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# PUBLIC COMMENT SUBMISSION

## DR AS 3633:2026 - Residential and public pools - Water quality

**Submitted by:** Watertech Services International Pty Ltd / Enviroswim

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**Address:** Unit 2/27 Ford Road, Coomera QLD 4209

**Date:** 19 August 2026

**Recommended disposition:** Major technical revision required - correct and reissue for public comment

**Central position:** Enviroswim supports a contemporary, evidence-based national pool-water standard. The present draft should not be finalised because a central normative microbiological table is missing, the alternative-conformance pathway is internally contradictory, and materially different evidentiary burdens are imposed on conventional and alternative treatment systems.

**AUSTRALIAN GOVERNMENT CHEMICAL SECURITY VIDEO - CENTRAL EVIDENCE:** This submission relies on the Australian Government Chemical Security Warnings video concerning the diversion and deliberate misuse of chemicals, including chemicals associated with pools. Direct link: https://www.youtube.com/watch?v=-7LQImWtrJg

## Statement of purpose and good faith

This submission is made in good faith. It does not allege corruption, dishonesty, collusion or personal bad faith by Standards Australia, Committee CS-061, any nominating organisation or any individual. It does not ask Standards Australia to endorse Enviroswim, and it does not assert that chlorine is ineffective in every pool or under every operating condition. It asks that the published draft be assessed on its wording, evidence, internal consistency and foreseeable effects.

Statements concerning market access and regulatory effect are identified as practical concerns and reasonable inferences from the draft's own stated intention to influence legislation and become the primary technical reference. References to earlier APVMA correspondence are confined to the evidence that was identified or provided to Enviroswim; this submission does not assert that no other evidence exists. References to the APVMA's 2020 cancellation decisions are confined to the specified products and labels identified in those decisions and are not presented as a finding about every possible formulation or use of hydrogen peroxide or PHMB.

## Executive summary

**The draft contains worthwhile recognition of innovation and alternative treatment, but the operative provisions do not yet deliver a coherent or genuinely equal pathway.**

Table 3.1.4 does not contain microbiological criteria. It duplicates the supplementary-sanitizer table while multiple normative clauses rely upon it.

Clauses 3.1.3, 3.2.2, Appendix B and 8.3.7 can require a conventional residual even after an alternative system has followed Appendix I.

Appendix I applies a novel three-tier burden only to alternatives while conventional chlorine and bromine systems receive deemed acceptance based on historical use.

For Australian outdoor pools the draft promotes cyanuric acid to protect chlorine from sunlight while acknowledging that stabilisation reduces the immediately active hypochlorous-acid fraction; it does not disclose the real-world efficacy basis or full secondary-chemical consequences.

The draft does not identify the laboratory reports and full-scale field trials supporting its conventional benchmark, despite APVMA guidance treating laboratory and actual-use field components as important.

Its favourable treatment of hydrogen peroxide and PHMB is not reconciled with APVMA's 2020 cancellation of the specified pool/spa products and labels for failing applicable safety and performance-related criteria.

The draft claims harmonisation with OECD Guidance Document 170 but adopts materially different bacterial organisms, reductions and contact times and omits important method safeguards and the OECD field phase.

Table I.1 relies on a US EPA hard-surface guideline and a superseded MAHC edition, and imports public-venue secondary-treatment criteria into a pathway applying to residential pools.

Detailed toxicological and by-product assessment is imposed on alternatives but not equivalently on conventional chlorination, despite the draft's own recognition of chloramines, trichloramine and trihalomethanes.

Although the draft addresses accidental chemical mixing, it does not address the Australian Government's separate chemical-security concerns about suspicious acquisition, missing stock, diversion and deliberate misuse of pool chemicals.

