Thank you for the opportunity to make a submission and raise my views and experiences about the Government's COVID-19 response. As an international student who was in [redacted] at the start of the pandemic, I have witnessed poor systematic coordination to this pandemic and the appalling loss of life that came as a result of a poor government response.

I hope that the inquiry focuses on pandemic prevention. More than any other global catastrophic risk, we are able to prevent novel pathogens from emerging and to identify and eliminate them if they do. Given the huge human and economic costs of pandemics – and that pandemics worse than COVID-19 are possible – prevention should be our top priority.

The paper "The costs and benefits of primary prevention of zoonotic pandemics" (Bertstein 2022) makes the economic case for a focus on pandemic prevention. The paper shows that – even on pessimistic assumptions and without considering the potential impact of emerging technologies – significant investment in pandemic prevention is overwhelmingly justified.

In light of that analysis, the new Australian Centre for Disease Control should focus on efforts to prevent novel pathogens from emerging and being able to control them if they do.

My submission goes primarily to 'preventive health measures' in terms of reference 3.

Sources:

The costs and benefits of primary prevention of zoonotic pandemics - PMC (nih.gov)

Indoor Air Quality could make a big difference, including emerging tech such as far UV-C

The vast majority of Australians can access clean, safe, and pathogen-free drinking water. Further to Terms of Reference 2, I want to see Australians have comparable access to clean, safe and pathogen-free air. This would be helpful for the ongoing COVID pandemic and for any future pandemic – while also providing co-benefits for individual health and the national economy.

Cholera, a water-borne bacterial disease, caused more than 127,000 deaths in Great Britain in the mid-1800s. Radical improvements in sanitising drinking water as a public health measure have effectively ended waterborne disease in industrialised countries.

The reduction of airborne diseases through clean indoor air is yet to receive the same systematic attention, despite the health and economic burden this class of disease places on Australia. Every winter, seasonal influenza-like illness (ILI) burdens the Australian healthcare system as Australians present with symptoms such as fever, cough, sore throat, and fatigue. In 2022, there were 9,440 reported COVID-19 and 308 influenza-associated deaths. It is my hope that improving indoor air quality (IAQ) can reduce the transmission of airborne pathogens, thus reducing the occurrence of ILI and its associated death toll. Reduced infection rates will also result in an increase in the productivity of Australia's workforce through reducing the number of days that Australians take sick-leave to care for themselves and their loved ones. This will also reduce the burden on Australia's healthcare system, specifically on GPs and hospitals who would otherwise have to treat patients with ILI.

Despite the obvious benefits, I worry that clean indoor air suffers from a "tragedy of the commons" as it is a public good that requires widespread adoption to yield substantial

benefits. Just like clean drinking water, coordinated action is required. As such, I believe this Inquiry is well placed to recommend that Australian governments do more to encourage and accelerate the improvement of indoor air quality. Higher-risk indoor environments – such as education facilities, aged care facilities, healthcare facilities and hospitals, food service, public assembly spaces, shopping centres, offices and places of worship – can be incentivised and supported to improve their indoor air quality through building standards, rebates, tax deductions, or other financial mechanisms. This would allow Australians to enjoy the benefits of these facilities and services with a significantly lower risk of exposing themselves to pathogens.

Unlike disease-specific vaccinations, delivering safe air is pathogen agnostic and can reduce the speed at which future novel pathogens infect communities. [redacted] report "Air Safety to Combat Global Catastrophic Biorisk" provides modelling for a scenario involving another pandemic of R0 = 3, similar to the first wave of the COVID-19 pandemic in a city of 2 million people. Without any behaviour changes or IAQ improvements, there would be 365,000 infections after 3 weeks. With indoor air quality interventions reducing respiratory disease infections by just 30% to an R0 of 2.1, after 3 weeks there would only be 9,797 infections. This modelling shows that even modest reductions can flatten curves and buy time for medical countermeasures and healthcare systems. As such, IAQ interventions could shorten lockdowns, lower the likelihood of quarantine leaks and perhaps be able to contain and eliminate a novel pathogen before a pandemic begins. IAQ interventions also don't require behaviour change – like mask wearing – which can be challenging to achieve.

I think the inquiry should recommend that Australia pursue policies to make indoor air as free from pathogens as drinking water. With simple practices like ventilation, existing filtration technologies, and emerging pathogen inactivation technologies, like far-UVC, this goal is within reach.

Citations:

Australian Government, Department of Health and Aged Care, 'National 2022 Influenza Season Summary' (2022)

Air Safety to Combat Global Catastrophic Biorisk, 1Day Sooner & Rethink Priorities

In a worse pandemic, next-generation PPE may be essential to keep critical infrastructure functioning.

The terms of reference refer to support for industry and business, including in responding to supply chain, transport and labour shortage issues. No doubt, when hearing evidence on this topic, the Inquiry will receive submissions from the industry which boil down to seeking additional government support.

While I think it is right that the Inquiry turns its mind to supporting industry and business – I would encourage the inquiry to do that through the lens of the public interest. Specifically, in a future pandemic worse than COVID-19, what is it that the public needs from industry and how can the Inquiry's recommendations ensure we are in a position to receive it?

We know that, during critical stages of the pandemic, Australia had difficulty acquiring adequate vaccines, PPE and rapid antigen tests. A lack of reagents also inhibited testing in the early stages of the pandemic.

In a future worse pandemic, it might be that supply chain breakdowns and labour force shortages lead to far worse consequences. Although COVID was challenging, there was never a suggestion that the power might go out or that food would not be available. But COVID did show us just how brittle modern "just in time" supply chains can be. If what happened to toilet paper instead happened to food or liquid fuel, the consequences could be catastrophic. Similarly, if the workforce shortages that hit the meat industry instead hit the power grid operators, the consequences could be societal collapse. Overall, there's a sense in which modern society is far more brittle than historical societies that endured pandemics. In a modern society, our lives depend on interactions with people hundreds or thousands of kilometres away who we have never met. This has never been the case historically.

This observation leads to two conclusions:

First, the importance of pandemic prevention is paramount. If a pandemic could plausibly cause complete social collapse, it's essential that we identify all the vectors by which pandemics could begin and work hard domestically and globally to address them.

Second, in the event that such a pandemic does occur, we can't be in the position of having to solve problems like defining essential workers or mapping supply chains on the fly through ad hoc approaches like the National Coordination Mechanism. Instead, we need to have a robust national plan for a pandemic worse than COVID that is regularly exercised with industry and civil society organisations as well as international partners. Exactly where the pressure points are will change rapidly, and the lessons we learned from COVID are unlikely to remain true in 10 or 30 years from now. Only robust planning and regular exercising will ensure we maintain and build the knowledge necessary for the future.

The notable public health challenges of history have been solved by innovative people bringing new ideas and perspectives to the challenge of health. As the scope of public health has grown, so has its ability to improve longevity and quality of life.

The terms of reference of this inquiry are fundamentally about doing better in the future. Given how terrible future pandemics could be – the best thing the Inquiry could do for the future is to prioritise pandemic prevention, including the novel ways pandemics could occur in the future. While that will require uncomfortable thinking about unexpected topics and emerging technologies, these are the issues that could have the biggest impact towards securing a healthier future.