THE CORE BODY OF KNOWLEDGE FOR GENERALIST OHS PROFESSIONALS

A project conducted by HaSPA (Health and Safety Professionals Alliance)
The first edition (2012) of the OHS Body of Knowledge was an outcome of the OHS Body of Knowledge project funded by a grant from WorkSafe Victoria and overseen by the Health and Safety Professionals Alliance (HASPA). The Technical Panel responsible for developing the conceptual framework for the OHS Body of Knowledge and for selecting the contributing authors and peer-reviewers comprised representatives from the Safety Institute of Australia, Latrobe University, RMIT University and the then University of Ballarat.

Safe Work Australia subsequently funded the development of a further four chapters.

The ongoing development of new chapters and the updating of existing chapters is funded by the Safety Institute of Australia drawing on a range of income sources.
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 531,800 people experienced a work-related injury or illness in 2013-14¹ while for the same year Safe Work Australia recorded 106,656 compensation claims for serious work-related injuries or illnesses² and 188 deaths resulting from work-related traumatic injury³. While estimates of the cost of injury depend on the statistic modeling, Safe Work Australia has estimated the total economic cost of work related injury to the Australian economy for the 2012–13 financial year at $61.8 billion, representing 4.1 per cent of GDP for the same period.⁴

Edition 1

2012 with further chapters in 2014 and 2015
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:

- 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 Ruschen (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

**Dr Chris Bearman**, Research Fellow, Appleton Institute, University of Queensland.

**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

**Carmel Bofinger**, Associate Professor, Minerals Industry Safety and Health Centre, University of Queensland

**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 Margaret Cook**, Senior Lecturer, OHS Education, 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

**Neil Foster**, Associate Professor, Newcastle Law school, University of Newcastle

**Beno Groothoff**, Managing Director, Environmental Directions Pty Ltd
Dr Jan Hayes, Senior Researcher and Program Leader, RP$ Public Safety and Security of Supply, Energy Pipelines CRC, Australian National University.

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

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

Alison Hutton, CQ University

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

Richard Johnstone, Professor, Faculty of Law, Queensland University of Technology

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

Chad Pettitt, Senior Consultant, AusSafe Consulting

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 Ruschenia, Senior Lecturer, School of Applied Science, RMIT University

Barry Sherriff, Partner, Norton Rosse Fullbright Australia

Dr Kevin Sleigh, Consultant Occupational Physician

Dr Robert Stacy, Executive Manager, Zero Harm, Downer

Neil Storey, Director, Plant and Structures Section, Codes and Guidance Branch, Safe Work Australia

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

Susanne Tepe, Associate Professor of OHS, School of Applied Science, RMIT University
Matthew Thomas, Associate Professor, Appleton Institute, Central Queensland University

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

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

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

Derek Viner, Consulting Risk Engineer, Viner & Associates

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

Dr Eric Windholtz, Lecturer, Faculty of Law, Monash 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 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

Richard Coleman, General Manager Safety, Asciano

Dr Steve Cowley, Steve Cowley Health and Safety Consulting

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

Malcolm Deery, Group General Manager HSE, Programmed

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

Peter (PJ) Fleming, Assistant Director, Safety Capability Development, Department of Defence

Gary Foster, Managing Director, Foster OHS Pty Ltd

Steve Gambrill, OHS Manager, Eraring Energy

John Green, HSEQ Director, Laing O’Rourke

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)

John McDonald, Barrister and solicitor

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

Dr Howard Morris, Australian Strategy Team, Safe Work Australia

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
Angela Seidel, Independent risk professional

Dr Lisa Steiner, Senior Scientist, Human Centered Design, National Institute for Occupational Safety and Health (NIOSH), Centre for Disease Control (CDC)

Jane Whitelaw, Lecturer Postgraduate OHS Program, University of Wollongong

Peter Wilkinson, General Manager, Noetic Group

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

David Skegg, Manager, HSE, CBH Australia Pty Ltd
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 scope 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
Edition 2
2017
From the Chair of the Safety Institute of Australia

The Safety Institute of Australia considers the OHS Body of Knowledge as strategically important to the SIA and vital to the profession.

Under the strategic pillar of Capability, the SIA has the strategic objective to

*Provide an up-to-date body of knowledge for the profession on which Higher Education and continuing professional development is based.*

The SIA considers that part of its role as a professional body is to support the development of the OHS Body of Knowledge to ensure that the OHS Body of Knowledge addresses priority topics for OHS education and for the profession, and that the quality and evidence-base for individual chapters reflects current OHS research and leading edge thinking.

