Guide to OHS BoK Chapters – Key words and Abstracts

Current chapters only (amended as new and updated chapters are loaded to web site)

* original versions of chapters under review are still available on the web site under 'Archive' button for each chapter

As at December 2021

In review Major review required or being undertaken In development Future planned

Concept	Chap No	Current year	Sub concept	Author	Key words	Abstract
	1.1	2019	Foreword and acknowledgements			
	1.2	2020	Contents			
	1.3	2019	Synopsis			
Introduction	2	2019	Introduction	Pam Pryor	OHS, safety body of knowledge professional certification accreditation	A defined body of knowledge is required as a basis for professional certification and for accreditation of education programs giving entry to a profession. The lack of such a body of knowledge for OHS professionals was identified in reviews of OHS legislation and OHS education in Australia. After a 2009 scoping study, WorkSafe Victoria provided funding to support a national project to develop and implement a core body of knowledge for generalist OHS professionals. The technical aspects of the project were managed by a technical panel with representation from universities and the professional body. An analysis and consultation process was used to develop a conceptual framework. Specialist authors were invited to contribute specific chapters, which then were subjected to peer review and editing. The outcome provides a basis for accreditation of OHS professional education programs and certification of OHS professionals. It provides guidance for OHS educators in course development, and for OHS professionals and professional bodies in developing continuing professional development activities. Also, OHS regulators, employers and recruiters will find it useful for benchmarking OHS professional practice. The OHS Body of Knowledge continues to be updated and further developed as people use and interpret it and as the evidence base expands.
The OHS Professional	3	2021	The Generalist OHS Professional: International and	Pam Pryor, David Provan, Tristan	OHS	This chapter provides context for the *OHS Body of Knowledge* by examining the status of occupational health and safety (OHS) as a profession. Firstly, it evaluates the status of the profession from international and Australian perspectives.

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			Australian perspectives	Casey, Xiaowen Hu	occupational health and safety profession professional accreditation certification	Integral to this analysis is a special issue of the journal *Safety Science* that focused on the evolution and status of the OHS professional. Secondly, the chapter presents results of recent Australian research, including an exploration of the professional identity of OHS professionals and a mixed-methods study that investigated the impact of the COVID-19 pandemic on the experiences of OHS professionals and the status of the profession. Finally, the chapter offers practical suggestions for improving the organisational experiences of generalist OHS professionals.
Global concepts						
Work	4		Work	Mark Griffin		
Safety	5	2019	Safety	Sidney Dekker	safety theory science system people	A defined body of knowledge is required as a basis for professional certification and for accreditation of education programs giving entry to a profession. The lack of such a body of knowledge for OHS professionals was identified in reviews of OHS legislation and OHS education in Australia. After a 2009 scoping study, WorkSafe Victoria provided funding to support a national project to develop and implement a core body of knowledge for generalist OHS professionals. The technical aspects of the project were managed by a technical panel with representation from universities and the professional body. An analysis and consultation process was used to develop a conceptual framework. Specialist authors were invited to contribute specific chapters, which then were subjected to peer review and editing. The outcome provides a basis for accreditation of OHS professional education programs and certification of OHS professionals. It provides guidance for OHS educators in course development, and for OHS professionals and professional bodies in developing continuing professional development activities. Also, OHS regulators, employers and recruiters will find it useful for benchmarking OHS professional practice. The OHS Body of Knowledge continues to be updated and further developed as people use and interpret it and as the evidence base expands.
Health	6	2021	Health	David Beaumont	health wellbeing ill-health	Along with 'work' and 'safety', 'health' is one of the global concepts of occupational health and safety (OHS) practice. This chapter explains how the concept of health expanded to include psychological health as well as physical health. It differentiates between the biomedical model that defines health

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					work workplace disability mental health psychological health biopsychosocial model	negatively as 'absence of disease' and the biopsychosocial model that inspires positive health, linkage of 'health' and 'wellbeing,' and replacement of the traditionally dominant OHS safety paradigm with a holistic health paradigm inclusive of safety. After reviewing historical associations between work and health and examining the biopsychosocial approach and its compatibility with positive psychology 2.0, the chapter considers health in today's workplace. It provides a conceptual model of workplace health that OHS professionals can adapt to their organisational circumstances and draws on the workplace impacts of the COVID-19 pandemic to illustrate application of the model.
Technical concepts						
Human (individual)	7	2020	The human as a biological system	Kelly Johnstone Keith Adam Mike Capra Joanne Crawford	system nervous system respiratory system endocrine system reproductive system digestive system skin musculoskeletal	To be able to provide appropriate advice on the effects of hazards on workers' health and to competently assess the potential impacts of changes in the workplace, the generalist OHS professional requires a working knowledge of the physiology of the human body including the systemic interactions that may impact on the body's response to environmental exposures. After a brief history of the association of workplace exposures with worker health and wellbeing, this chapter presents an overview of the biological systems of the human body. Four case studies – featuring the nervous system, the integumentary system, the reproductive system, and the interaction between exposure to psychosocial hazards and multiple biological systems – provide examples of the application of physiological knowledge in the OHS context.
	8.1		Basic psychological principles to be re-developed as People as individuals			
	8.2		Individual differences and work			
	8.3		Basic principles of social interaction to			

