



THE CORE BODY OF KNOWLEDGE FOR GENERALIST OHS PROFESSIONALS

A project conducted by HaSPA
(Health and Safety Professionals Alliance)



**Australian OHS Education
Accreditation Board**

Copyright notice and licence terms

First published in 2012 by the Safety Institute of Australia Ltd, Tullamarine, Victoria, Australia.

Bibliography.

ISBN 978-0-9808743-1-0

This work is copyright and has been published by the Safety Institute of Australia Ltd (**SIA**) under the auspices of HaSPA (Health and Safety Professionals Alliance). Except as may be expressly provided by law and subject to the conditions prescribed in the Copyright Act 1968 (Commonwealth of Australia), or as expressly permitted below, no part of the work may in any form or by any means (electronic, mechanical, microcopying, digital scanning, photocopying, recording or otherwise) be reproduced, stored in a retrieval system or transmitted without prior written permission of the SIA.

You are free to reproduce the material for reasonable personal, or in-house, non-commercial use for the purposes of workplace health and safety as long as you attribute the work using the citation guidelines below and do not charge fees directly or indirectly for use of the material. You must not change any part of the work or remove any part of this copyright notice, licence terms and disclaimer below.

A further licence will be required and may be granted by the SIA for use of the materials if you wish to:

- reproduce multiple copies of the work or any part of it
- charge others directly or indirectly for access to the materials
- include all or part of the materials in advertising of a product or services, or in a product for sale
- modify the materials in any form, or
- publish the materials.

Enquiries regarding the licence or further use of the works are welcome and should be addressed to:

Registrar, Australian OHS Education Accreditation Board
Safety Institute of Australia Ltd, PO Box 2078, Gladstone Park, Victoria, Australia, 3043
registrar@ohseducationaccreditation.org.au

Citation of the whole *Body of Knowledge* should be as:

HaSPA (Health and Safety Professionals Alliance).(2012). *The Core Body of Knowledge for Generalist OHS Professionals*. Tullamarine, VIC. Safety Institute of Australia.

Citation of individual chapters should be as, for example:

Pryor, P., Capra, M. (2012). Foundation Science. In HaSPA (Health and Safety Professionals Alliance), *The Core Body of Knowledge for Generalist OHS Professionals*. Tullamarine, VIC. Safety Institute of Australia.

Disclaimer

This material is supplied on the terms and understanding that HaSPA, the Safety Institute of Australia Ltd and their respective employees, officers and agents, the editor, or chapter authors and peer reviewers shall not be responsible or liable for any loss, damage, personal injury or death suffered by any person, howsoever caused and whether or not due to negligence, arising from the use of or reliance of any information, data or advice provided or referred to in this publication. Before relying on the material, users should carefully make their own assessment as to its accuracy, currency, completeness and relevance for their purposes, and should obtain any appropriate professional advice relevant to their particular circumstances.

The OHS Body of Knowledge for Generalist
OHS Professionals has been developed under the
auspices of the **Health and Safety Professionals Alliance**



The Technical Panel established by the Health and Safety Professionals Alliance (HaSPA) was responsible for developing the conceptual framework of the OHS Body of Knowledge and for selecting contributing authors and peer-reviewers. The Technical Panel comprised representatives from:



University of Ballarat
Learn to succeed



The Safety Institute of Australia supported the development of the OHS Body of Knowledge and will be providing ongoing support for the dissemination of the OHS Body of Knowledge and for the maintenance and further development of the Body of Knowledge through the Australian OHS Education Accreditation Board which is auspiced by the Safety Institute of Australia.



Dedication

This OHS Body of Knowledge is dedicated to all those who die, are injured or whose health suffers as a result of their work activities, and to their families and others affected by these deaths, injuries and illnesses*. It is dedicated also to those OHS professionals, OHS practitioners and others whose work and life passion is the improvement of safety and health conditions in the workplace and who believe that work should be a positive life influence rather than a source of harm.