## Primary requested outcomes

1. Correct the missing Table 3.1.4 and all dependent cross-references.
2. Reissue the corrected draft and provide a renewed public-comment period.
3. Create one transparent outcome- and risk-based evidence framework for all treatment technologies, or publish a fully evidenced basis for any deemed-to-satisfy exemption.
4. Resolve every contradiction between Appendix I and chlorine/bromine residual requirements.
5. Independently validate the Appendix I test method, including controls, replication, repeatability, laboratory scope and complete-system testing.
6. Use current, pool- and water-specific scientific sources and explain every material departure from them.
7. Apply by-product, inhalation, dermal and genotoxic risk assessment consistently to conventional and alternative systems.
8. Add proportionate chemical-security controls for commercial and public-pool chemical holdings, including access control, stock accountability, tampering or loss escalation, suspicious-behaviour awareness and service-vehicle security.
9. Publish the laboratory and full-scale field evidence used for the conventional benchmark, including results under cyanuric acid, organic load, bather waste, sunlight and biofilm conditions.
10. Reconcile every hydrogen-peroxide and PHMB permission or effectiveness claim with the APVMA's 2020 final regulatory decisions.
11. Recognise existing high-quality NATA/ISO 17025 data, recognised certification and relevant field evidence through a documented equivalence process.
12. Obtain independent multidisciplinary review and publish reasoned dispositions of major technical comments before finalisation.

## Background to this submission

Enviroswim has engaged with Standards Australia throughout 2026 and previously supplied detailed questions concerning the evidence base for incumbent pool sanitizers, the need for equal performance criteria, the practical market effect of AS 3633 and the availability of independent water-microbiology expertise. Dr Simon Toze was offered as an independent scientific resource. A formal complaint under Complaints Policy PO 700 was submitted on 10 July 2026 and later escalated.

The present public comment is not a repetition of that complaint. It addresses the actual wording now published and identifies new defects that could not have been raised before the draft was available,

particularly the missing Table 3.1.4, the operation of Appendix I and the scientific sources used in Table I.1.

## Australian Government chemical-security evidence

The Australian Government's chemical-security material identifies pool chemicals and bleaches among chemicals of security concern. The linked Australian Government video graphically demonstrates why diversion and deliberate misuse must be treated as a distinct high-consequence risk, in addition to accidental mixing, workplace exposure and ordinary storage hazards.

**Australian Government Chemical Security Warnings video:**
https://www.youtube.com/watch?v=-7LQImWtrJg

The draft contains valuable accidental-risk controls, including locked storage, chemical segregation, separate bunding, no-flow interlocks, fail-safe shutdown and emergency procedures. It does not expressly address suspicious acquisition, unexplained stock discrepancies, theft, tampering, diversion, deliberate misuse, security of chemicals carried in service vehicles or associated reporting pathways.

## Detailed clause-by-clause comments

Page references are the printed page numbers in DR AS 3633:2026. Proposed wording is intended to convey the required effect and may be refined by Standards Australia drafting staff without weakening the substance.

### Comment 1 - Regulatory intent and practical authority

**Clause: Introduction | Draft page: vi | Type: General / governance | Priority: Critical**

**Issue:** The draft expressly states that it is intended to influence legislative and regulatory requirements and is expected to become the primary technical reference for pool water quality. This is inconsistent with treating concerns about practical market or regulatory effects as merely third-party misuse of a voluntary document.

**Requested change:** Retain the acknowledgement of intended regulatory use, but add an explicit commitment that prescriptive requirements, exclusions and deemed-to-satisfy pathways are supported by transparent evidence and do not impose unequal burdens on competing technologies. Publish an evidence map for all critical treatment requirements before finalisation.

**Reason:** A document designed for regulatory adoption warrants heightened care concerning evidence traceability, internal consistency, competition effects and procedural fairness. The draft's own statement confirms that these consequences are foreseeable.

## Comment 2 - Make the alternative pathway controlling and effective

**Clause: 1.2 and 1.5 | Draft page: 1 and 8 | Type: Technical | Priority: Critical**

**Issue:** Clauses 1.2 and 1.5 appear to permit alternative conformance, but later clauses continue to require chlorine/bromine concentrations or a conventional primary sanitizer residual. The draft does not establish which provisions prevail after Appendix I validation.

**Requested change:** Insert a controlling provision: 'Where a system demonstrates conformance under Appendix I, requirements expressed solely as a chlorine or bromine concentration or a conventional primary sanitizer residual do not apply unless Appendix I expressly provides otherwise.' Identify every displaced provision in a normative schedule.

**Reason:** Without an express precedence rule, the alternative pathway may be defeated by the very clauses from which it is intended to provide relief.