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			be re-developed as People in Organisations			
Socio-political context	9.1	2019	Socio-political context for OHS in Australia	Elizabeth Bluff	act law legislation inspection enforcement regulation standard education and training employer association union social and economic trends	This chapter focuses on the socio-political context of occupational health and safety (OHS) practice. It is about the different legal and advisory instruments, government and non-state institutions or actors, economic and social forces, and other factors that constitute the context for OHS practice. Collectively, these contextual elements frame and shape OHS policy, regulation and workplace practice, and they impact on OHS risks and how they are dealt with in these settings. The chapter begins by providing a broad overview of the socio-political context of OHS, and then examines some of its key elements in more detail. These elements are OHS policy and regulation, other regulation impacting on OHS, technical standards and instruments, the education and training framework, employer associations and unions, OHS professional associations, and economic and social trends.
	9.2	2020	WHS law in Australia	Neil Foster, Barry Sherriff, Eric Windholz, Leo Ruschena,	statutory law common law duty of care reasonably practicable PCBU enforcement inspectors	This chapter reviews the basic principles underlying current Australian work health and safety (WHS) legislation. It is essential for the provision of OHS advice and OHS decision making in organisations to be underpinned by an understanding of these principles. It is equally important that OHS professionals are able to identify when it is appropriate to seek professional legal advice. After outlining the historical context for the current legislative framework, this chapter reviews core concepts including the sources of OHS law and provisions of the model Work Health and Safety Act. It focuses on duty of care, the qualifiers to this duty, an officer's duty to exercise due diligence, and enforcement mechanisms available to regulators. The chapter concludes with implications for OHS practice
The organisation	10.1		The Organisation	Debra Burlington Michael Griffiths	organisation safety	Generalist Occupational Health and Safety (OHS) professionals need to work within organisations and contribute to overall organisational goals rather than attempt to impose OHS change from outside the organisational context. This

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					health professional complexity metaphor integral	chapter discusses the complexity of organisations and the scope of relevant theory before exploring three 'lenses' – metaphorical, structural and integral –which OHS professionals can apply to assist their understanding of organisations. Implications for OHS practice are considered and an appendix containing an excerpt from the 2012 edition of this chapter provides relevant perspectives on organisational health and safety.
	10.2.1	2019	Organisational culture : A search for meaning	David Borys	organisational culture organisational climate safety culture safety climate leadership culture change	Since the Chernobyl nuclear disaster in 1986 there has been an explosion of academic and organisational interest in safety culture. However, the body of safety culture literature harbours unresolved debates and definitional dilemmas. As a result, safety culture remains a confusing and ambiguous concept in both the literature and in industry, where there is little evidence of a relationship between safety culture and safety performance. This chapter investigates the concept of safety culture, and finds it to have limited utility for occupational health and safety (OHS) professional practice. Informed by a literature review, interviews with key stakeholders and focus group discussions, it concludes that workplace safety may be better served by shifting from a focus on changing 'safety culture' to changing organisational and management practices that have an immediate and direct impact on risk control in the workplace. The chapter identifies characteristics of an organisation that focuses on safety, and concludes by considering the implications for OHS practice.
	10.2.2	2020	Organisational culture: Reviewed and repositioned	David Borys	organisational culture safety culture, safety climate OHS	The construct of 'safety culture' remains alive and well in industry and among researchers. However, research evidence linking safety culture with better occupational health and safety (OHS) outcomes is weak. While industry may not talk about 'safety climate,' the research findings linking safety climate with better OHS outcomes is strong. Therefore, OHS professionals should emphasise safety climate over safety culture. Specifically, OHS professionals should adopt an intervention evaluation process using safety climate to measure the effectiveness of interventions. Safety climate measures may also be used to target interventions in the first instance. A significant gap is identified between research and practice, and the research findings may not always reflect industry experience. This companion chapter to OHS Body of Knowledge 10.2.1 Organisational Culture: A Search for Meaning draws on a range of information sources, including a review of the post-2014 research evidence base and focused discussions with OHS