In working towards this objective, the OHS Body of Knowledge is a key contributor to the strategic outcomes of the Australian Work Health and Safety Strategy 2012-22 in the action area of evidence-informed policy, programs and practice such that:

- Evidence is translated to assist practical application, and
- The results of research and evaluation are disseminated and implemented.

While the SIA is committed to maintaining and further developing the OHS Body of Knowledge, we can only achieve this through the support of our industry partners, like minded associations and OHS researchers, educators and professionals.

I commend this second edition of the OHS Body of Knowledge, I thank all those who have contributed, and encourage all OHS professionals and practitioners to engage with the OHS Body of Knowledge by reading it, reflecting on the implications for practice, and providing feedback.

*Patrick Murphy GDOHS, GDSust, MBus, MHlthSci, ChOHSP, CFSIA*

*Chair, Safety Institute of Australia*
Acknowledgements

**Pam Pryor** as Registrar of the Australian OHS Education Accreditation Board and more recently as Manager OHS BoK Development, Pam is instrumental in the conception of individual chapters, she project-manages the development of the chapters including liaison with technical panels, authors, peer reviewers and the editor; also undertaking a drafting and editorial function as required.

**Leo Ruschena** continues to provide ongoing support and critical comment especially on the review of existing chapters.

**Editorial**

**Dr Anne Statham** PhD, BBus, MBus(Comm) provides ongoing academic editing for each chapter to ensure consistency of approach, readability and rigour in referencing. Anne’s editorial support goes beyond the normal scope of the editorial role and all involved in the OHS BoK express their appreciation for her commitment to the task. As the respective authors for each chapter and the Manager OHS BoK Development have final chapter approval, any errors or inconsistencies are theirs.

**Graphics**

**Penny Toth** of the Safety Institute of Australia has taken on the role of developing the graphics for the chapters and we appreciate having the in-house service.

**Collaboration partners**

**Institution of Chemical Engineers (IChemE) Safety Centre (ISC)**

The development of the two chapters on process safety, *Process hazards (Chemical)* and *Managing Process Safety*, were made possible by a collaboration with the ISC who supported the project through their Director, Trish Kerin and their member representatives who contributed through the technical panel and peer review. The ISC has also supported the dissemination of the OHS Body of Knowledge through presentations at international conferences.

**Safe Work NSW**

As a Diamond Corporate Member of the Safety Institute of Australia, Safe Work NSW has chosen to direct a significant proportion of their support to the ongoing development of the OHS Body of Knowledge.

**Consultative Processes**

Development of recent chapters has included the input of topic specific technical panels. Members of the technical panels are not remunerated and give of their time and expertise as part of their contribution to OHS and to the profession.

Depending on the chapter, other consultative processes may include scoping workshops of focus groups to test chapter drafts.
Contributing Authors

In addition to the authors who contributed to Edition 1 chapters, the following authors have been involved in developing chapters for Edition 2.

Trish Kerin, Director, Institution of Chemical Engineers Safety Centre.

Peer-reviewers

The peer-review process is vital to the quality and rigour of the content of the OHS Body of Knowledge. Those who committed their time and expertise to provide thoughtful and constructive feedback as part of the drafting of chapters for Edition 2 of the OHS Body of Knowledge are listed below.

Sidney Abiodun, Senior Inspector Onshore, Major Hazards Facility, WA Department of Mines and Petroleum

Paul Amyotte, Professor, Dalhousie University, Canada

Kym Bills, Executive Director, National Resource Sciences Precinct, Perth

Simon Farrar, Manager Systems Safety, WorkSafe Victoria

Jan Hayes, Associate Professor, RMIT University

Peter Hicks, Prelude Production HSSE Manager, Shell Australia

Andrew Hopkins, Emeritus Professor, Australian National University

Jennifer Lourie, Production AIPSM Lead, Shell Australia

Vince McNeilly, General Manager, McNeilly Consulting, UK

Tony Pooley, CEO, Principle Seven

Leo Ruschen, Senior Lecturer, RMIT University

David Skegg, Lecturer, Central Queensland University

Derek Viner, Associate Professor, Central Queensland University

Laurentiu Zamfirescu, Senior Inspector (Technical Process Safety), WA Department of Mines and Petroleum