## Comment 3 - Strengthen the competent-person definition

**Clause: 1.4.13 | Draft page: approximately 5 | Type: Technical / safety | Priority: Major**

**Issue:** A competent person may acquire knowledge through education, training, qualification, experience or a combination. This is too open-ended where the work involves hazardous pool chemicals, microbiological risk and public-pool closure decisions.

**Requested change:** Require documented, task-relevant competency and verification. For chemical handling, storage, transport and dosing, identify applicable nationally recognised competency or an objectively equivalent assessment, with refresher and recordkeeping requirements.

**Reason:** Experience alone should not be presumed sufficient for high-consequence chemical and public-health tasks.

## Comment 4 - Remove the universal residual-sanitizer assumption

**Clause: 2.1.2(c) | Draft page: approximately 9 | Type: Technical | Priority: Critical**

**Issue:** The system-design requirements assume a required sanitizer residual throughout the pool. That assumption embeds a particular treatment model before Appendix I performance is considered.

**Requested change:** Replace the technology-specific assumption with a requirement to maintain the validated control parameter or measurable indicator specified for the treatment system. Where a residual is necessary to the validated design, require it; where another control strategy is validated, allow that strategy.

**Reason:** A performance-based standard should prescribe the required outcome and verification method, not assume one mechanism for every technology.

## Comment 5 - Do not define efficacy by chlorine concentration

**Clause: 3.1.1 | Draft page: 18 | Type: Technical | Priority: Critical**

**Issue:** The statement that primary and supplementary sanitizers shall meet the 'minimum efficacy of 1.0 ppm free available chlorine' treats a concentration as if it were an efficacy outcome. It does not specify organisms, log reduction, contact time, pH, cyanuric acid, organic load or operating conditions.

**Requested change:** Replace the sentence with objective microbiological and system-performance outcomes, including specified organisms, reductions, timeframes and validated operating conditions. Chlorine may be used as a comparative control, but not as the definition of efficacy.

**Reason:** The performance of 1 mg/L free chlorine varies with water chemistry and exposure conditions. Concentration alone is not a technology-neutral efficacy metric.

## Comment 6 - Prevent Table 3.1.2(B) from nullifying Appendix I

**Clause: 3.1.2 and 3.2.2 | Draft page: 18-25 | Type: Technical | Priority: Critical**

**Issue:** Table 3.1.2(B) contains chlorine and bromine concentrations, while Clause 3.2.2 says all residential pools shall conform to those concentrations. On its face, that requirement conflicts with alternative conformance under Clause 1.2 and Appendix I.

**Requested change:** State that Table 3.1.2(B) applies to chlorine- and bromine-based systems. Add a separate row or cross-reference for Appendix I validated systems, requiring operation within their validated range and compliance with the completed microbiological criteria.

**Reason:** The present wording can be read as requiring chlorine or bromine in every residential pool, regardless of successful Appendix I validation.

## Comment 7 - Clarify supplementary-sanitizer requirements

**Clause: 3.1.3 | Draft page: 23 | Type: Technical / drafting | Priority: Major**

**Issue:** The clause states that supplementary sanitizers as specified in Table 3.1.3 'shall be used'. This can be read as requiring every listed supplementary process. The same clause also requires a primary sanitizer with a measurable residual, which conflicts with the alternative route.

**Requested change:** Rewrite the clause so that supplementary processes are optional or required only where the system design, risk category or validated treatment train calls for them. Separate conventional supplementary treatment from Appendix I alternative treatment.

**Reason:** The clause is ambiguous and may produce inconsistent enforcement.

## Comment 8 - Remove technology exclusion from Table 3.1.3

**Clause: Table 3.1.3 | Draft page: 23 | Type: Technical / competition | Priority: Critical**

**Issue:** The table states that copper/silver ionisation is not accepted for public pools and is not to be used as a residual primary sanitizer in isolation. That classification applies before any Appendix I evidence is assessed.

**Requested change:** Replace categorical acceptance or rejection by technology with a cross-reference to uniform performance and validation requirements. If a limitation is retained, publish the evidence and risk assessment supporting it and explain how a validated multi-barrier system may qualify.

**Reason:** A technology-neutral standard should not pre-judge a treatment mechanism where an outcome-based validation pathway is said to be available.

