

WORKPLACE SAFETY, DEADLY JELLYFISH AND TOURISTS: A NOVEL APPROACH TO AN EMERGENT PROBLEM

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This article considers the hazards posed by marine stingers (notably Irukandjis) to recreational divers and snorkelers through the lens of Queensland's unique workplace health and safety regulatory regime. The sustainability of diving and snorkelling tourism is highly dependent on the quality and safety of the services provided. The regime already contemplates the role of operators, the impact of sting-protective swimwear and other matters. An independent review of the State's workplace laws in 2017 influenced changes to the law to improve its clarity, enforcement and prosecutions. However, this article argues that in relation to the management of marine stinger risks, with further slight adjustments to enhance clarity and consistency, the regulatory framework could achieve greater effectiveness in terms of compliance. This is important in a harmonised regulatory system. Other jurisdictions in Australia facing dangerous jellyfish hazards can refer to Queensland's laws as a model of industry standards for the provision of safer recreational water activities. The article concludes with practical recommendations.

I INTRODUCTION

Since the summer of 2019, Australia's tourism businesses have endured the effects of severe drought, catastrophic bushfires, and then the onslaught of COVID-19. The COVID-19 pandemic is of unprecedented scale and impact on the global tourism industry.¹ Domestically, travel restrictions and border closures, social distancing and other public health measures have and will continue to

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¹ On 28 July 2020, the United Nations World Tourism Organization ('UNWTO') reported that the lockdowns imposed in response to the COVID-19 pandemic led to a 98 per cent fall in international tourist numbers in May relative to 2019, which translates into a fall of 300 million tourists and US\$320 billion in international tourism receipts. See UNWTO, 'Impact of COVID-19 on Global Tourism Made Clear as UNWTO Counts the Cost of Standstill' (Web Page, July 2020) <<https://www.unwto.org/news/impact-of-covid-19-on-global-tourism-made-clear-as-unwto-counts-the-cost-of-standstill>>.

affect the lives and livelihood of tourism businesses. Health and safety risks and public/tourist risk-perception are of unparalleled importance as tourism businesses plan for the future. Tourists, especially international tourists, may have become more risk-averse than previously.² However, the virus has also triggered an opportunity for public authorities and tourism industries to review all health and safety risks with greater vigour, including marine stinger risks to recreational divers and snorkelers.

The economic value of diving and snorkelling tourism is highly dependent on the quality and safety of the services provided. Participants with little or no experience in these ocean sports are likely to place greater trust in service providers to keep them safe from known hazards. Australia's rich tropical waters are home to two of the world's deadliest jellyfish: 'box jellyfish' (*Chironex fleckeri*),³ and Irukandjis⁴ (collectively known as 'marine stingers').⁵ Experts say the frequency of encounters involving marine stingers with humans (though invariably underestimated) is increasing.⁶ Such encounters are inherently risky because they can be life-threatening.⁷ The emotional and financial costs of serious stings are significant to those affected, even catastrophic, as they can cause brain haemorrhages, long-term health complications, or death.

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- ² Past research points to a negative relationship between risk perception and intention to travel. See, eg, Rob Law, 'The Perceived Impact of Risks on Travel Decisions' (2006) 8(4) *International Journal of Tourism Research* 289; Ignatius Cahyanto et al, 'The Dynamics of Travel Avoidance: The Case of Ebola in the US' (2016) 20 *Tourism Management Perspectives* 195.
- ³ Full grown, the bell-shaped body is around 25 cm in height and has multiple tentacles up to three metres in length that can kill humans in two to three minutes through mass envenomation. See John Williamson et al (eds), *Venomous and Poisonous Animals: A Medical and Biological Handbook* (NSW University Press, 1996) 70.
- ⁴ Full grown, Irukandjis' bells are the size of a thimble, with four threadlike tentacles of around 35 cm long. See Williamson, *ibid* 269.
- ⁵ Box jellyfish and Irukandjis score a danger rating of 10/10 and 9/10, respectively. See Jude Dineley, 'Australia's Dangerous Animals: The Top 30' *Australian Geographic* (Web Page, 28 March 2013) <<https://www.australiangeographic.com.au/topics/wildlife/2013/03/australias-dangerous-animals-the-top-30/>>.
- ⁶ See Lisa-ann Gershwin et al, 'Marine Stingers: Review of an Under-Recognized Global Management Issue' (2010) 38(1) *Coastal Management* 21, 27; Chris Honnery, 'Awash with Tiny Threats', *The Courier Mail* (Brisbane, 8 January 2019) 21.
- ⁷ See Gershwin et al (n 6), 27; JH Barnes, 'Cause and Effect in Irukandji Stings' (1964) 1(24) *Medical Journal of Australia* 897; P Fenner et al, 'Further Understanding of, and a New Treatment for "Irukandji" (Carukia Barnesi) Stings' (1986) 145(11-12) *Medical Journal of Australia* 569; P Fenner and I Carney, 'The Irukandji Syndrome: A Devastating Syndrome Caused by a North Australian Jellyfish' (1999) 28(11) *Australian Family Physician* 1131; M Little et al, 'Severe Cardiac Failure Associated with Presumed Jellyfish Sting. Irukandji Syndrome?' (2003) 31(6) *Anaesthesia and Intensive Care* 642; and MA Corkeron, 'Magnesium Infusion to Treat Irukandji Syndrome' (2003) 178(8) *Medical Journal of Australia* 411.

Marine stinger hazards also carry significant economic impacts on local and national economies. For instance, an early and modest estimate of the annual financial cost of retrieving and treating Irukandji stings in Queensland in 1999 was in the range of \$1–3 million.⁸ Today, the cost is predictably much higher. Public fear and apprehension following news reports of stings can have devastating economic impacts on tour-boat businesses, the wider diving/snorkelling tourism sector, and the communities that depend on tourism revenue for their livelihood.

In many of the world's tropical regions, encounters between people and marine stingers occur during water activities such as snorkelling and diving. Tourism businesses facilitate encounters where they provide boat-based and reef water activities. Further, experts predict that with rising sea temperatures, the numbers and geographic spread of these jellyfish will also rise.⁹ For these reasons, such jellyfish are an acknowledged 'global coastal management issue' for most of the world's coastal tourism destinations¹⁰ and a significant health hazard¹¹ in Australia. This arguably brings the management of risks to health and safety posed by recreational water activities within the scope of Australia's workplace health and safety ('WHS') laws. Yet, Queensland is the only jurisdiction that has enacted specific regulation for the management of marine stinger hazards by recreational water activities providers.

