

12 November 2021

Nancy Norton
Senior Inspector
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Resources Safety & Health Queensland
Via email to: hydrogensafety@rshq.qld.gov.au

Dear Nancy

Re: Developing a Hydrogen Safety Code of Practice

Thank you for the opportunity to provide a submission in response to the discussion paper Developing a Hydrogen Safety Code of Practice.

The Australian Hydrogen Council (AHC) is the peak body for the hydrogen industry, with 85 members from across the hydrogen value chain. Our members are at the forefront of Australia's hydrogen industry, developing the technology, skills and partnerships necessary to build Australia's hydrogen economy.

The existence of a strong regulatory framework is essential to ensure the successful development of a hydrogen industry in Australia. AHC understands that through the development of a Code of Practice for Hydrogen Safety (the Code), the Queensland government is seeking to provide the basis of such a framework. While AHC applauds Queensland's desire to be a leader in this area, we consider that a harmonised, nationally consistent approach to safety is preferable to a state-based regime and will better deliver the intended outcomes.

Hydrogen safety is of utmost importance. Like all current energy sources, hydrogen has a number of properties which mean that it must be stored and handled correctly in order to prevent damage to property, injury or loss of life. While the intent behind the Code is supported, AHC would point to the National Hydrogen Strategy's view that "While safety is paramount, regulation should also be efficient to secure opportunities for jobs and economic development."¹ A nationally consistent regime based on Australian Standards and aligned with International Standards will ensure that the dual outcomes of safety and efficiency are delivered.

The Queensland government has signalled its intent to drive the development of a domestic clean hydrogen industry via the appointment of the world's first Minister for Hydrogen, the release of a hydrogen strategy and the formation of a Task Force to address a range of challenges. Leadership of this nature is welcomed however, considered coordination and harmonisation among jurisdictions is also necessary to reduce barriers to the development of a hydrogen industry in Queensland and across Australia more broadly.

We also consider that development of a hydrogen industry provides an opportunity to rethink the approach to safety and ensure that a broader framework which considers not only risk mitigation (or elimination) but also emergency response and community awareness is developed. Linking these elements will require broader consideration than simply ensuring that the existing regulatory approach is expanded to cover the range of hydrogen applications and technologies which are likely to become part

¹ Australia's National Hydrogen Strategy p.50

of our energy mix. Consequently, we urge Resources Safety and Health Queensland (RSHQ) to continue to engage with a range of stakeholders to determine whether a state based Code is the optimal approach.

Gas devices and approvals

The lack of standards to manage a range of matters related to the development of hydrogen infrastructure is an issue that the AHC is acutely aware of. To progress this issue we are closely engaged with Standards Australia and are represented on their ME-093 Committee. While noting that the Code will reference standards where they exist, we consider that developing regulation which will in effect be subordinate to the Australian Standards prior to these Standards being finalised may cause confusion and delay.

The proposal to reference Australian and International Standards for Fuel Cells should in theory provide an adequate balance of certainty and flexibility however we see a risk if International Standards are referenced prior to the adoption of Australian Standards as a subsequent modified adoption may cause a misalignment between the Code and the standard.

We recommend that a safety framework be developed in line with a broader regulatory and legislative review to reduce the barriers to the development of a hydrogen industry while ensuring optimal safety outcomes. We are heartened that at its information session on 27 October, RSHQ outlined an understanding of the challenges posed by the existing regulatory regime and we propose a broader regulatory review to ensure that the regime can facilitate both safety and industry development.

The classification of fuel cells as type B appliances for example appears to be an attempt to include a new technology into a regime that does not consider a future where they are likely to be ubiquitous, uniform and safely constructed by trusted brands. Where fuel cells are designed and manufactured to an appropriate specification which includes the necessary safety requirements, we do not believe that a type B classification appropriate, nor do we consider that fuel cells will in fact be assessable under the full set of Type B criteria. We consider then that this specification should reside in Australian Standards which will ensure that safe and compliant devices are accepted across all jurisdictions.

Gas Work Licenses, Authorisations and Competencies

Once again, we consider that an appropriate licensing framework is required to ensure that hydrogen equipment is handled, installed and maintained safely. We are however concerned that the proposals outlined in the discussion paper may inhibit the development of the hydrogen sector for no real safety benefit.