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						professionals and organisational psychologists. Ultimately, it will be the law and workers who will judge whether an organisation's efforts to create a healthy and safe working environment have been effective.
	10.3		Governance and OHS			
	11		Left blank			
Systems	12.1		Systems	Paul Salmon, Gemma Read, Adam Hulme		
	12.2	2021	OHS management systems	Nektarios Karanikas Pam Pryor	safety health management system OHSMS	While organisations implement various programs and initiatives to ensure occupational health and safety (OHS), they do not always connect them under a systems perspective. An OHS management system (OHSMS) requires a holistic approach to risk management that is shared across the organisation. A systems approach provides systematic management for process consistency while recognising inevitable system variability, the interdependence of system elements, and the importance of participation and shared learning. A systems approach can ensure OHS is on par with other organisational business objectives and is likely to increase the probability of compliance with legal obligations. However, implementation of an OHSMS does not guarantee improvement in OHS performance, and the OHS professional should be cognisant of factors that are likely to increase OHSMS effectiveness. After proposing a definition of OHSMS, and briefly considering the historical and legislative contexts, this chapter presents an OHSMS element structure, and explores the outcomes of, first, research evaluating OHSMS effectiveness and, second, a discussion forum with OHS professionals. Drawing on both the literature and the practical perspective, the chapter concludes with implications for OHS practice, including a set of guiding principles for OHSMS development.
	12.3.1	2020	Rules procedures and documentation	David Provan Drew Rae	safety OHS rule procedure	Rules and procedures to control work have long been central instruments of occupational health and safety (OHS) management. Applying rules and procedures is consistent with top-down organisational strategies for managing OHS such as OHS management systems, behavioural safety and safety culture. Recent safety, social and organisational theories support a more nuanced understanding of the

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					compliance	role of people within organisations and the uses and limitations of rules and procedures for supporting work. This chapter elucidates challenges associated with the use of rules and procedures in managing OHS and is a resource for OHS professionals as they seek to influence the management of OHS in their organisations. OHS professionals and senior leadership of organisations and industries may need to critically review their beliefs about, and approaches to, rules and procedures to ensure that they are useful in supporting the performance of frontline work.
	12.3.2	2020	Document usability	Klaus Hofer	usability UX, usability engineering document procedure *Usability Mapping* safety OHS PQA	While being low on the hierarchy of risk controls, procedures and other safety-related documentation are a vital element in occupational health and safety (OHS) hazard management and OHS management systems. Usability or UX engineering as applied to safety-related documentation is a relatively new concept. However it is built on a significant science background that draws on psychology and neuroscience. This chapter identifies a need for a different approach to the development and design of safety-related documentation. It introduces the science behind the usability of documentation. Emphasising that designing safety documentation for usability (UX engineering) is a skill and that the OHS Body of Knowledge cannot teach a skill, the chapter outlines how the science is applied to the design and content of procedures providing some illustrative examples. The chapter concludes with the implications for OHS practice.
	12.4		Contractors and CoR			
	12.5		OHS performance evaluation			
	12.6		Investigations	Geoff Dell Yvonne Toft		
	13	2019	Managing process safety	Trish Kerin	process safety occupational health and safety OHS failure	Process safety incidents have resulted in thousands of deaths, severe environmental damage, and massive property and business losses. Process safety is usually seen as the responsibility of process safety or chemical safety experts. However, limiting the management of process safety to process safety professionals ignores the contribution of generalist occupational health and safety (OHS) professionals and the value of an integrated, collaborative approach. As a

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					control	companion chapter to OHS Body of Knowledge Process Hazards (Chemical), this chapter provides information vital for the effective engagement of generalist OHS professionals in the management of process safety. After defining process safety, the chapter provides contextual information from historical and legislative perspectives, and considers the impact of process safety incidents on people, the environment and businesses. The core of the chapter focuses on clarifying the roles of process safety professionals and generalist OHS professionals, and reviewing process safety-related hazard identification, risk assessment and control from an OHS perspective. Finally, implications for OHS practice are discussed. As an impetus for change to both process safety and OHS practice, this chapter should facilitate improved safety in all process and hazardous chemical environments.
Hazards and their mechanisms of action and related controls	14	2019	Foundation science	Pam Pryor Michael Capra	OHS occupational health and safety health science physical chemical biological health science	Scientific knowledge that could be used to prevent work-related fatality, injury, disease and ill health is often well known long before it is seriously applied. The time is past when prevention of work-related injury and ill health can be considered a matter of 'common sense.' There is a science base to understanding how hazards behave, how they cause harm and how the body reacts. This understanding is vital in designing effective control measures. Generalist Occupational Health and Safety (OHS) professionals must embrace this knowledge as part of their professional practice. The breadth and depth of the scientific knowledge required by individual OHS professionals will depend on the industry and hazards where they work and the nature of the advice they provide. How the OHS professional gains this knowledge may vary from school or vocational study to university education or specifically designed bridging programs. This chapter provides science-topic 'maps' to assist educators and OHS professionals in identifying the basic science required for professional practice, and also identifies fundamental numeracy requirements.
	15	2019	Hazard as a concept	Pam Pryor	hazard hazardous risk energy complex systems	In occupational health and safety (OHS), the term 'hazard' is defined and used in many different ways. In introducing a series of hazard-specific chapters in the OHS Body of Knowledge, this chapter considers some of the issues associated with these various definitions and applications, including, for example, the common misidentification of failures of controls as hazards and equating hazard with risk. This chapter discusses a range of definitions and classification systems for hazards