Part II of this article provides an overview of Queensland's unique regulatory approach. An independent review of the State's workplace laws in 2017 has influenced changes to the law to improve its clarity, enforcement and prosecutions, to better protect people from hazardous workplace incidents.¹² This part concludes that Queensland's unique regime is an exemplar for all tourism businesses and public authorities having to manage similar jellyfish hazards and risks. However, it argues that minor changes to clarify the obligations of water activities providers could strengthen their compliance with statutory objects and help better safeguard the lives of recreational snorkelers and divers. Part III turns the focus to the relevant code of practice to suggest minor adjustments to marine stinger provisions, notably to clarify the circumstances where a person

⁸ Peter Fenner, 'Irukandji Envenomation in Far North Queensland' (1999) 170(10) *Medical Journal of Australia* 512.

⁹ Lisa-ann Gershwin, *Stung! On Jellyfish Blooms and the Future of the Ocean* (University of Chicago Press, 2013). See also Aylin Woodward, 'Thousands of Animals around the World are at Risk of Extinction. But not Jellyfish — They're Thriving in Warm, Polluted Water', *Briefing, Business Insider Australia* (online, 31 October 2019) <<https://www.businessinsider.com.au/jellyfish-thriving-climate-change-warm-oceans-2019-10?r=US&IR=T>>.

¹⁰ These jellyfish are present in much of the world's usable oceans and seas. See Gershwin et al (n 6) 21.

¹¹ Lisa-ann Gershwin et al, 'Biology and Ecology of Irukandji Jellyfish (Cnidaria: Cubozoa)', in Michael Lesser (ed), *Advances in Marine Biology* (Elsevier, 2013) 1.

¹² Tim Lyons, *Best Practice Review of Workplace Health and Safety Queensland* (Final Report, 3 July 2017) ('Best Practice Report').

conducting a business or undertaking ('PCBU') is to supply sting-protective swimwear as personal protective equipment ('PPE') and the timing, form and content of safety information for prospective customers. The suggested amendments relate to at-risk snorkelers and divers and aim to help eliminate ambiguity and promote consistency in the messaging that operators are statutorily required to provide. This part concludes that such adjustments could improve compliance by duty-holders with their statutory obligations and, consequently, better protect the health and safety of their guests. The article concludes with specific recommendations.

II QUEENSLAND'S RECREATIONAL WATER ACTIVITIES REGULATION

In 1995, recreational diving and snorkelling businesses operating in Queensland became subject to a regulatory regime that included the *Workplace Health and Safety Act 1995* (Qld) ('WHS Act 1995') and Regulations, and the *Compressed Air Recreational Diving & Recreational Snorkelling Code of Practice 1995* ('CARDRS Code'). Tour-boat operators that transport visitors by vessels to recreational diving and snorkelling sites in Queensland, notably at the Great Barrier Reef ('the Reef') and Whitsunday islands, became subject to this statutory regime. Vessels and ocean sites used to conduct these water activities are essentially marine workplaces.¹³

Under the 1995 Workplace Health and Safety ('WHS') regime, employers or self-employed persons, industry workers, and WHS regulators relied on codes of practice to provide guidance on how to achieve compliance with statutory health and safety obligations. Codes of practice were mandatory for duty-holders, insofar as they set minimum standards for the control and management of exposure to described risks. By 2005, the *CARDRS Code* included provisions on managing the risk of 'marine jellyfish stings'.¹⁴ While duty holders could adopt and follow an approach not described in a code of practice, the alternative had to create an equivalent or higher level of protection against the risk.¹⁵ As such, codes were admissible as evidence in proceedings against duty-holders suspected of breaching their statutory duty to manage exposure of prescribed risks.

¹³ In North Queensland, for example, control of an ocean site generally involves an operator holding a valid permit for the temporarily use of the site to conduct business operations, such as those issued by the managing Reef Marine Part Authority.

¹⁴ *Compressed Air Recreational Diving and Recreational Snorkelling Code of Practice 2005* (Qld) ss 1.2.18 and 2.2.11.

¹⁵ *Workplace Health and Safety Act 1995* (Qld) s 42 ('WHS Act 1995').

Then, in 2009, during the reformation¹⁶ and subsequent national harmonisation¹⁷ of Australia's workplace laws, the question arose as to whether proposed model WHS laws should regulate recreational diving and snorkelling businesses. Queensland was the only jurisdiction in support of such regulation. Workplace Health and Safety Queensland ('WHSQ') had reported 81 fatalities associated with these activities between 1998 and 2010.¹⁸ With a well-established and lucrative diving and snorkelling tourism sector, the Queensland Government argued that the laws were necessary to reassure the public that safety is a priority and that appropriate enforceable standards are in place.¹⁹

Queensland's industry stakeholders supported the new scheme. They shared concerns about the potential for serious damage to the sector's image from 'intensive media scrutiny' following 'any recreational diving or snorkelling incident'.²⁰ For example, new reports of two Irukandji sting fatalities on the Reef in 2002²¹ led to an estimated '\$65 million' loss in tourism revenue.²² Around that time, tour-boat operators were conducting around 1.2 million diving trips and 2.3 million snorkelling trips each year, injecting an annual \$1.4 billion into Queensland's economy.²³ Research studies confirm that tourists are less willing to travel to tourism destinations following media coverage of health and safety risks at those destinations, leading some preferring to vacation at home.²⁴

Ultimately, Queensland enacted a standalone regime, fashioned on the WHS model laws three-tiered framework of regulation (WHS Act, Regulations and Codes). The regime includes the *Safety in Recreational Water Activities Act 2011*

¹⁶ The 2008 National Review into Model Occupational Health and Safety Laws influenced the reform. For an insightful historical overview of the process, see Richard Johnstone, Elizabeth Bluff and Alan Clayton, *Work Health and Safety Law and Policy* (Thomson Reuters, 2012).

¹⁷ The harmonised scheme involved the creation of national model WHS laws (including the model WHS Act, WHS Regulations and Codes of Practice). All jurisdictions except Victoria and Western Australia implemented their version of the model laws by 2013. Safe Work Australia, the Australian Government's statutory agency, coordinated the harmonisation process.

¹⁸ 22 of these fatalities (16 snorkelling and 6 diving) occurred between 2006 and 2010: Queensland Government, *Report of the Recreational Dive and Snorkelling Industry Reference Group* (2011) 12 <https://www.worksafe.qld.gov.au/__data/assets/pdf_file/0004/82516/dive-reference-group-report.pdf>.