*The Australian Bureau of Statistics estimated that 640,700 people experienced a work-related injury or illness in 2009-10,¹ while for 2008-9 Safe Work Australia recorded 134,835 compensation claims for serious work-related injuries or illnesses² and 223 compensated fatalities³. While no current cost estimates are available the 2005-6 estimated cost of work-related injury and illness as \$57.5 billion (or 5.9% of GDP) is indicative.⁴

¹ ABS (Australian Bureau of Statistics). (June, 2011). 4102.0 – Australian Social Trends: Work and Health. Canberra, ACT. Retrieved from <http://www.abs.gov.au>

² Safe Work Australia. (2011). Key Work and Health and Safety Statistics. (p.3). Retrieved from <http://www.safeworkaustralia.gov.au>

³ Safe Work Australia. (2011). Key Work and Health and Safety Statistics. (p.10). Retrieved from <http://www.safeworkaustralia.gov.au>

⁴ Safe Work Australia. (2011). Key Work and Health and Safety Statistics. (p.3). Retrieved from <http://www.safeworkaustralia.gov.au>

CONTENTS

Foreword

Statements of support

Acknowledgements

Preface

Introduction

Pam Pryor

The generalist OHS professional in Australia

Pam Pryor

Global concepts

Work

Mike Rafferty and Sally Wright

Safety

Sidney Dekker

Health

Niki Ellis

Technical concepts

Foundation science

Pam Pryor and Mike Capra

Socio-political context

Socio-political context: OHS law and regulation in Australia

Liz Bluff

Socio-political context: Industrial, technological and business imperatives

Leo Ruschena

The Organisation

Andrew Hopkins, John Toohey, Dennis Else, Bob Stacy, David Borys, Susanne Tepe

Systems

David Borys, Steve Cowley, Susanne Tepe, Andrew Morrell, Wendy Macdonald

The Human

The Human: As a biological system

Kelly Johnstone and Keith Adam

The Human: Basic psychological principles

Carlo Capponechia

The Human: Basic principles of social interaction

Bill Pappas, Carlo Capponechia and Eleanor H. Wertheim

Hazard

Hazard as a concept

Pam Pryor

Biomechanical hazards

Robin Burgess Limerick

Chemical hazards

Dino Pisaniello and Susanne Tepe

Biological hazards

Geoff Newman-Martin

Psychosocial hazards

Psychosocial hazards and occupational stress

Kirstin A Way

Psychosocial hazards: Fatigue

Jessica L Paterson and Drew Dawson

Psychosocial hazards: Bullying, aggression and violence

Kirstin A Way

Physical hazards

Physical hazards: Noise and vibration

Beno Groothof

Physical hazards: Electricity

Leo Ruschena

Physical hazards: Ionising Radiation

Martin L Ralph

Physical hazards: Non-Ionising Radiation – Electromagnetic

Leo Ruschena and Martin L Ralph

Physical hazards: Thermal environment

Ross DiCorleto

Physical hazards: Gravitational

Neil Adams and Paul Breslin

Physical hazards: Plant

Tony Payne

Physical hazards: Mobile plant

Gloria Kyriacou Morosinotto

Physical hazards: Vehicles and occupational road use

Rwth Stuckey

Risk

Jean Cross

Causation

Models of causation: Safety

Yvonne Toft, Geoff Dell, Karen K Klockner and Allison Hutton,

Models of causation: Health determinants

Wendy Macdonald

Control

Control, prevention and intervention

Leo J Ruschena

Mitigation: Emergency preparedness

Neville Betts

Mitigation: Health impacts

Kevin Sleigh

Practice

Introduction to 'practice' as a concept

Phillip Turner

Model of OHS practice

Pam Pryor and Susanne Tepe

The OHS professional as a 'critical consumer' of research

Pauline Zardo and Pam Pryor

NOT FOR COMMERCIAL PURPOSES

STATEMENT FROM WORKSAFE VICTORIA

WorkSafe Victoria is dedicated to improving the health and safety of workers. As part of this commitment we strive to ensure workplaces have access to the most up to date strategic, evidence based occupational health and safety advice through suitably qualified OHS professionals.