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						and proposes that while different definitions and classification systems may be useful depending on the context of the OHS activity; extended discussion on the topic is advocated. This discussion needs to acknowledge that multiple hazards may be present in many situations, and that workplaces are inherently complex systems. While different definitions and classifications of hazards may be tailored to different contexts and purposes, the chapter concludes that the fundamental test as to whether something is a hazard is that if it is eliminated there is no risk.
	16	2021	Work-Related Musculoskeletal Disorders	David Trembearth Joanne Crawford	musculoskeletal disorder, sprain strain manual handling, biomechanics psychosocial hazard	Musculoskeletal disorders are the world's leading contributors to disability, and work-related musculoskeletal disorders (WMSDs) are responsible for more than a third of Australian workers' compensation claims. This chapter presents information about the nature, causation and management of WMSDs. The aim is to enable generalist OHS professionals to take a holistic, participative and evidenced-based approach to WMSD prevention. The chapter includes a multifactorial systems model to assist in the assessment of physical and psychosocial WMSD risks and design of risk controls, and a hierarchy of control for WMSD interventions.
	17	2020	Biological hazards	Amanda Jones	biological hazard, biohazard, infection, vector, virulence, infectivity	Biological hazards present the Occupational Health and Safety (OHS) professional with complex challenges. Many and varied biological hazards may result from workplace exposure to organisms, or substances produced by organisms, that threaten human health. Although workers in health and community care, and agricultural and fishing occupations are at particular risk of exposure to hazardous biological agents, all workplaces harbour the potential for various forms of biological hazard exposure, particularly via person-to-person transmission of infectious disease. The COVID-19 pandemic has brought a heightened perspective to the management of biological hazards and the role of the OHS professional. This chapter outlines the knowledge required by the OHS professional to understand the nature of biological hazards and the principles of control. Armed with this knowledge, the generalist OHS professional can then facilitate a team approach to the identification, assessment and control and mitigation of biological hazards.

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	18.1		Chemical hazards			
	18.2		Fibres, dust=s and fumes	Linda Apthorpe, Shahnaz Bakand, Jennifer Hines, Belinda Margetts, Leanne Treadwell, Jane Whitelaw		
	18.3	2019	Process hazards (Chemical)	Trish Kerin	process safety hazardous substances chemical fire explosion toxic release GHS barrier	Chemical process hazards may be associated with high-consequence outcomes of fire, explosion and/or release of toxic substances. While the management of such hazards is usually the responsibility of those with specialist process safety or chemical expertise, generalist occupational health and safety (OHS) professionals should understand the basic science underpinning the characteristics of such hazards, the mechanisms by which they cause harm, potential consequences – fire, explosion and toxic effect – and common controls. As a companion chapter to OHS Body of Knowledge 12.3 Managing Process Safety, and with reference to the Globally Harmonised System (GHS) of Classification of Labelling of Chemicals, this chapter provides information vital for understanding and applying process safety management strategies. Such knowledge will enable generalist OHS professionals to effectively engage with process safety and chemical safety experts, contribute to better hazard control and reduce the risk of catastrophic events.
	19	2020	Psycho-social hazards	Kirsten Way	psychosocial hazards occupational stress psychological injury mental health work stressors	Exposure to work-related psychosocial hazards is escalating in today's 24-hour society which is increasingly dominated by knowledge work and digital economies. This chapter – the first of three chapters focused on psychosocial hazards – introduces the topic and provides an overview of key concepts related to psychosocial hazards. It presents a framework of ten psychosocial hazards that increase the risk of injury/illness: time pressure/role overload; emotional demands; poorly defined work roles; interpersonal or team conflict; poorly managed change; lack of job control; lack of supervisor and/or co-worker support; organisational injustice; inadequate reward and recognition, and certain environmental conditions. The risk-assessment process for psychosocial hazards is outlined and implications for Occupational Health and Safety (OHS) practice are