¹⁹ Queensland, *Second Reading Safety in Recreational Water Activities Bill*, Legislative Assembly, 10 May 2011, 1284 (CR Dicks) <<https://www.parliament.qld.gov.au/documents/tableOffice/HALnks/110510/Safety.pdf>>.

²⁰ Queensland Government (n 18) 11.

²¹ See Peter Fenner and John Hadok, 'Fatal Envenomation by Jellyfish Causing Irukandji Syndrome' (2002) 177(7) *Medical Journal of Australia* 362.

²² R Williams, 'Update on Irukandji Issues', in *Report Presented to the Queensland Government Irukandji Task Force Meeting* (24 February 2004, Townsville, Queensland), in Gershwin n (6) 26.

²³ Overseas visitors undertook almost half of these trips. See Queensland Government (n 18) 11.

²⁴ Sara Dolnicar, 'Understanding Barriers to Leisure Travel: Tourist Fears as a Marketing Basis' (2005) 11(3) *Journal of Vacation Marketing* 197.

(‘SRWA Act’), *Safety in Recreational Water Activities Regulation 2011* (‘SRWA Regulation’), and *Recreational Diving, Recreational Technical Diving and Snorkelling Code of Practice 2011* (‘RDRTDS Code’). The object of the SRWA Act is to protect consumers of recreational diving and snorkelling activities from harm to their health, safety and welfare through the elimination or minimisation of risks arising from those activities.²⁵ The RDRTDS Code provides updated guidance for the control and management of water activity hazards, including marine stinger hazards. The SRWA Act operates in conjunction with the *Workplace Health and Safety Act 2011* (Qld) (‘WHS Act 2011’).²⁶ In the event of any inconsistencies, the WHS Act 2011 provisions prevail.²⁷

Whether Queensland’s regulatory scheme has lowered the number of sting-related incidents is difficult to discern. There are no official reports on the number of stings managed by tour-boat operators or any prosecutions or penalties issued for failure to control marine stinger hazards published on the WHSQ website. Media reports remain the main source of information on serious sting incidents associated with recreational diving and snorkelling tour boats.

A review of Queensland’s workplace laws following high-profile workplace fatalities in 2016 was the catalyst for recent reforms.²⁸ The *Best Practice Review of Workplace Health and Safety Queensland Report* (‘Best Practice Report’)²⁹ identified defects in the State’s WHS regime associated with the harmonisation process and made 58 recommendations. Despite sharing similar frameworks, the 1995 and 2011 WHS regimes were found to be markedly different in their enforceability. The 2011 regime introduced a multifaceted enforcement regime based on the State’s National Compliance and Enforcement Policy and enforcement pyramid³⁰ that encourages compliance through a responsive regulatory model, which combines deterrence and accommodative regulation.³¹ The Best Practice Report notes that since the introduction of the WHS Act 2011, WHSQ overemphasised ‘encouraging and assisting compliance’ at the expense of appropriate use of powers and

²⁵ *Safety in Recreational Water Activities Act 2011* (Qld) s 3 (‘SRWA Act’).

²⁶ *Ibid* ss 3(3) and 4(2).

²⁷ *Ibid* s 4(3).

²⁸ At Eagle Farm Racecourse, two construction site workers died when crushed by a concrete slab. Three weeks later, four fatalities were due to failures relating to the Thunder River Rapids Ride at Dreamworld. See WorkCover Queensland, ‘Company Fined over Eagle Farm Double Fatality’ (Media Release, 6 September 2018) <<https://www.worksafe.qld.gov.au/news/2018/company-fined-over-eagle-farm-double-fatality>>; Coroners Court of Queensland, *Inquest into the Deaths of Kate Goodchild, Luke Dorsett, Cindy Low and Roozbeh Araghi at Dreamworld, Findings and Recommendations* (February 2020).

²⁹ Best Practice Report (n 12).

³⁰ National Compliance and Enforcement Policy <<https://www.safeworkaustralia.gov.au/sites/swa/about/publications/pages/national-compliance-enforcement-policy>>.

³¹ Best Practice Report (n 12) 2.

punitive sanctions to ‘direct compliance’ at times when it was necessary to encourage improvement in standards.³² The recommendations include that WHSQ develop a new policy that ‘more precisely identifies the use of “directed compliance” as a vital, widely available tool’ with which to measure, annually, the assessment and reporting of compliance–performance against the policy.³³

The Best Practice Report also notes that since harmonisation of the law, the status of codes of practice have shifted from mandatory to recommendatory,³⁴ introducing uncertainty for those who rely on codes for guidance on how to comply with statutory obligations.³⁵ The first National Review of the Model WHS Laws in 2018 (‘National Report’) made a similar finding of confusion and complexity regarding codes of practice.³⁶ In the marine stinger hazard context, the most significant of the Best Practice Report’s recommendations include the restoration of codes of practice to their previous mandatory status, and their review every five years to keep them up-to-date and improve their effectiveness.³⁷ Section 26A of the *WHS Act 2011* now makes compliance with codes of practice approved by the Minister mandatory. This provision captures the *RDRTDS Code*.³⁸

In terms of encouraging compliance with statutory obligations under the *SRWA Act*, inspectors can issue an improvement notice for a contravention, a prohibition notice in circumstances where an activity involves a serious and imminent risk to a person’s health and safety, or an infringement notice where a person has committed an infringeable offence. There are three categories of offences applicable to infringements by duty-holders. Category 1 offences are crimes and attract the most severe penalties. Reckless conduct in breach of s 21 of the *SRWA Act* requires a duty-holder to, without excuse, expose an individual to a risk of death or serious injury. Penalties include fines of up to 3,000 penalty units or five years’ imprisonment for individuals; up to 6,000 penalty units or five years’ imprisonment for PBCU’s or their officers; and for bodies corporate, up to

³² Ibid 29.

³³ Ibid, Recommendation 9.

³⁴ See, eg, the *RDRTDS Code Recreational Diving, Recreational Technical Diving and Snorkelling Code of Practice 2018* (Qld) 5 (‘*RDRTDS Code*’), states that it recommends a course of action rather than create any legal requirement.

³⁵ Such as employers, unions and the regulator. See Best Practice Report (n 12) 22.