For example, we do not see a safety benefit in requiring technicians who work on purpose built fuel cell electric vehicles to be licensed gas fitters. The fuel cell and hydrogen tank are replaceable components which, once isolated and bled, can be readily removed and replaced without any real need for a gas work license. In the near term, technicians will be trained by the original equipment manufacturers however the necessary competencies will make their way into the broader curricula by registered training organisations as the demand for the skills grows.

We acknowledge that there may be a greater need for licensing where heavy vehicles are undergoing conversion to hydrogen and urge that these two categories are treated separately, consistent with our view that a broader regulatory review is required.

Hydrogen Delivery Networks including Hydrogen Fuel Stations

AHC note that RSHQ is aware that it is not practical to require hydrogen to be used in fuel cells to be odorised. We are unclear what is then meant by the reference to an alternate safety requirement to odorant. We understand that RSHQ intend to take a pragmatic approach to ensuring safety standards are maintained however we consider that it will be difficult to propose an alternative risk mitigant to odorants without further guidance. Conversely a this will lead to a more prescriptive approach will act as barrier to deliver network approvals.

Fuel cell vehicles include leak sensors and pressure monitors in a range of locations within the fuel cell stack and tank. These are able to detect minute leaks and, as they are linked to shutdown systems, are a more effective risk mitigant than odorants to allow detection at the point of delivery. Once again, we consider that the approach outlined is a result of needing to incorporate hydrogen into the existing regime when a more comprehensive review could result in a more fit for purpose outcome, for by example amending the *Petroleum and Gas (Production and Safety) Act 2004*. We appreciate that this legislative change requires longer lead times than the development of subordinate legislation however the foundation of a new industry justifies reform of this nature.

Hydrogen in Pipelines in Gas Distribution Systems

AHC acknowledges the need for hydrogen blends to be prescribed to meet the natural gas specification (AS4564) and recognise that this will be required to facilitate gas blending. We note that AEMC is currently undertaking a review of the National Gas Law (and subservient regulatory framework) and that under the proposed approach the states will be required to prescribe a gas specification. We support RSHQ's approach in this regard.

Conclusion

AHC appreciates that RSHQ is responding to calls from industry for regulatory certainty. We believe however, that the opportunity exists to develop the hydrogen industry in a nationally harmonious manner and that a safety framework developed from the top down (ie via the development of a comprehensive suite of Australian Standards aligned with International Standards) is preferable.

The desire to expand the regulatory framework in a way which is familiar to both industry and the regulator is understandable. This approach should however be balanced against the fact that some of the properties of hydrogen are unique compared to currently used alternatives and the fact that it will be deployed in a range of new technologies, which can be designed and manufactured to incorporate new safety features.

Adverse health and safety outcomes resulting from inadequate regulation have as much, if not more potential to stymie the development of a hydrogen industry in Australia as over regulation. The social cost of inadequate regulation is certainly much greater. With this in mind, AHC urges RSHQ to reconsider the development of a Code at this time in favour of a broader review undertaken, where appropriate, with other jurisdictions. This recommendation is not borne of a desire to minimise regulation, but to allow for the development of a broader safety eco-system which considers current and future uses of hydrogen, emergency response and community education.

While we consider that unique, state-based safety frameworks are necessary where there are unique characteristics to an industry in a particular jurisdiction, we do not believe this is the situation in Queensland at this time. Any inconsistencies from state to state may lead to confusion and inefficiency, particularly in the developmental stages of a hydrogen industry. Proponents of hydrogen developments are likely to rely on the knowledge, experience and qualifications gained by workers from a particular state to provide leadership when projects are replicated across state borders, only to find the value of this experience is diminished due to an inconsistent regulatory regime. Barriers of this nature have the potential to slow the development of a safe and sustainable hydrogen sector in Australia.

We look forward continuing to work with RSHQ and the Queensland Government more broadly develop the hydrogen industry in a safe and sustainable manner.

If you wish to discuss this matter in further detail, please contact on 0413 266 081 or email to jkremzer@h2council.com.au

Yours sincerely



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