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						discussed.
	20	2020	Fatigue	Jessica Paterson Sally Ferguson Drew Dawson	fatigue risk sleep safety health	Economic pressures for longer hours and round-the-clock working time arrangements along with a deregulated industrial landscape highlight the necessity to manage fatigue as an Occupational Health and Safety (OHS) hazard. There have been significant advances in scientific knowledge regarding the causes, consequences and methods for controlling fatigue-related risk. Changes in the amount of sleep and/or wakefulness, circadian disruption and time on task are recognised as key contributors to an individual being fatigued. Also, the cognitive demands of a given task can shape the susceptibility of a task to fatigue-related error. The experience of fatigue is associated with increased feelings of sleepiness, impaired neuro-behavioural performance and negative mood. From an operational perspective, fatigue can sometimes manifest as an increased likelihood of fatigue-related error and/or fatigue-related accident or injury due to cognitive impairment. There are also documented negative consequences of fatigue for mental and physical health. Traditionally, fatigue has been managed primarily through the regulation of working time arrangements; specifically, regulation of shift maxima and break minima along with aggregate limits on total working hours over a specified period of time. Recent research suggests that this is of limited benefit and that a systems approach based on the principles of risk and safety management may provide better risk mitigation. This chapter outlines the Defences in Depth (DiD) approach to fatigue management that encompasses five levels of fatigue-related hazards and their associated controls. The chapter also provides an overview of emerging research areas in the study of fatigue. Understanding and managing fatigue is essential to building a healthy and safe workplace.
	21	2020	Bullying and violence	Carlo Caponecchia Kirsten Way	bullying aggression violence psychosocial	This chapter – one of three dedicated to psychosocial hazards – presents key concepts related to workplace bullying, aggression and violence. Since the 1990s, research on these issues has proliferated along with increasing awareness of associated health and safety problems and organisational effectiveness detriments. This chapter provides the Occupational Health and Safety (OHS) professional with information on the potential outcomes of workplace bullying, aggression and violence for individuals and organisations, useful conceptual

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						models, the legislative environment, and risk assessment and control fundamentals. It considers the implications for OHS practice and highlights the importance for generalist OHS professionals to seek specialist advice on matters such as mediation and complaint investigation.
	22.1	2019	Occupational noise	Beno Groothoff	noise hearing hearing loss ototoxic tinnitus audiometry control	The health impacts of noise hazards are well recognised with noise-induced hearing loss identified as a priority work-related disease for Australian workers. Although noise-related legislation focusing on reduction at source has existed for many years, provision of hearing protectors is still the predominant control strategy in many workplaces. This chapter discusses the concept of noise as a hazard and its effects on individuals. It provides a basic understanding of acoustics and the factors that impact on hearing loss and health together with the principles of noise measurement and control. It concludes with an examination of the role of the generalist OHS professional in the management of noise hazards.
	22.2	2019	Vibration	Beno Groothoff	hand-arm vibration whole-body vibration control	Vibration and noise are closely linked in that both originate from a vibrating body and both have similar physics as they are transmitted as waves through a medium. In contrast to occupational noise, there is to date no regulation for vibration hazards in Australian workplaces and these hazards are not well recognised. The health impacts of vibration can be significant and career limiting. Controlling the effects of vibration relies mainly on elimination and engineering measures. This chapter discusses the concept of vibration, its associated hazards and the effects on individuals. It provides a basic understanding of the health impacts of vibration, measurement of vibration, general controls and concludes with an examination of the role of the generalist OHS professional in the management of vibration hazards.
	23.1	2019	Electricity	Leo Ruschena	electricity electrocution voltage burns induction arc flash safety	Electricity, present in all workplaces, kills a significant number of workers every year. Most of these fatalities occur outside the electricity supply industry. Effective control of electrical hazards needs to consider the nature of the work and the exposure, and include appropriate controls for electrical workers outside the electricity supply industry and for non-electrical workers. While control of electrical hazards requires specialist knowledge, the generalist Occupational Health and Safety (OHS) professional has a vital role in stimulating critical analysis to ensure electrical safety is effectively integrated into an organisation's OHS management system and risk management processes for both electrical and non-

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					control	electrical workers. To deliver on this role, the OHS professional should understand the basic physics of electricity and how electricity causes injury and death, the regulatory framework, standard controls for both electrical and non-electrical work, and how the controls might fail. This chapter and an appendix addressing the high-risk event of arc flash present this information from the perspective of the generalist OHS professional.
	23.2	2019	Electricity – Appendix Arc Flash	Brett Cleaves	electricity arc flash arc blast risk	This appendix to the OHS Body of Knowledge Chapter 'Physical Hazards: Electricity' focuses on the electrical hazard of arc flash from the perspective of the generalist OHS professional. After defining relevant terms, examining the incidence of arc flash injuries and reviewing relevant legislation and standards, it considers options for control of arc flash and implications for OHS practice.
	24		Ionising radiation	Martin Ralph	ionising radiation safety dose ALARA	Despite increased use of radiation in the workplace since the 19th century, the topic is associated with fear and lack of understanding in the community. While the level of natural background radiation makes it difficult to assess the impact of exposure to work-related radiation, the damage to the body is dose-related and cumulative, often with a long latency period. Thus the hazards and level of risk should be identified and managed. There is a legislative requirement for users of radiation sources to be licensed and for suitably trained *responsible persons* to be appointed; consequently, this chapter provides a broad overview of radiation hazards relevant to the generalist OHS professional. Excluding research and medical applications as specialist areas, OHS professionals are most likely to encounter radiation sources in industries such as construction, mining and manufacturing. This chapter reviews the physics of radiation and how ionising radiation can cause damage to the body. It outlines dose limits and risk assessment for radiation hazards, and cites relevant legislation and standards. Principles of radiation protection – justification, limitation and optimisation – are combined with exposure-limiting factors – time, distance and shielding – to develop a hierarchy of control. Finally, implications for OHS practice are discussed.
	25	2019	Non-ionising radiation	Leo Ruschena Martin Ralph	non-ionising radiation electromagnetic radiation	Non-ionising radiation includes electromagnetic radiation spanning the spectrum from extra low frequency fields produced from power lines, through to very short wavelength ultraviolet radiation. Humans have evolved in an environment bathed in electromagnetic radiation, principally received from the sun and other natural events including lightning. However, in the last century, humans have developed