³⁶ Marie Boland, *Review of the Model Work Health and Safety Laws* (Final Report, Safe Work Australia, December 2018) 25 (‘National Report’) <https://www.safeworkaustralia.gov.au/system/files/documents/1902/review_of_the_model_whs_laws_final_report_0.pdf>.

³⁷ Best Practice Report (n 12) Recommendations 5, 9.

³⁸ *SRWA Act* (n 25) s 43.

30,000 penalty units.³⁹ A lack of intention or motive to cause harm by the wrongdoer is irrelevant. However, category 1 prosecutions are rare. To date, there have only been two convictions against an individual director in relation to a workplace death due to reckless conduct.⁴⁰ The National Report notes that this is likely due to the difficulties in proving ‘recklessness’, which requires proof of a conscious choice to take an unjustified risk.⁴¹ Category 2 and 3 offences involve only the potential imposition of modest fines for statutory breaches.⁴²

As enforcement tools, these offences provide options for remedying breaches of mandatory statutory requirements. However, as noted in the Best Practice Report, they do not apply to breaches of a requirement in a code of practice.⁴³ This is despite the fact that regulators, prosecutors and courts⁴⁴ can rely on adherence to codes of practice as evidence of the minimum technical and industry safety standards required to discharge health and safety duties in specific circumstances.⁴⁵ Category 1 to 3 offences focus on the level of exposure to risk rather than the consequence of any breach of duty.⁴⁶

The Queensland Government has given effect to many of the Best Practice Report’s recommendations by passing the *Work Health and Safety and Other Legislation Amendment Act 2017* (Qld). The amendments included introducing industrial manslaughter provisions to the *WHS Act 2011* and the *SRWA Act*.⁴⁷ The new provisions took effect on 23 October 2017. The first industrial manslaughter conviction for a breach of s 34C of the *WHS Act 2011* was on 11 June 2020 in *R v Brisbane Auto Recycling Pty Ltd*,⁴⁸ suggesting a rebalance of WHSQ’s priorities in favour of ‘hard’ compliance work to improve protection of workers. The new offence carries up to 20 years’ imprisonment for PCBUs or 100,000 penalty units

³⁹ Ibid s 21. Unlike in other jurisdictions, only category 1 offences and industrial manslaughter offences are crimes in Queensland’s workplace laws. See *SRWA Act* ss 21(3), 25C(2) and 25D(2). See also *Workplace Health and Safety Act 2011* (Qld) (*‘WHS Act 2011’*) ss 31(3), 34C(2) and 34D(2).

⁴⁰ The first case involved the death of a worker who fell from a roof at a construction site, but the conviction was overturned in 2019, based on a misdirection to the jury by the judge on the application of the statutory provision: *R v Lavin* [2019] QCA 109. The second conviction for reckless conduct by two directors of a car-wrecking and recycling business was in *R v Brisbane Auto Recycling Pty Ltd* [2020] QDC 113. It involved the death of a worker, killed by a reversing forklift. Both cases were for breaches of the reckless conduct provision, s 31, of the *WHS Act 2011* (n 39).

⁴¹ National Report (n 36) 14.

⁴² *SRWA Act* (n 25) ss 22 and 23. Volunteers are exempt from liability pursuant to s 25.

⁴³ Best Practice Report (n 12) 21.

⁴⁴ For example, Coroners Courts investigating suspicious deaths or civil courts in negligence proceedings against services providers.

⁴⁵ Guidance on the general risk-management process that PCBUs are to follow is in the *WHS Act 2011* (n 39), and in the *How to Manage Work Health and Safety Risks Code of Practice 2011* (Qld).

⁴⁶ National Review (n 36) 12.

⁴⁷ *WHS Act 2011* (n 39) pt 2A, and *SRWA Act 2011* (n 25) pt 2A.

⁴⁸ [2020] QDC 113.

for bodies corporate (around \$13,345,000), and up to 20 years' imprisonment for senior officers.⁴⁹ It applies to PCBUs and their 'senior officers' who negligently cause the death of a worker through, or as a result of, carrying out work during the course of employment.⁵⁰

However, in Queensland, the industrial manslaughter offence only extends to the negligently caused death of a worker. This raises the question of why the terms of imprisonment for the negligently caused death of a worker are four times higher than those that apply to the death of an individual caused by reckless conduct. Both are criminal offences that involve the death of a person at a workplace, but the approach used to determine culpability differs. For example, for criminal negligence, an objective standard of behaviour (the 'reasonable individual') applies to determine culpability. Assessments of reckless conduct require the use of both an objective test to determine whether the commission of the act was reasonably foreseeable and a subjective test to determine whether the accused wilfully took an initial action that is inherently risky, or did not take steps to ensure that the risk posed to workers was controlled.⁵¹

Despite suggesting less culpability than intention to cause harm, recklessness ('indifference to the realised possible risks and consequences of one's actions') nevertheless suggests more culpability than criminal negligence ('inattention ... and not taking care').⁵² This raises questions as to why the Best Practice Report did not criticise the significant disparity in the penalties for the two statutory offences. Perhaps this is because category 1 offences are directly referable to the WHS Prosecutor, as part of a newly established Office of Workplace Health and Safety Prosecution.⁵³ The WHS Prosecutor can seek to

⁴⁹ *SRWA Act* (n 25) ss 25C and 25D; *WHS Act 2011* (n 39) ss 34C and 34D. The value of penalty units can change, but as at 13 March 2020, it is \$133.45 per penalty unit as prescribed by the *Penalties and Sentences Regulation 2015* (Qld) s 5A(1).

⁵⁰ *Ibid.*

⁵¹ *R v Brisbane Auto Recycling Pty Ltd* [2020] QDC 113, [58], where a worker died after being crushed by a reversing forklift operated by a co-worker. See also: *Orr v Cudal Lime Products Pty Ltd* [2018] NSWDC 27, where an occupant of a residence on quarry grounds was electrocuted and killed due to a worker's faulty electrical work on a switchboard; *R v Watts* [2020] ACTSC 91, where a worker was killed by a crane that overturned while moving a large generator; and *Anderton (VWA) v Jackson* (Magistrates Court, Victoria at La Trobe Valley, Judge AJ Rafter SC, 19 December 2018), where a worker was killed when a large industrial bin being lifted by a forklift operated by the business owner, fell to the ground, while the worker was inside the bin transferring scrap metal to a larger bin.

⁵² Allan White, 'Carelessness, Indifference and Recklessness' (1961) 24(5) *Modern Law Review* 592, 594.

