SUBMISSION TO THE SENATE SELECT COMMITTEE ON PFAS

From: Robert Tonks, Queensland Engineer and Biochar Innovation Developer

Date: June 2025

EXECUTIVE SUMMARY

I am Robert Tonks, a Queensland engineer with almost 20 years of research and development in pyrolysis technology and biochar production. I have developed a breakthrough biological PFAS remediation technology combining pyrolysis-produced biochar with proprietary microbial solutions. This innovative approach offers the potential to destroy PFAS contamination in-situ while improving soil health—a stark contrast to current expensive dig-and-dump or incineration methods.

Despite my technology's promise and engagement with multiple large government departments since 2020, I face insurmountable barriers: zero pathways for field trial access, no dedicated funding for pre-commercial technology validation, and regulatory frameworks that favour established multinationals over Australian innovation.

Australia has already spent over $1 billion on PFAS remediation with costs escalating exponentially. Without immediate policy intervention to support innovative solutions, these costs will continue growing while breakthrough Australian technologies remain trapped in regulatory limbo.

I urgently request the Committee recommend:

1. **Establishment of Environmental Technology Regulatory Sandbox -** Create a 24-month testing framework allowing innovative PFAS technologies to conduct field trials under regulatory supervision with temporary exemptions from standard approval processes. Include environmental safeguards while enabling real-world validation.

2. **Creation of Dedicated PFAS Innovation Fund -** Allocate $50 million over 3 years specifically for pre-commercial Australian companies and individual innovators developing PFAS remediation technologies. Structure as grants for proof-of-concept ($100K-500K) and demonstration projects ($500K-2M) with simple application processes

3. **Implementation of Fast-Track Approval Pathways -** Develop 30-day approval processes for technologies meeting basic safety and efficacy criteria, with clear performance benchmarks and standardised testing protocols. Prioritise Australian innovations addressing critical contamination challenges.

4. **A Mandated Portfolio Approach to PFAS -** Formally recognise that PFAS remediation requires multiple complementary technologies. Require government procurement to trial diverse approaches rather than defaulting to established methods. Set targets for Australian technology adoption.

5. **Establishing Innovation Performance Metrics -** Track and publicly report on percentage of remediation spending on innovative vs. traditional approaches, number of Australian technologies validated annually, cost reductions achieved through innovation adoption, and environmental outcomes compared to baseline methods.

ABOUT MY WORK AND INNOVATION

I have dedicated almost two decades to developing sustainable charcoal production methods through my company, Australian Hardwood Charcoal Products. This extensive R&D journey led to my breakthrough discovery: **paramagnetic biochar can attract, concentrate, and enable biological destruction of PFAS compounds**.

My novel approach combines:

- **Thermodynamic optimisation** - creating conditions where PFAS breakdown becomes energetically favourable
- **Electromagnetic attraction** - using biochar's paramagnetic properties to concentrate PFAS
- **Biological destruction** - proprietary microbial solutions that consume concentrated PFAS
- **Soil enhancement** - leaving behind improved soil biology rather than toxic waste

This represents a fundamental shift from current remediation approaches that merely move contamination or create secondary waste streams. **My technology can potentially destroy PFAS where it sits while improving environmental outcomes.** As a sole innovator without corporate backing, I have invested my own resources and decades of expertise into solving this critical environmental challenge. Yet I remain locked out of the very testing opportunities that could validate and deploy this solution.

THE INNOVATION BARRIERS I FACE

1. **Complete Absence of Field Trial Pathways -** Despite submitting my biochar to large government departments responsible for contaminated sites as early as 2020, I have received no field testing results (other than proof of method laboratory results), feedback, or pathway forward. **Without field trial data, I cannot validate my technology or attract investment**, creating a Catch-22 where proven performance is required for funding, but trials are needed to prove performance.

2. **Zero Funding for Pre-Commercial Innovation –** Current government funding mechanisms exclusively target universities or require partnerships that dilute intellectual property and delay commercialisation. The $8.2 million in ARC PFAS funding since 2018 remains inaccessible to individual innovators and small companies like mine. **Without access to even modest validation funding, Australian innovations cannot compete with multinational corporations.**
3. **Regulatory Frameworks Favouring Established Players -** Australia lacks any fast-track approval mechanism for innovative environmental technologies. While the US EPA provides accelerated review processes and the UK launched a Regulatory Innovation Office in 2024, **Australian innovators like me face the same lengthy, expensive approval processes as multinational chemical companies**, despite fundamentally different risk profiles and resource constraints.

4. **The Cost of Inaction –** Every month of delay represents millions in additional remediation costs using expensive, ineffective methods incorporating large infrastructure, mobile machinery, and intensive labour. **Large departments continue spending taxpayer funds on dig-and-dump or incineration approaches that merely relocate contamination** while Australian innovations that could actually destroy PFAS remain unused.

URGENT NEED FOR MULTIPLE COMPLEMENTARY SOLUTIONS

The Committee must recognise a fundamental truth: **no single solution will address all PFAS compounds across all contamination contexts**. The over 4,700 PFAS variants, each with different chemical properties and environmental behaviours, require a portfolio of complementary technologies.

Just as cancer treatment requires surgery, chemotherapy, radiation, and immunotherapy working together, PFAS remediation demands:

- Extraction technologies for groundwater
- Destruction technologies for concentrated waste
- In-situ treatments for soil contamination
- Biological approaches for low-level widespread contamination
- Thermal treatments for high-concentration sources

My biochar-microbial approach fills a critical gap in this portfolio, particularly for agricultural land and environmentally sensitive areas where excavation is impractical. However, current policy frameworks assume one-size-fits-all solutions, preventing the diverse innovation ecosystem Australia desperately needs.

THE COST OF CONTINUED INACTION

Australia faces a stark choice: invest modestly in innovation support now or continue haemorrhaging billions on ineffective remediation approaches. **Every large, contaminated site currently costs $50-100 million using traditional methods.** My technology and others like it could reduce these costs by 70% or more while achieving better environmental outcomes.

The global PFAS remediation market will reach $2.65 billion by 2030. **Without immediate support for Australian innovation, we will spend billions importing overseas technologies while our breakthrough solutions gather dust.** This represents not just economic loss but environmental injustice as communities continue suffering while solutions exist but cannot access testing sites.

CONCLUSION: A CALL FOR URGENT ACTION

The Senate Select Committee on PFAS has the opportunity to recommend transformative changes that unleash Australian innovation while addressing one of our greatest environmental challenges. **The policy mechanisms exist, the technologies are ready, and the economic case is overwhelming.**

What's missing is the political will to challenge established interests and create pathways for breakthrough solutions. I have engaged constructively with government departments for over four years with no meaningful progress. **Without the Committee's intervention, Australian innovations will continue being locked out while contamination spreads and costs escalate.**

I stand ready to deploy my technology tomorrow if given access to contaminated sites and basic validation support. The question is whether Australia will act quickly enough to capture this innovation opportunity or continue down the expensive path of technological dependence.

The time for incremental approaches has passed. Australia needs comprehensive PFAS innovation policy that matches the scale and urgency of the contamination challenge.

--

I respectfully request the opportunity to present evidence at public hearings and provide additional technical documentation as required.

Robert Tonks

Submitted to the Senate Select Committee on PFAS

June 2025