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					extra low frequency radiofrequency microwaves infrared visible light ultraviolet laser	focused sources of such radiation for communications and other industrial uses that, if not controlled, can cause adverse health effects. In relation to some electromagnetic radiation bands, the epidemiology of possible health effects is still evolving. The measurement of electromagnetic radiation and the design and control of plant that produces this is, with some exceptions, a specialised field requiring the services of an expert. However the generalist OHS professional needs to understand the basic epidemiology, physics and control actions required to manage electromagnetic radiation and its risks. With industrial sources of radiation this will generally mean involvement at the design stage to ensure relevant standards are met, and to ensure appropriate maintenance programs for such engineering controls. The OHS professional will also be required to develop administrative control programs, particularly relating to outdoor worker exposure, and selection and use of relevant personal protective equipment.
	26	2019	Thermal environment	Ross Dicorleto	thermal environment heat cold hypothermia hyperthermia burn	The complex range of hazards associated with the thermal environment is widely acknowledged as a serious Occupational Health and Safety (OHS) issue. Exposure to extreme heat or cold can result in illness, injury and, in extreme cases, death. While high-risk situations will require specialist occupational hygiene advice, the generalist OHS professional should have an understanding of the impact of hot and cold environments, risk assessment methods and the regulatory framework as a basis for advising on, implementing, and monitoring controls. This chapter presents fundamental information about potential health and injury effects, assessment and control methods and, given the relevance of heat exposure to Australian working conditions, outlines a three-tiered approach to the assessment of heat exposure.
	27	2019	Gravitational	Neil Adams	gravity slip trip fall, misstep falling objects	The term ‘slips, trips and falls’ is treated almost as a single word in the workplace context with, in some cases, differentiation between a ‘fall on the same level’ and ‘a fall from a height.’ Such occurrences rank among the most significant causal factors in workplace injury and death in Australia, and there have been only relatively minor reductions in the injury rate in recent 10 years. Hazard identification, risk assessment and development of control strategies require an understanding of the physics of gravitational energy and the mechanisms of causation. This chapter uses injury statistics to examine the extent of the problem

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						and the agencies of injury of slips, trips and falls (on the same level and from heights), and due to being hit by falling objects. It facilitates understanding of gravitational hazards with an overview of the relevant physics of gravity and the normal gait of a person, and examines the different mechanisms of a slip, a trip and a misstep. The importance of building design in prevention of injuries related to gravitational hazards is highlighted through a discussion on causation and scenario examples for control. The chapter concludes by discussing the role of the generalist OHS professional in preventing injuries from gravitational hazards.
	28	2020	Mechanical plant	Roger Lim Tony Payne	plant machinery equipment guard energy injury safety	Machinery, equipment, appliances or powered tools that can be generically grouped as 'plant' are ubiquitous in most workplaces. While many hazards are associated with such plant, this chapter focuses on the hazards associated with the moving parts of machinery which have the potential to cause injury by crushing, shearing, entangling, trapping, hitting or abrading, or through the uncontrolled release of pressure. Most of these 'kinetic energy' or 'potential energy' related injuries are associated with fixed plant; however, a significant number of these injuries arise from use of powered equipment and tools in workshop, kitchen, office and garden workplaces. Identifying these hazards and assessing the associated risk requires knowledge of how kinetic and potential energy behave, as well as factors at the machine-human interface that may lead to loss of control of the energy. Control strategies for these hazards have evolved from the simple approach of guarding dangerous machine parts to a more sophisticated systematic approach involving: elimination or minimisation of the risk through design; engineering controls to prevent access to hazardous zones or to protect workers who have to access hazardous zones; administrative controls, including provision of information, training and instruction; and procedural approaches, such as Permit To Work and lockout/tagout systems. In developing or monitoring controls for mechanical plant, generalist Occupational Health and Safety (OHS) professionals must remain aware of the ways such protections can be defeated or break down. Ensuring safety of mechanical plant has become more complex with technological developments including automation and artificial intelligence and OHS professionals need to be able to engage with engineers, ergonomists and other technical experts.
	29		Mobile plant			