⁵³ The Office of the Work Health and Safety Prosecutor ('OWHSP') is as an independent statutory office established in Queensland under the *WHS Act 2011* (n 39) to conduct and defend proceedings for breaches of workplace laws. The OWHSP began operations on 18 March 2019. See OWHSP, *Annual Report 2018-19*, 4 <<https://www.parliament.qld.gov.au/documents/tableOffice/TabledPapers/2019/5619T1989.pdf>>.

increase the penalties ordered by courts in appropriate cases.⁵⁴ A priority of the WHS Prosecutor is to provide greater ‘efficiency, effectiveness and transparency’ in the conduct of prosecutions for breaches of workplace laws.⁵⁵

The National Report has recommended changing the model WHS laws to include ‘gross negligence’ to category 1 offences and shifting to a more robust, consequence-focused industrial manslaughter offence than presently exists in Queensland, by expanding the offence beyond the death of a ‘worker’ to include the death of third parties such as clients, customers, visitors or neighbours of the workplace.⁵⁶ This may influence future adjustments to Queensland’s WHS laws.

In summary, organisations and employers need to be aware of the changing laws and regulations so that they can implement safe work systems and practices. Having a firm understanding of their obligations and responsibilities, duty-holders can put in place the highest level of risk-management procedures to avoid significant penalties and, most importantly, protect the lives of their customers. Employers and organisations rely on codes of practice to guide them in complying with their statutory duties.

The next part of this article considers the marine stinger provisions of the *RDRTDS Code* and suggests that the marine stinger management provisions lack clarity concerning the use and supply of sting-protective swimwear as PPE, and the timing, form and content of marine stinger safety advice. This can lead to a lack of compliance with WHS requirements and endanger lives, rather than assisting operators in meeting their obligations of keeping people safe.

III THE DUTY TO KEEP PARTICIPANTS SAFE

The introduction of the *SRWA Act* made PCBUs, operating in Queensland, duty-bound to protect the health, safety and wellbeing of all those under their control or supervision, by eliminating or minimising hazards or risks,⁵⁷ at the ‘highest level as is reasonably practicable’.⁵⁸ This is determined through a consideration and balancing of relevant matters, including the following listed in s 15 of the *SRWA Act*:

- the likelihood of the hazard or risk occurring;
- the degree of harm that might result from the hazard or risk;

⁵⁴ Ibid 4.

⁵⁵ Ibid 6.

⁵⁶ National Report (n 36) 19. Subsequent to the National Report, the *Workplace and Health Safety Act 2011* (NSW) added ‘gross negligence’ as an alternative form of Queensland’s s 31 through the *Work Health and Safety Amendment (Review) Act 2020* (NSW), assented to on 10 June 2020 and commencing on that date.

⁵⁷ *SRWA Act* (n 25) s 3(1)(a), (2).

⁵⁸ Ibid s 3(2).

- what the person knows about the hazard or risk, and ways to eliminate or minimise the risk;
- the availability and suitability of ways to eliminate or minimise the risk; and
- the cost associated with available ways to eliminate or minimise the risk, including whether the cost is grossly disproportionate to the risk.

This approach is consistent with assessments of breach of duty and causation in personal injury claims for negligence at common law⁵⁹ and pursuant to Australia's civil liability legislation.⁶⁰

Under the *SRWA Act*, s 16 sets out the statutory obligations of recreational water activity providers. Without limiting its scope, the duty provision encompasses the safe use, handling, maintenance and storage of plant, structures and substances provided to activity participants.⁶¹ To prevent injuries, the provision further requires operators to give their customers safety information, training, instruction and supervision, and to monitor conditions at activity sites.⁶² Under this statutory provision, operators would also be responsible for the maintenance of safety equipment supplied to participants, including PPE. Essentially, PPE includes anything worn to minimise risks to health and safety.⁶³ In the present context, this would include five-millimetre wetsuits and full-body Lycra suits, as scientifically tested swimwear that significantly reduce the risk of Irukandji and box jellyfish stings.⁶⁴

Section 17 requires operators' officers (such as company directors) to exercise due diligence in ensuring the business and its employees comply with their health and safety obligations.⁶⁵ Australia's courts, including the High Court, have interpreted employer obligations as involving positive action in keeping abreast of technological and scientific knowledge associated with the business operations,⁶⁶ and in considering and responding to the needs of accident prevention in accordance with 'changing ideas of justice and increasing concern

⁵⁹ See *Wyong Shire Council v Shirt* (1980) 146 CLR 40, 47–8 (Mason J).

⁶⁰ Civil liability legislation collectively refers to legislation introduced to reform the law of negligence in 2002–2003. The statutes enacted in marine stinger jurisdictions, except the Northern Territory which continues to rely on the common law, include the *Civil Liability Act 2003* (Qld), *Civil Liability Act 2002* (NSW), *Civil Liability Act 2002* (WA), and *Wrongs Act 1958* (Vic).

⁶¹ *SRWA Act* (n 25) s 16(2)(a)–(b).

⁶² *Ibid* s 16(2)(c)–(d).

⁶³ Safe Work Australia <<https://www.safeworkaustralia.gov.au/ppe>>.

⁶⁴ L Gershwin and K Dabinett, 'Comparison of Eight Types of Protective Clothing against Irukandji Jellyfish Stings' (2009) 25(1) *Journal of Coastal Research* 117.

⁶⁵ *SRWA Act* (n 25) s 17.

⁶⁶ *New South Wales v Fahy* (2007) 232 CLR 486, 519 [102] (Kirby J) ('*Fahy*'); *Stokes v Guest, Keen & Nettlefold (Bolts and Nuts) Ltd* [1968] 1 WLR 1776, 1783.

with safety in the community'.⁶⁷ Merely prescribing a safe system is not enough for operators and their officers to discharge their obligations. They must enforce the system.⁶⁸

A Marine Stinger Risk-Management

In terms of managing marine stinger risks, the *RDRTDS Code* provides control measures mainly in ss 2.7 and 6.5. Section 2.7 (the safety advice provision) applies at times of the year when 'people are at risk of severe marine jellyfish stings'. The provision states that operators 'should ensure that people diving/snorkelling are advised of the risks of marine jellyfish, where to access first aid, and appropriate precautions (eg use of stinger suits where appropriate)'. It refers to s 6.5 for additional information.