The Safety Institute of Australia (SIA), in collaboration with industry and health and safety professional bodies, is now able to present this body of knowledge, providing consistent standards to guide OHS educators and professionals.

This work leads the way to consistent education for OHS professionals through accreditation of tertiary courses and is a credit to the extensive knowledge contributed by OHS educators and experts from around Australia. The accreditation process will play a significant role in both raising the standard of professional OHS advice and giving employers great confidence when engaging OHS expertise.

I would particularly like to thank the team from the SIA for their dedication and hard work, the Technical Panel for contributing their knowledge and coveted time to this important project, and the Health and Safety Professionals Alliance (HaSPA) that steered the project. Most importantly I acknowledge the significant contributions of the chapter authors. Without their work the Body of Knowledge could not have been written.

SIA and all parties involved can all be extremely proud of this piece of work and the collaborative spirit in which it was created. In developing these standards for education, SIA has achieved an acknowledged world first and generated much international interest. I have no doubt it will be of huge benefit to the OHS profession and as a result, the safety of workers.

Greg Tweedly
Chief Executive
WorkSafe Victoria

OHS Body of Knowledge Technical Panel

The Technical Panel established by the Health and Safety Professionals Alliance (HaSPA) was responsible for developing the conceptual framework of the OHS Body of Knowledge and for selecting contributing authors and peer-reviewers. Members of the Technical Panel were not remunerated.

The Technical Panel comprised representatives of:



Members of the Technical Panel were:

Pam Pryor (SIA) (Chair)

Professor Mike Capra (SIA)

Dr David Borys (University of Ballarat)

Susan Leggett (University of Ballarat) (part)

Associate Professor Wendy Macdonald (La Trobe University)

Dr Jodi Oakman (La Trobe University)

Leo Ruschena (RMIT University)

Associate Professor Susanne Tepe (RMIT University)

Acknowledgements

WorkSafe Victoria

This project was made possible with financial support and assistance from **WorkSafe Victoria**.

Health and Safety Professionals Alliance (HaSPA)

HaSPA as the official ‘owner’ of the project provided high level direction and gave regular feedback on progress reports.

Safety Institute of Australia

The **Safety Institute of Australia** was not only the contract holder and responsible for financial governance but provided resources such as meeting and teleconference facilities. The SIA also coordinated arrangements for engagements session and consultative processes.

Chair of the Technical Panel

Pam Pryor as chair of the Technical Panel liaised with authors and peer reviewers during writing of the Body of Knowledge also undertaking an editorial function directed to chapter layout and support for contributing authors..

Project Administration

Sally Bennett of Enhance Solutions undertook project management and administration together with workshop facilitation. Her expert professional advice was invaluable.

Editorial

Dr Anne Statham PhD, BBus, MBus(Comm) was the academic editor. Anne’s editorial support went beyond the normal scope of the editorial role and the Technical Panel wishes to acknowledge their appreciation for her commitment to the task. As the respective authors for each chapter and the Chair of the Technical Panel had final chapter approval, any errors or inconsistencies are theirs.

Leo Ruschena provided considerable editorial and technical support in developing early drafts of some chapters and in the final production

Graphics

Graphics were developed or re-drawn by **Laura Kelly** of Rewire Group Pty Ltd.

Consultative Processes

Workshops and focus groups conducted as part of the OHS Body of Knowledge development process included:

- A two-day workshop attended by 40 OHS educators from throughout Australia
- SIA College of Fellows Professional Reference convened for the project
- Eight workshops conducted in all states and the ACT attended by 137 OHS professionals
- Focus groups conducted as part of developing the Model of OHS practice, involving approximately 30 OHS professionals.

While participants in these events are too numerous to name individually, the Technical Panel is appreciative of their time and interest and values their input.