## Comment 9 - Restore the missing microbiological criteria

**Clause: 3.1.4 and Table 3.1.4 | Draft page: 24 | Type: Technical / drafting | Priority: Critical**

**Issue:** Table 3.1.4 is titled 'Microbiological criteria for all facilities' but contains the same supplementary-sanitizer entries as Table 3.1.3. It provides no microbiological parameters or acceptance limits. Clauses 3.1.4, 6.3.4 and Appendix I rely upon the missing criteria.

**Requested change:** Withdraw the defective table, insert the intended microbiological criteria with methods, units, sampling rules and actions, conduct a full cross-reference audit, and reissue the corrected draft for a renewed public-comment period.

**Reason:** This is not a minor typographical error. The draft omits a central normative conformance benchmark and prevents informed public review.

## Comment 10 - Require demonstrated chemical-handling competency

**Clause: 5.3.5 | Draft page: approximately 36 | Type: Technical / safety | Priority: Major**

**Issue:** The clause requires personnel handling chemicals at public pools to be trained, but it does not specify competency assessment, refresher frequency or coverage of technicians working at residential sites, shops, warehouses or service vehicles.

**Requested change:** Extend the requirement to all workplace handling of pool chemicals and require documented competency, refresher training, segregation knowledge, spill response and applicable transport controls. Distinguish attendance at a workshop from verified competency.

**Reason:** Hazardous chemical risk exists across the supply and service chain, not only inside public aquatic facilities.

## Comment 11 - Address chemical security, diversion and deliberate misuse

**Clause: Section 5 and whole document | Draft page: 32-37 and whole document | Type: Technical / safety / security | Priority: Critical**

**Issue:** Section 5 contains useful controls for accidental fire, toxic-gas generation, incompatible reactions and unauthorised access. However, the draft contains no express chemical-security risk assessment or requirements concerning suspicious acquisition, unexplained stock discrepancies, theft, tampering, diversion or deliberate misuse. Australian Government chemical-security material identifies pool chemicals and bleaches among chemicals of security concern and specifically asks retailers and the public to report unusual possession, storage, missing chemicals and suspicious behaviour around chemical stores. The draft does not explain why that foreseeable risk category is outside its risk model.

**Requested change:** Add a proportionate, risk-based chemical-security provision for public pools and pool-industry workplaces. Require controlled access, inventory accountability appropriate to quantity and concentration, investigation of unexplained losses or tampering, staff awareness of suspicious behaviour, escalation and reporting arrangements, and security of chemicals in transit or service vehicles. Cross-reference current Australian Government chemical-security guidance and applicable work health and safety, dangerous-goods and transport duties. Clarify that ordinary residential obligations remain proportionate to risk.

**Reason:** A locked enclosure helps prevent casual access but is not a complete control for diversion or deliberate misuse. A Standard intended to become a primary technical reference should either address this high-consequence risk or state its boundary and normatively direct users to the applicable security framework.

## Comment 12 - Repair the microbiological-testing cross-reference

**Clause: 6.3.4 | Draft page: approximately 46 | Type: Technical / drafting | Priority: Critical**

**Issue:** The public-pool microbiological testing provisions rely on Table 3.1.4, which does not contain microbiological criteria.

**Requested change:** Complete Table 3.1.4 and state the required organisms, methods, sampling frequency, detection limits, corrective actions, closure criteria and reopening verification. Revalidate every related cross-reference.

**Reason:** An operative monitoring provision cannot depend on a missing normative table.

## Comment 13 - Apply by-product and air-exposure controls to all systems

**Clause: Section 7 and Appendix D | Draft page: 49-58 and 92-99 | Type: Technical / health | Priority: Critical**

**Issue:** The draft acknowledges chloramines, trichloramine, trihalomethanes, respiratory irritation and indoor-air effects, but does not establish routine numeric monitoring or an equivalent lifecycle risk assessment for conventional chlorination.

**Requested change:** Introduce risk-based source-control and monitoring requirements for disinfection by-products and indoor-air exposure. Apply an equivalent Tier 3 or lifecycle assessment to every oxidative treatment route, including conventional chlorination, with requirements scaled to pool type and indoor exposure risk.

**Reason:** Appendix I applies detailed by-product assessment only to alternatives even though the draft recognises that conventional chlorination produces important volatile by-products.

