structures and life hazardBS EN IEC 62305-2. Protection Against LightningPart 2. Risk managementBS EN IEC 62305-4. Protection Against LightningPart 4. Electrical and electronic systems within structuresIndustrial Applications of Power ElectronicsMDPI

Este libro de texto constituye un curso completo de Diseño en Ingeniería Química. Es apropiado para estudiantes que se matriculan tanto en módulos como en el curso de diseño del último año de los actuales grados, pero también es muy útil como libro de referencia para post-graduados. Se ocupa de las bases de las operaciones unitarias y de los últimos aspectos del diseño de procesos, selección de equipos, economía de planta y de funcionamiento, seguridad y prevención de riesgos. Es un libro de texto que los estudiantes desearán tener durante sus estudios de graduación y también en su vida profesional. -Brinda a los estudiantes un texto de relevancia inigualable para las clases introductorias de Ingeniería Química y para el curso de diseño del último año. Enseña a partir de los conocimientos expertos de los ingenieros de diseño en ejercicio que tienen también extensa experiencia en la enseñanza universitaria. -Cubre todos los aspectos de las operaciones unitarias, economía y diseño, incluyendo los últimos códigos de diseño ISO, ISA, EN, ASME y API; datos de precios y correlaciones de costes de equipo actualizados; robusta economía de planta para ingenieros; uso de programas informáticos comerciales ingenieriles para el diseño y estimación de costes. -Su rigurosa pedagogía está complementada con ejemplos resueltos, con todo detalle, estudios de casos, ejercicios propuestos al final del capítulo, más datos de soporte, hojas de cálculo y hojas de especificaciones de equipo. -Gran cantidad de recursos que incluyen diapositivas

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de conferencias, bancos de imágenes y manual de soluciones a disposición de profesores.

Electrical Safety and the Law describes the hazards and risks from the use of electricity, explaining with the help of case studies and accident statistics the types of accidents that occur and how they can be prevented by the use of safe installations, equipment and working practices. It describes the British legislation on the safety of electrical systems and electrotechnical machinery control systems, much of which stems from European Directives and which will therefore be affected by the UK's decision to leave the EU (Brexit), and the main standards and guidance that can be used to secure compliance with the law. There are detailed descriptions covering the risks and preventive measures associated with electrical installations, construction sites, work near underground cables and overhead power lines, electrical equipment and installations in explosive atmospheres, electrical testing and electrotechnical control systems. Duty holders' responsibilities for designing, installing, and maintaining safe systems are explained, as well as their responsibilities for employing competent staff. The fifth edition has been substantially updated to take account of considerable changes to the law, standards and guidance; it has been expanded to include: a new chapter on the Corporate Manslaughter and Corporate Homicide Act; a new chapter describing landlords' legal responsibilities for electrical safety in private rented properties and social housing; a new chapter on the Electricity Safety Quality and Continuity Regulations; new information on offences, penalties, sentencing guidelines, and relevant case law; a description of the main requirements of BS 7671:2008 and other principal standards, many of which have been amended in recent years; new cases studies to illustrate the hazards and risks; information on changes to GB's health and safety

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system.

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