Contributing Authors

The Technical Panel selected authors on the basis of their demonstrated, specialist expertise. Contributing authors were not remunerated; they wrote the chapters in their own time as part of their contributions to the OHS profession and to workplace health and safety. The authors of the OHS Body of Knowledge are:

Dr Keith Adam, Senior Occupational Physician, Medibank Health Solutions, Queensland

Neil Adams, Director Neil Adams and Associates

Neville Betts, Chair College of Fellows, Safety Institute of Australia

Dr Elizabeth Bluff, Research Fellow, National Research Centre for Occupational Health and Safety, Australian National University

Dr David Borys, Senior Lecturer OHS, University of Ballarat

Paul Breslin, OHSE Manager, Construction and Development, Brookfield Multiplex

Robin Burgess-Limerick, Professor of Human Factors, Minerals Industry Safety and Health Centre, University of Queensland

Dr Carlo Caponecchia, Lecturer, School of Aviation, University of New South Wales

Mike Capra, Professor of OHS, School of Biomedical Sciences, University of Queensland

Dr Steve Cowley, Steve Cowley Health and Safety Consulting

Jean Cross, Emeritus Professor Risk and Safety Science, University of New South Wales

Drew Dawson, Professor and Director, Centre for Sleep Research, University of South Australia

Sidney Dekker, Professor and Director, Key Centre for Ethics, Law and Justice, Griffith University

Geoff Dell, Associate Professor and Development Leader (Accident Investigation) School of Health & Human Services Faculty of Sciences, Engineering and Health, CQUniversity

Dr Ross DiCorletto, Principal Advisor Industrial Hygiene, RioTinto

Niki Ellis, Professor and CEO, Institute of Safety, Compensation and Recovery Research, Monash University

Dennis Else, Professor OHS, University of Ballarat, Director, Sustainability, Safety and Health, Brookfield Multiplex

Beno Groothoff, Managing Director, Environmental Directions Pty Ltd

Andrew Hopkins, Emeritus Professor, School of Sociology, Australian National University

Allison Hutton, CQ University

Dr Kelly Johnstone, Senior Lecturer, School of Biomedical Sciences, University of Queensland

Karen Klockner, CQ University

Wendy Macdonald, Associate Professor and Director, Centre for Ergonomics and Human Factors, School of Public Health & Human Biosciences, Faculty of Health Sciences La Trobe University

Gloria Kyriacou Morosinotto Director, Contract Safety Solutions

Andrew Morrell, Associate Professor, Minerals Industry Safety and Health Centre, University of Queensland

Dr Geoff R Newman-Martin, Scientific Advisor Toxinology and Toxicology, Defence Centre for Occupational Health, Department of Defence, Canberra, Australia; Adjunct Senior Lecturer, Centre for Military and Veterans' Health, University of Queensland

Bill Pappas, National Convenor, Australian Psychological Society, Occupational Health Psychology Interest Group

Dr Jessica L Paterson, Postdoctoral Research Fellow, Centre for Sleep Research, University of South Australia

Tony Payne, Director, Payne Consulting Services Pty Ltd

Dino Pisaniello, Associate Professor, Deputy Head, Discipline of Public Health, University of Adelaide

Pam Pryor, Chair Technical Panel OHS Body of Knowledge

Dr Mike Rafferty, Senior Research Analyst, Workplace Research Centre, University of Sydney

Martin J Ralph, Managing Director, Industrial Foundation for Accident Prevention

Leo Ruschena, Senior Lecturer, School of Applied Science, RMIT University

Dr Kevin Sleight, Consultant Occupational Physician

Dr Robert Stacy, Executive Manager, Zero Harm, Downer

Dr Rwth Stuckey, School of Occupational Therapy, La Trobe University

Susanne Tepe, Associate Professor of OHS, School of Applied Science, RMIT University

Yvonne Toft, Associate Professor, School of Health & Human Services Faculty of Sciences, Engineering and Health, CQUniversity

John Toohey, Professor, Graduate School of Business and Law, RMIT University

Phillip Turner, Vice President Health, Safety and Environment, RioTinto Alcan

Kirsten A Way, School of Psychology, University of Queensland.