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	30		Vehicles and occupational road use	Rwth Stuckey	road vehicles work OHS safety	Roadways are workplaces for occupational-vehicle users and road workers. Occupational road-vehicle users – drivers of short- and long-haul, light and heavy vehicles, including trucks, buses, vans, cars and utilities – face risks experienced by all road users as well as risks specific to work design and occupational demands. The work environment of occupational road users is atypical, shared with non-work road users, and regulated by both work- and road-related policy. While heavy-vehicle users are a readily identifiable occupational-road-use group and their significant injury burden is well documented, injury and fatality data for other occupational road users is difficult to access and fraught with definitional complexities. Regardless, occupational road use is the most common cause of work-related traumatic injury and death in most western countries, including Australia. This chapter summarises contemporary occupational-road-use exposures and research and describes work- and road-related risks and models for Occupational Health and Safety (OHS) risk-management intervention.
Risk	31.1	20	Risk	Jean Cross	Occupational Health and Safety OHS risk uncertainty likelihood consequence risk assessment risk analysis level of risk risk management	The purpose of this chapter is to discuss the meaning of risk in its broader organisational and societal context and the implications this has for managing occupational health and safety (OHS) risks. Risk is a complex concept, but we often try to describe a risk in only a few words and represent its magnitude as a single value. The validity of the assumptions normally made in recording and assessing risks are explored with a quantitative example used to explain some of the problems. The most important part of managing risks in the workplace is not to measure it (qualitatively or quantitatively) but to understand the nature of risks, their causes and consequences and to use this information to control risks. This chapter aims to explore terminology issues, discuss the concept of risk and how risk is assessed then consider how to apply a risk management process in a safety context.
	31.2	2019	OHS Risk and decision-making	Carmel Bofinger, Jan Hayes, Chris Bearman, Derek Viner	risk risk management decisions decision-making influence	Risk management is part of organisational decision-making with poor decision-making about risk being a factor in workplace fatality, injury, disease and ill-health. Generalist Occupational Health and Safety (OHS) professionals can influence decision-makers to make informed choices about risk. To do so they need to understand the nature of risk and its inherent uncertainty and how decisions are made in organisations and by individuals, and the factors influencing such

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					uncertainty occupational health and safety OHS risk information risk communication	decisions. This chapter examines decision-making theory, types of organisational decisions and factors influencing decisions about risk. It considers risk communication, legal and ethical issues, and the limitations of risk assessments. The chapter concludes with an examination of the role of the OHS professional in influencing risk-based decision-making, and presentation of a model to inform OHS professional practice OHS professional together with the Appendix addressing the high-risk event of arc flash.
Causation	32		Models of occurrence causation (safety)			
	33		Models of causation (health determinants)			
Control	34.1	2019	Control: Prevention and intervention	Leo Ruschena	control barriers defences hierarchy of control safe design	Hazard and risk control to prevent work-related fatality, injury, disease and ill health is the core objective of the OHS professional. While there is a legislative requirement to control risks in the workplace, the approach should go beyond mere compliance. Control of hazards and risk is not necessarily an easy or straightforward task. While the methods of controlling individual hazards such as chemicals and noise are well understood, there are many workplace injuries and disorders that have multiple causes, and there are different approaches to control. This chapter addresses key principles of control including requisite variety, hierarchies of control, time-sequence approaches, barriers and defences, the precautionary principle and the sociotechnical systems approach. A brief discussion of specific control strategies is followed by consideration of the implications for OHS practice. The chapter emphasises the role of the OHS professional as an organisational change agent, rather than just a risk-management technician.
	34.2	2019	Introduction to user-centred safe design	Tim Horberry, Robin Burgess-Limerick,	safe design participatory ergonomics	This chapter emphasises the importance of user-centred control and safe design within a framework of participatory ergonomics, and considers the roles that generalist OHS professionals can take in the workplace design and control process. Key concepts of ergonomics/human factors, user-centred design, risk

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				Neil Storey, Matthew Thomas, Leo Ruschena, Margaret Cook, Chad Pettitt,	end users human factors user-centred control	management and participatory approaches to control, and safe design are described, with an emphasis on methods of infusing safe design with a user-centred perspective. The chapter provides an example of a user-centred safe design tool – Safety in Design Ergonomics (SiDE) – that employs a task-based approach to develop effective user-centred controls in the mining industry. Also, safe design procurement and manual-task risk management are considered. Designer duties and regulations are summarised, including standards for user-centred control and safe design, and the chapter concludes with some implications for OHS practice.
	34.3	2019	Health and safety in design	AIHS	design safe design prevention through design safety health	The concept of safe design or 'prevention through design' has developed in response to the recognition of the relationship between design and the risk of injury or ill health to 'users' of the designed product. Incorporating health and safety early in the design process is effective from prevention and financial perspectives. The generalist OHS professional should be a workplace advocate for healthy and safe design, encouraging critical thinking as part of the design process and, when appropriate, a coordinator of specialist expertise. Rather than considering design as a linear process, the OHS professional should identify design as a complex, multi-stakeholder, iterative process applying to the full life cycle of the designed product. Taking account of this complexity, this chapter discusses the design process and the implications for OHS practice, including relevant principles of safe design, and appends a design-process tool to guide the OHS professional in stimulating critical analysis of safety and health impacts.
	34.4		Design of work	Lisette Kanse Laura Fruhen		
	35	2019	Mitigation of Health impacts	AIHS	health injury early intervention rehabilitation return to work compensation good work	Although the activities of injury management, claims management and return to work may not be core activities for generalist Occupational Health and Safety (OHS) professionals, knowledge of the key principles of mitigating health impacts is required to minimise the impact of work-related injury, ill health and disease on individuals and organisations. Increases in work time lost and the size of workers' compensation payments for serious claims underline the importance of such knowledge. This chapter discusses: key concepts of early intervention, return to work and social support; the roles of professionals involved in injury management and return to work; and strategies to achieve early and effective return to work.