Section 6.5 offers more detailed information, such as: the lethality of marine stingers; when they present risks and when these are most severe depending on locality, conditions and times of the year; what to expect from stings; and first-aid treatments. It mentions the use of neoprene wetsuits and Lycra body suits as offering a 'high degree of protection' from marine stingers, since 'most stings occur on parts of the body that are typically covered by [such] protective clothing'.⁶⁹ The section details that such protective swimwear should be made of 'synthetic smooth fabrics' to lessen the chance that tentacles will stick, possibly leading to secondary marine stings, and that the fabric's mesh should be 'no greater than 200 microns' and should cover 'over 75% of the body's skin surface'.⁷⁰ Finally, it recommends that the swimwear is inspected regularly 'for holes, loose threading, broken or damaged zippers and other causes of decreased effectiveness, and where required replaced or repaired'.

However, the *RDRTDS Code* does not articulate a positive obligation on operators to supply sting-protective swimwear or to compel customers to wear protective suits when engaging in water activities in circumstances where marine stinger hazards and risks are predictable. Meanwhile, pursuant to s 44(2) of the *SRWA Act*, a court can have regard to a code of practice as evidence of compliance or otherwise with a duty or obligation under the Act. Arguably, by returning codes of practice to a mandatory status in Queensland, one plausible interpretation of the provisions, in light of the objects of the *SRWA Act* and PBCUs statutory duties, could be that operators are duty-bound to supply stinger suits as PPE and compel

⁶⁷ *Bankstown Foundry Pty Ltd v Braistina* (1986) 160 CLR 301, 309; *Mihaljevic v Longyear (Australia) Pty Ltd* (1985) 3 NSWLR 1, 9, 18.

⁶⁸ *Fahy* (n 66) 519 [103] (Kirby J).

⁶⁹ *RDRTDS Code* (n 34) 40–1.

⁷⁰ *Ibid* 41.

their customers to wear sting-protective swimwear when a stinger risk exists. Since operators control marine sites where their customers dive or snorkel,⁷¹ to do less when marine stinger hazards are present could put participants and others, like rescuers, at an unreasonable risk of harm.

Essentially, when determining compliance with the duty to protect against risks, a regulator or a court must weigh up the s 15 matters relevant in assessing what was 'reasonably practicable' in the circumstances.⁷² The relevant matters in the present context can be summarised broadly as balancing the likelihood and magnitude of the risk of harm caused by marine stingers against the availability and cost of adopting suitable responses to eliminate or minimise the risk.

Reasonable recreational water activity providers and operators know of marine stinger risks in Queensland's coastal regions. Information about the probability and seriousness of marine stinger harm is readily available from scientific and medical literature, and is summarised in s 6.5 of the *RDRTDS Code*. The risk can be catastrophic if a sting occurs out at sea. Delays in reaching emergency care due to distance from a hospital increases the risk of life-threatening and debilitating complications. Emergency airlifting the victim from the operator's vessel to the nearest hospital is often required to minimise such delay. Children and people with pre-existing conditions are particularly vulnerable.

Sting-protective swimwear is readily available as a means of significantly reducing the risk of stings. Generally, divers will wear neoprene wetsuits for thermal comfort. However, snorkelers are less likely to wear wetsuits, particularly in warmer tropical waters, as wearing them may contribute to a feeling of overheating. Being lighter and easier to wear, Lycra suits provide the highest level of reasonably practicable protection against marine stinger risks for snorkelers. Arguably, the cost of buying, storing and maintaining protective swimwear as PPE by operators is not grossly disproportionate to the risk of injury pursuant to s 15(e) of the *SRWA Act*. The average retail cost of a full-body Lycra suit with hood, for example, is around AUD90. These suits are durable and reusable.

On balance, the supply of Lycra suits as sting protection appears to provide a reasonably practicable response in meeting operators' duty to eliminate or significantly minimise the risk of stings and is not grossly disproportionate to those risks. If so, the *RDRTDS Code* should clearly state that operators are to supply sting-protective swimwear, including Lycra suits, to their customers as PPE

⁷¹ Control of an ocean site generally involves a provider holding a valid permit to use the site to conduct business operations with or without conditions, such as those issued by the managing Reef Marine Park Authority.

⁷² Section 15 matters also appear in the Queensland Government, Office of Industrial Relations, *How to Manage Work Health and Safety Risks Code of Practice* (at 1 January 2012) 6.

when marine stinger risks exist. Ensuring that people wear Lycra suits before they engage in water activities may also assist operators who encounter difficulties with knowing what is required in order to comply with their duty to provide marine stinger safety advice to their customers.⁷³

B *Duty to Provide Safety Information*

The *RDRTDS Code* is unclear on how operators are to communicate the required marine stinger safety message effectively to their customers. Section 2.7, while briefly stating that the advice should contain marine stinger risks, first aid and precautions, is unclear whether any of the additional information in s 6.5 should form part of the safety message.

Section 4.5 offers some confusing guidance on when and how operators can give safety advice to their customers, but not on the content of various types or means of communication. In regard to timing, for example, the provision broadly states that opportunities for ‘briefing snorkelers’ with information and advice about safe snorkelling occur ‘from the time the snorkeller [sic] makes a booking until they enter the water’. As for the means of communication, the section states that a briefing ‘can be combined with’ the distribution of brochures, signs and posters with various images, the showing of safety films, and the provision of translated materials to non-English-speaking customers. The provision then lists what operators need to cover when advising customers about the snorkelling environment and potential problems, including the location and availability of wetsuits, as either a ‘floatation device’ or a means of managing the ‘risks of sun exposure’.⁷⁴ There is no reference or information concerning Lycra suits or sting-protection generally.

The need to inform snorkelers of marine stinger protection is also absent from the *RDRTDS Code*’s Appendix 7 titled ‘Recreational diving and snorkelling compliance checklist’ for use by operators. The *RDRTDS Code* describes the checklist as ‘an example of a tool’ that duty-holders can develop to self-assess their levels of compliance with their statutory duties. Only three checks contained in the nine-page document relate to marine stingers — namely, whether divers and snorkelers have been advised of the risks of marine stings; whether crewmembers are taking appropriate precautions (although it is unclear what this may mean); and whether ‘appropriate first aid and PPE [is] available where a jellyfish risk exists’. An updated 2018 version of this document, located on the WHSQ website, offers no additional marine-stinger-related checks. The website

⁷³ SRWA Act (n 25) s 16(2)(c).