Eleanor H Wertheim, Professor, School of Psychological Science, La Trobe University

Sally Wright, Senior Research Analyst, Workplace Research Centre, University of Sydney

Pauline Zardo, Department of Epidemiology and Preventive Medicine, Monash University

Peer-reviewers

The peer-review process was vital to the quality and rigour of the content of the OHS Body of Knowledge. The OHS Body of Knowledge Technical Panel would like to acknowledge those who committed their time and expertise to provide thoughtful and constructive feedback as part of the drafting of the chapters. The Technical Panel is appreciative of the input provided by the peer reviewers listed below along with those few who preferred to remain anonymous.

Timothy Ackland, Professor and Head, School of Sport Science, Exercise and Health, University of Western Australia

Dr Keith Adam, Senior Occupational Physician, Medibank Health Solutions, Queensland

Dr John Barton, Adjunct Reader, Centre for Integrative Systems, University of Queensland

Sally Bennett, Director, Enhance Solutions; Sessional Lecturer, Deakin University; President, Victorian Chapter, Risk Management Institute of Australia.

Robert Blackly, Radiation Protection Advisor, Australian Nuclear Science and Technology Organisation

Dr David Borys, Senior Lecturer OHS, University of Ballarat

Dr Matthew Brandt, Visiting Occupational Physician, Kinetic Health Care

Dr David Bromwich, Adjunct Professor, Griffith University

Marion Burgess, Research Officer, Acoustics and Vibration Unit, University of NSW, Canberra

Dr Peter Cairney, Principle Research Scientist, Australian Road Research Board

David Caple, Adjunct Professor, Centre for Ergonomics & Human Factors, La Trobe University; Director David Caple and Associates Pty Ltd

Dr Carlo Caponecchia, Lecturer, School of Aviation, The University of New South Wales

Mike Capra, Professor of OHS, School of Biomedical Sciences, University of Queensland

David Cliff, Professor and Director, Minerals Industry Safety and Health Centre, Sustainable Minerals Institute University of Queensland

Dr Steve Cowley, Steve Cowley Health and Safety Consulting

Dr Gary Dennis, Managing Director, Ergo Enterprises Pty Ltd, Adjunct Professor University of Queensland

Niki Ellis, Professor and CEO, Institute of Safety, Compensation and Recovery Research, Monash University

Gary Foster, Managing Director, Foster OHS Pty Ltd

Steve Gambrill, OHS Manager, Eraring Energy

Dr David Goddard, Senior Lecturer, Monash Centre for Occupational and Environmental Health, Monash University

Max Hely, Director, Safety Science Associates

Dr Tim Horberry, Principal Research Fellow (Human Factors), Minerals Industry Safety and Health Centre, University of Queensland

Richard Johnstone, Professor, Griffith Law School, Griffith University; National Research Centre for Occupational Health and Safety, Australian National University

Peter Knott, Senior Occupational Hygienist, 3M Australia Pty Ltd

Stephen Kuehn, Principle Engineer, Escape Technologies

Dr Robert McCartney, Occupational Physician, OccMD Pty Ltd, President, Australian & New Zealand Society of Occupational Medicine (ANZSOM)

Ern Millard, Principal Consultant, Ern Millard and Associates Pty Ltd

Andrew Morrell, Associate Professor, Minerals Industry Risk Management, Minerals Industry Safety and Health Centre, University of Queensland

Bill Pappas, National Convener, Australian Psychological Society, Occupational Health Psychology Interest Group

Warwick Pearse, Associate Professor, School of Public Health, Queensland University of Technology

Leo Ruschena, Senior Lecturer, School of Applied Science, RMIT University

John Salter, Director, Emergency Preparedness Capacity Builders

Jane Whitelaw, Lecturer Postgraduate OHS Program, University of Wollongong

Professor Chris Winder, Professor Chris Winder, Faculty of Business, Australian Catholic University

David Skegg, Manager, HSE, CBH Australia Pty Ltd

NOT FOR COMMERCIAL PURPOSES

From the Chair of the Technical Panel

As Patrick Hudson clearly demonstrated in his 2010 Dr Eric Wigglesworth Memorial Lecture on *Rethinking Safety*, “OHS is not rocket science, it's much harder”. While recognising that everybody has a stake, and therefore a role, in workplace health and safety one of the objectives of the OHS Body of Knowledge is to support and encourage evidence-based practice by OHS professionals.