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						The special cases of critical incidents and workplace fatalities are also considered. The potential role of the generalist OHS professional is highlighted at the end of sections, and the chapter concludes with a summary of implications for OHS practice.
	36	2019	Emergency management	Andrew Stanbury	emergency planning threat preparedness response recovery mitigation	All organisations are vulnerable to emergencies and, consequently, must plan for them as part of their health and safety framework and systems. While expert advice may be required, the generalist Occupational Health and Safety (OHS) professional has a pivotal role in facilitating and managing an organisation's emergency management, preparedness and response capability. Australian Emergency Management arrangements are based on partnerships across governments, emergency response services, businesses, industry and the community with the approach being both comprehensive and integrated. This chapter facilitates such a broad approach by introducing the OHS professional to the principles and concepts underpinning two commonly used emergency management frameworks, the Australasian Inter-service Incident Management System (AIIMS) and the US National Incident Management System (NIMS). It should also be recognised that while these are the primary systems used by both industry and hazard management agencies in Australia, there are any number of hybrid systems and systems developed by industry for specific applications. The chapter examines the four components of an emergency management system: understanding threats; planning; response and recovery and their underpinning elements of an all hazards approach, risk assessment, vulnerability, competency, interoperability, flexibility; minimising impacts, management by objectives and incident action planning. The chapter concludes with a role statement for OHS professionals in emergency management.
Practice						
	37.1		Theory to practice			
	37.2	2019	Model of OHS practice	Pam Pryor Susanne Tepe	model of practice professional OHS	In 2011 Australia-wide consultation with OHS professionals as part of the development of the OHS Body of Knowledge led to the development of a consensus model of OHS practice. The model had three elements: (i) a cyclic representation of the overall process (the process model) with two meta-skills applicable to all aspects of the model; (ii) actions/thinking processes that provide some detail for each of the cyclic steps; and (iii) professional practice skills

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					occupational health and safety	required to action each step. A list of 'areas of practice' were also mapped to the cyclic steps as examples of where the professional practice skills are applied. In the light of a number of professional developments and a maturing of the profession since the development of the model, and with the benefit of experience, the authors revisited the model to identify any modifications and consider its ongoing relevance. The review clarified the model as applying to the problem-solving aspects of OHS practice and confirmed it as a useful model for OHS practice in both its extended and the more recently developed abbreviated forms.
	37.3		OHS professional practice for the 2020s			
	37.4	2020	Workers working from home	Pam Pryor David Provan	safety health wellbeing OHS working from home WFH	Working from home, in some form, has always been a feature of work. The recent COVID-19 pandemic and the government recommendation for workers to work from home where possible has cast new light on working from home, and in particular the health and safety implications. With working from home likely to be a significant feature in ongoing working arrangements it is vital that we learn from the recent experience to optimise the outcomes of working from home for the worker and for the organisation. Building on the limited literature, this chapter draws on the outcomes of a survey and interviews with OHS professionals to develop principles for OHS practice to inform the design of work for working from home.
Professional attributes	38.1		Working in organisations			
	38.2		Organisational learning and leading change			
	38.3		Professional practice and ethics	AIHS	ethics morality code of ethics ethical decision-making	Ethical decision-making is integral to the role and practice of occupational health and safety (OHS) professionals. This chapter focuses on the OHS professional as an 'ethical professional,' and foregrounds the complexity of ethics in OHS professional practice. It considers ethics in the context of the legal obligations of the OHS professional, introduces the concept of the OHS professional as 'moral agent,' and discusses ethical theory from a moral philosophy perspective as a basis

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					professional behaviour safety OHS	for examining the role of formal codes of ethics and particular ethical challenges for OHS professionals. This is followed by discussion of individual and organisational ethical capability and practical approaches to ethical OHS decision-making, including consideration of 'speaking up' when the need arises. Appendices provide a summary of ethical theories and a compilation of OHS scenarios to prompt professional discourse.
Practice skills	39.1		The OHS Professional as critical consumer of research	Drew Rae		
	39.2		The OHS Professional as a workplace researcher			

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