⁷⁴ *RDRTDS Code* (n 34) 33.

also provides a publication titled 'safety information for divers and snorkelers', in several languages, and a 'snorkelling sense' video, in which participants are wearing Lycra suits. However, neither of these resources contain or provide examples of marine stinger advice or information on protection.⁷⁵

The absence of clear examples and guidance on how to brief snorkelers about marine stinger safety means that operators will self-manage this requirement. Operators are free to decide the content, form and timing of the advice. The *Code's* failure to specify the timing and specific details of what must be conveyed at safety briefings potentially undermines the quality of the safety message to their customers because it introduces an element of variability. For instance, s 4.5, while it provides further opportunity to communicate safety information through additional tools, offers no specific information on what, how and when it is most effective to communicate marine stinger safety information to customers. This raises questions about the consistency of messaging and effective communication of the importance of wearing sting-protective swimwear to protect against potentially life-threatening jellyfish stings.

In terms of the means of communication listed in s 4.5, operators could interpret the provision as suggesting that they can discharge their duty to provide safety information to customers by erecting a sign at the entrance of their tour boat. Such a sign could include specific information on marine stingers, including the use of protective swimwear. Operators might then give their customers a more general safety briefing that simply mentions the three points in s 2.7.

Such an interpretation of the *RDRTDS Code* is highly problematic unless operators supply sting-protective swimwear to their customers as PPE, and ensure that everyone who intends to enter the water is wearing the swimwear when marine stingers exist. This is mainly because studies have shown the complexity and serious limitations associated with communicating health and safety risks through signage.⁷⁶ Research studies have found that to be effective in communicating risks, signs must be noticed, identify the hazard, explain the consequences of exposure to the hazard and encourage behaviours that may reduce risk of injury or death.⁷⁷ The transmission of all the marine stinger safety information can occur through appropriate text, but the challenge would be to

⁷⁵ Worksafe Queensland, 'Snorkelling Sense' (Web Page, 13 October 2016) <<https://www.worksafe.qld.gov.au/forms-and-resources/films/snorkelling-sense>>.

⁷⁶ For a list of such studies, see M Wogalter, 'Purposes and Scope of Warnings', in Michael Wogalter (ed), *Warnings and Risk Communication* (Lawrence Erlbaum Associates, 2006) 3–9. See also Tamar Ben-Bassat et al, 'Expert Evaluation of Traffic Signs: Conventional vs Alternative Designs' (2019) 62(6) *Ergonomics* 734.

⁷⁷ Michael Wogalter, Vincent Conzola and Tonya Smith-Jackson, 'Research-Based Guidelines for Warning Design and Evaluation' (2002) 33(3) *Applied Ergonomics* 219.

remain sufficiently brief so that customers are likely to read the sign.⁷⁸ For the most part, people on holiday tend to be relaxed, unobservant and quickly lose interest in reading signs with lengthy text, especially in stimuli-rich environments⁷⁹ like diving/snorkelling tour-boats heading out to sea.⁸⁰ Even well-designed signs with pictograms or symbols can be misconstrued or ignored if they are unclear or difficult to decode.⁸¹ The same principles apply to brochures handed to customers.

Location of safety signs is also important in terms of noticeability.⁸² The entrance of a boat is not the optimum location. Recreational tour boats tend to have narrow entrances and customers can feel pressured to embark relatively quickly so that the adventure can begin. This can decrease the likelihood that they will see, read and understand a safety information sign. For example, studies have found that many visitors to North Queensland, notably international tourists, do not know what marine stingers are, or that they pose a serious health risk.⁸³ One study found 80 per cent of 109 beachgoers who had seen and read the official marine stinger warning signs located nearby did not know of Irukandjis, the danger they present, or how to protect against them.⁸⁴

Many factors are at play. Tourists who visit Queensland to engage in recreational diving/snorkelling can come from vastly different backgrounds. Some are non-English-speaking. Some come from locations where jellyfish are not harmful or cause only minor stings. Moreover, even locals of the Reef region who are aware of marine stinger hazards often misunderstand the true temporal

⁷⁸ Gabriel K Rousseau and Michael S Wogalter, 'Research on Warning Signs', in Michael S Wogalter (ed), *Handbook on Warnings* (Routledge, 2006) 147.

⁷⁹ Bernadette Matthews, Robert Andronaco and Austin Adams, 'Warning Signs at Beaches: Do They Work?' (2014) 62 (February) *Safety Science* 312.

⁸⁰ Ibid; Christian Brannstrom et al, "'You Can't See Them from Sitting Here": Evaluating Beach User Understanding of a Rip Current Warning Sign' (2015) 56 (January) *Applied Geography* 61.

⁸¹ RJ Jacobs, AW Johnston and BL Cole, 'The Visibility of Alphabetic and Symbolic Traffic Signs' (1975) 5(7) *Australian Road Research* 68; TJ Babbitt Kline et al, 'Visibility Distance of Highway Signs among Young, Middle-Aged, and Older Observers: Icons are Better than Text' (1990) 32(5) *Human Factors* 609.

⁸² Shawn K Davis and Jessica L Thompson, 'Investigating the Impact of Interpretive Signs at Neighborhood Natural Areas' (2011) 16(2) *Journal of Interpretation Research* 55.

⁸³ Around half of the 208 national and international tourists surveyed while travelling on a ferry did not know what an Irukandji was, and half of the international tourists mistakenly assumed that unsafe behaviours were safe. See Simone L Harrison et al, 'Reported Knowledge, Perceptions and Behaviour of Tourists and North Queensland Residents at Risk of Contact with Jellyfish that Cause "Irukandji Syndrome"' (2004) 15(1) *Wilderness & Environmental Medicine* 4.

⁸⁴ Lynda Crowley-Cyr, 'Are Warning Signs Effective in Communicating Jellyfish Hazards?' (2018) 34(2) *Journal of Health Safety Environment* 181.

and spatial danger.⁸⁵ Merely informing such individuals as to the possible presence of jellyfish, the potential severity of their stings, and the location of first aid in no way conveys the true nature of marine stinger risks. Even referring to the jellyfish as ‘dangerous’ fails to convey their potentially life-threatening and debilitating sting hazard.