The development of the OHS Body of Knowledge has been a bit like giving birth. There has been a long gestation period with some challenges along the way; the delivery has taken longer than expected; and, while the outcome has been very gratifying, this is just the beginning. There will a maturation process requiring nurturing by many people and caring custodianship.

The OHS Body of Knowledge, 2012, is not intended to be a definitive statement, fixed in time. Rather it should be subject to continual reinterpretation and evolution as people engage with it, apply it, and extend it by research. Therefore this is the beginning of the discussion; a discussion that should occur on a national and international basis. It is proposed that this discussion will be facilitated by:

- An interactive web site facilitating evidence-based comment and input
- Workshops conducted in Australia with specialists and practicing OHS professionals to test and interpret the content of specific chapters and to clarify the scope of content in terms of the role of the generalist OHS professional
- Extension of these workshops to include international specialists; also with some workshops being held in other countries as part of the SIA's involvement with the International Network of Safety and Health Professional Organizations (INSHPO).

As with any work of such vast and compiled from the input of so many there will be those who think we have not got it quite right. I call on those people to be part of the discussion.

The OHS Body of Knowledge is just one part of the OHS Body of Knowledge project that has informed the establishment of the Australian OHS Education Accreditation Board to accredit OHS professional education programs and the creation of a certification process for generalist OHS professionals.

The OHS Body of Knowledge Technical Panel has been on quite a journey over the last three years, one that has forced us to think about our approach to and understanding of OHS in general and some aspects of OHS in particular. I encourage all OHS professionals to embark on a similar journey, to engage with the Body of Knowledge and in constructive discussion about the content. I also implore all OHS professionals to explore the scope of their work and the links with professionals in other OHS disciplines and work together to optimise workplace health and safety for all Australians.

While many people are recognised in the Acknowledgements I would personally like to thank all those who have contributed to the project and assisted me personally: the Technical Panel who tolerated my sometimes pedantic approach; the many authors and peer reviewers who I chased and sometimes nagged, Anne Statham the editor, the SIA, and of course Clarke Martin and his colleagues at WorkSafe Victoria. There has been a great commitment by many people and I think we have a really worthwhile result. Now let the discussion begin.



Pam Pryor BSc.BEd.GDipOHS.FSIA
Chair OHS Body of Knowledge Technical Panel

NOT FOR COMMERCIAL PURPOSES

PREFACE

Background

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 in Australia.