If tour-boat operators do not supply sting-protective swimwear, then they must clearly inform their customers of the marine stinger risks, the appropriate sting-protective suits to acquire, and the requirement for such suits to be worn for participation in water activities. This raises the issue of timing of this specific advice. Customers must have sufficient time to locate and acquire appropriate protective swimwear. Even if they comprehend the safety advice, customers may find it confusing. There are numerous types and brands of sting-protective swimwear in stores and online. Some are labelled as ‘stinger suits’, but this does not mean that they comply with the design requirements of protective swimwear described in the *RDRTDS Code*. Studies have shown that where the costs of complying (eg the amount of time, money or effort to comply) with risk warnings are higher, compliance can lessen.⁸⁶ Further, customers who purchase appropriate swimwear may forget to bring it on the day and, if prevented from engaging in the activities paid for, may become disgruntled or even resentful. In a highly competitive environment such as Queensland’s recreational diving/snorkelling tourism sector, negative comments and reviews, through word of mouth or online, can have deleterious economic impacts on individual businesses.

This article suggests a few minor adjustments to s 4.5 to improve its clarity and consistency with other safety provisions in the *RDRTDS Code* as follows. The location and availability of Lycra suits as PPE to protect against marine stinger risks should be included in the list of information that operators must cover when advising customers about the snorkelling environment and potential problems. Like wetsuits, Lycra suits also protect against the ‘risks of sun exposure’. With regard to ‘briefing snorkelers’ about safe snorkelling, clearer guidance on the appropriate use and content of so-called ‘additional tools’ is needed to avoid misunderstandings or misinterpretations of the provision that could leave operators exposed to a possible finding of non-compliance with their statutory duty. For example, the provision’s reference to the use of signs to deliver health and safety information should remind operators of the need to comply with Australian and international standards for safety signs. It should also provide

⁸⁵ Ibid; Jennifer J Sando, Kim Usher and Petra Buettner, ‘“To Swim or Not to Swim”: The Impact of Jellyfish Stings Causing Irukandji Syndrome in Tropical Queensland’ (2010) 19(1–2) *Journal of Clinical Nursing* 109.

⁸⁶ Michael S Wogalter, Scott T Allison and Nancy A McKenna, ‘Effects of Cost and Social Influence on Warning Compliance’ (1989) 31(2) *Human Factors* 133; Thomas A Dings, Stephen S Wreggit and Jill A Hathaway, ‘Warning Variables Affecting Personal Protective Equipment Use’ (1993) 516 (5–6) *Safety Science* 655.

information on how to communicate marine stinger risks based on current research studies on effective warning signage.

A WHSQ standardised script example of what can be included in brochures and signs may bring even more clarity and consistency to the meaning of s 4.5 of the *RDRTDS Code*. Finally, it is also recommended that the multi-lingual ‘safety information for divers and snorkelers’ and ‘snorkelling sense’ video available on the WHSQ website is amended to include examples of marine stinger advice and, notably, information on how to protect against these hazards and risks.

Greater clarity on the timing, form and content of marine stinger safety advice could assist operators to better self-manage the advice they give their customers, and in a more confident, accurate and balanced way, which informs customers of marine stinger risks without creating unnecessary fear or anxiety. Moreover, only where operators back up the advice they give with the supply of sting-protective PPE, and with proper supervision of the appropriate use of such swimwear, can the safety message be more relaxed or general, allowing their customers to enjoy their water activities with greater safety and confidence.

IV CONCLUSION

This article has considered the hazards posed by marine stingers to recreational divers and snorkelers through the lens of Queensland’s unique workplace health and safety regulatory regime. The regime already contemplates the role of operators, the impact of stinger-protective swimwear, and other matters. However, it has been argued that with enhanced clarity and consistency, the regulatory framework could achieve greater effectiveness in terms of compliance. This is important in a harmonised regulatory system. Other jurisdictions in Australia facing dangerous jellyfish hazards, like Western Australia, the Northern Territory and even New South Wales, or overseas, can refer to Queensland’s laws as a model of industry standards for the provision of recreational water activity.

This article also proposes that the Queensland Government could better meet its health and safety policy objectives, including maintaining public confidence and the sustainability of the lucrative recreational diving and snorkelling industry, if it collaborated with operators to help alleviate the cost of supplying sting-protective suits. For example, if the Government negotiates with Lycra suit manufacturers or suppliers to purchase the suits in bulk, it can then on-sell them to operators at cost. This would assist operators economically, particularly when their business operations are interrupted and impacted by Australia’s natural disasters (such as the summer 2019 bushfires) and major health crises (such as the COVID-19 pandemic), which drastically impact tourism operators and communities.

This approach, coupled with minor statutory adjustments to make it clear that operators are duty-bound to supply Lycra suits to their customers, is

arguably the most efficient and effective option in terms of minimising the risks and costs of stings. Moreover, the reduction of sting injuries that can flow from a 'wear it to participate' approach would have a direct impact on the substantial annual costs of retrieving and treating injured tourists, as well as other related costs, including the emotional and financial consequences to those who are stung, and the adverse reputational effects on operators and the wider tourism industry.

Finally, the proposed collaborative approach could expand to include hotels and resort operators, so that Lycra suits can be more widely supplied to all tourists, supporting and reinforcing safety messages on beach signs and in the popular media in marine stinger regions. It can also help to increase public awareness that the Queensland Government considers marine stingers to present very serious harms that require a protective response by everyone.

Specific recommendations of this article are as follows:

1. Lycra suits are a risk-mitigating response to marine stinger hazards. They are affordable, practical and reasonably practicable. For this reason, they should be recognised as best-practice industry standard and endorsed in the *RDRTDS Code*, confirming that they are mandatory. Any tension that might arise from economic imperatives to keep costs down would then be effectively neutralised by a universal requirement.
2. PBCUs are best placed to supply sting-protective suits and supervise their correct use. Alternatively, if customers can provide their own suits, further recommendations should be developed to ensure that those suits adhere to the standards mentioned in the *RDRTDS Code*, and that where they are reused, their integrity is maintained.
3. For the same reasons that PCBUs are best placed to ensure PPE is worn during water activities, they are also best placed to deliver comprehensive, consistent and up-to-date safety information about marine stinger risks to their customers. This information should be populated into other health and safety risks advice associated with diving and snorkelling. Further, to ensure compliant and consistent messaging, the determination of timing, form and content of the information, taking into consideration customer demographics, should be a joint initiative of industry associations and WHS regulators and safety officers.
4. Australia should establish a national reporting system to capture real-time data about sting incidents.⁸⁷

⁸⁷ Lynda Crowley-Cyr and Lisa-ann Gershwin, 'Going to the Beach this Easter? Here are Four Ways We're Not Being Properly Protected from Jellyfish', *The Conversation* (18 April 2019) <<https://theconversation.com/going-to-the-beach-this-easter-here-are-four-ways-were-not-being-properly-protected-from-jellyfish-112955>>.