Development

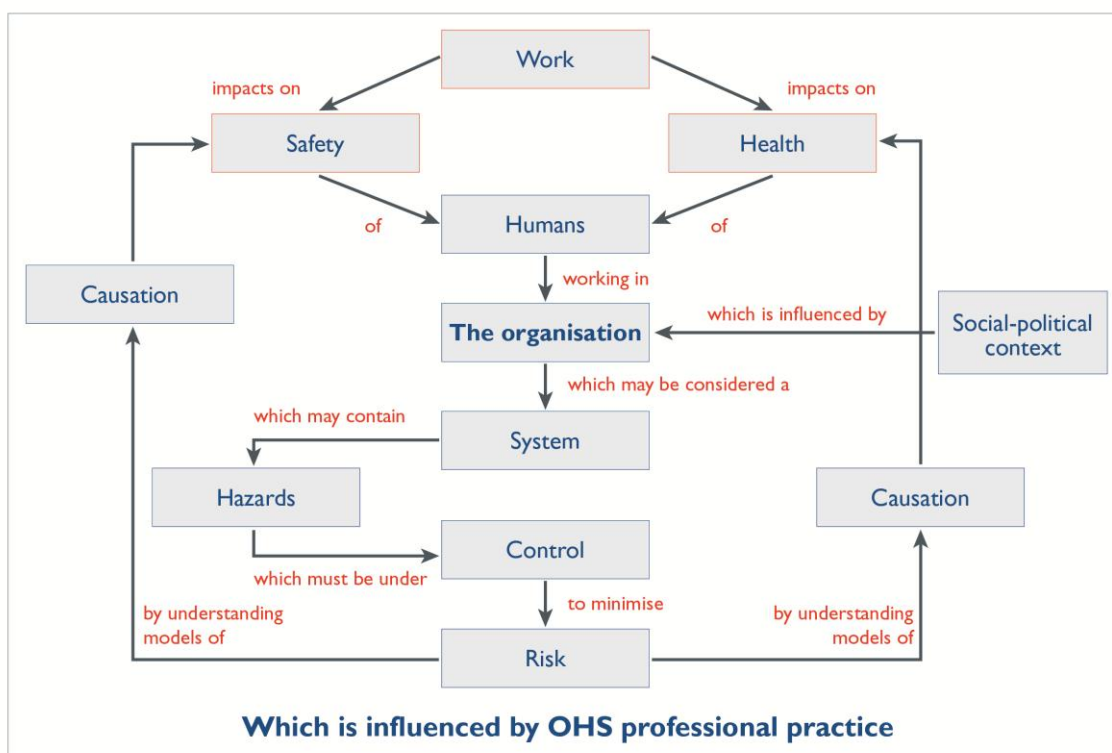
The process of developing and structuring the main content of this document was managed by a Technical Panel with representation from Victorian universities that teach OHS and from the Safety Institute of Australia, which is the main professional body for generalist OHS professionals in Australia. The Panel developed an initial conceptual framework which was then amended in accord with feedback received from OHS tertiary-level educators throughout Australia and the wider OHS profession. Specialist authors were invited to contribute chapters, which were then subjected to peer review and editing. It is anticipated that the resultant OHS Body of Knowledge will in future be regularly amended and updated as people use it and as the evidence base expands.

Conceptual structure

The OHS Body of Knowledge takes a ‘conceptual’ approach. As concepts are abstract, the OHS professional needs to organise the concepts into a framework in order to solve a problem. The overall framework used to structure the OHS Body of Knowledge is that:

Work impacts on the **safety** and **health** of humans who work in **organisations**. Organisations are influenced by the **socio-political context**. Organisations may be considered a **system** which may contain **hazards** which must be under control to minimise **risk**. This can be achieved by understanding **models causation** for safety and for health which will result in improvement in the safety and health of people at work. The OHS professional applies **professional practice** to influence the organisation to being about this improvement.

This can be represented as:



Audience

The OHS Body of Knowledge provides a basis for accreditation of OHS professional education programs and certification of individual 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 may find it useful for benchmarking OHS professional practice.

Application

Importantly, the OHS Body of Knowledge is neither a textbook nor a curriculum; rather it describes the key concepts, core theories and related evidence that should be shared by Australian generalist OHS professionals. This knowledge will be gained through a combination of education and experience.

Accessing and using the OHS Body of Knowledge for generalist OHS professionals

The OHS Body of Knowledge is published electronically. Each chapter can be downloaded separately. However users are advised to read the Introduction, which provides background to the information in individual chapters. They should also note the copyright requirements and the disclaimer before using or acting on the information.

Note 1: References to national Model Work Health and Safety Regulations (WHSR) refer to the 2010 draft as the final regulations were not available at the time of writing. Readers should refer to the current version of the regulations and Work Health and Safety Act.

Note 2: It is recognised that as part of the further development of the OHS Body of Knowledge additional chapters may be required. It is likely that at least some of these may be in the area of 'practice'. For example one area of practice that may warrant a chapter is that of 'Investigation'. We welcome suggestions for other chapters.

NOT FOR COMMERCIAL PURPOSES