## Comment 14 - Resolve the contradiction in alternative-system operation

**Clause: 8.3.7 | Draft page: 65 | Type: Technical | Priority: Critical**

**Issue:** The first paragraph says alternative systems must support and not replace the required primary sanitizer residual. The final paragraph says replacement may occur if validated for that purpose. These directions conflict.

**Requested change:** Rewrite the clause into two unambiguous pathways: supplementary systems that do not replace the primary residual, and Appendix I validated alternative systems that may replace it. Define fallback and alarm requirements for each pathway without assuming chlorine is always the fallback.

**Reason:** Operators, regulators and specifiers cannot apply contradictory normative directions consistently.

## Comment 15 - Remove undefined chlorine-centric language in Appendix B

**Clause: Appendix B | Draft page: approximately 74-86 | Type: Technical / drafting | Priority: Major**

**Issue:** Appendix B says ionic purifiers are not stand-alone and need to be paired with an 'approved sanitizer'. The term is undefined and may be interpreted as chlorine or bromine irrespective of Appendix I validation.

**Requested change:** Replace 'approved sanitizer' with a defined treatment requirement linked to the validated system design. Ensure Appendix B does not impose a blanket rule inconsistent with Clauses 1.2 and Appendix I.

**Reason:** Undefined approval language can recreate the market barrier that the performance pathway is meant to remove.

## Comment 16 - Address cyanuric-acid effects in the operative criteria

**Clause: Table 3.1.2(B), Appendix B and Appendix D | Draft page: 18-22, 74-86 and 92-99 | Type: Technical / health | Priority: Critical**

**Issue:** For outdoor pools the draft says cyanuric acid is required to protect chlorine from sunlight and recommends a 5-50 mg/L range, while also acknowledging that stabilised chlorine is less effective and that, at 30-50 mg/L cyanuric acid, active hypochlorous acid may be of the order of only 1% of measured free available chlorine. The operative table nevertheless relies mainly on fixed free-chlorine values. It does not disclose a validated free-chlorine-to-cyanuric-acid relationship, contact-time basis or field evidence under Australian sunlight, bather waste, organic demand, temperature and biofilm conditions.

**Requested change:** Provide an evidence-based operating relationship between free chlorine, cyanuric acid, pH, temperature, organic demand and required inactivation performance. Identify the supporting laboratory and Australian-relevant field evidence. State when the stabilised-chlorine system is expected to require higher free-chlorine targets, superchlorination, supplementary oxidation, algaecide, pH correction or dilution/water replacement, and assess the resulting chemical-handling, by-product, cost and water-use consequences. Correct the erroneous cross-reference in Clause 3.1.2 Note 3 from Appendix I to Appendix H if mineralised pools are intended.

**Reason:** A free-chlorine test result is not a direct measure of immediately active hypochlorous acid. A Standard intended for regulatory use should not infer real-world sanitation from a nominal residual while leaving the stabiliser-dependent active fraction and the associated treatment train undefined.

## Comment 17 - Reconcile hydrogen-peroxide and PHMB statements with APVMA decisions

**Clause: Table 3.1.3, B.1.3 and B.1.9 | Draft page: 23 and approximately 74-86 | Type: Technical / regulatory evidence | Priority: Critical**

**Issue:** Table 3.1.3 permits hydrogen peroxide as supplementary treatment in residential and public pools and PHMB in residential pools. Appendix B makes affirmative statements that PHMB at the stated concentration maintains hygienic water and describes hydrogen-peroxide/PHMB systems as established options. APVMA's final decisions published on 28 July 2020 cancelled the registrations and labels of the specified hydrogen-peroxide and polyhexanide-hydrochloride pool/spa products in Appendix A of that decision because they did not meet the applicable safety and labelling criteria. APVMA reported inadequate antibacterial performance for the specified hydrogen-peroxide products and inadequate anti-Legionella performance for the specified PHMB products.

**Requested change:** Identify the exact products, formulations, concentrations, functions and evidence relied upon for each Table 3.1.3 permission and Appendix B claim. Reconcile those provisions expressly with the APVMA 2020 final decisions, including any material differences in concentration, combination, supplementary-only use or claim scope. Remove unqualified hygiene or effectiveness statements unless supported by current, applicable evidence. Clarify that the 2020 decisions concerned the specified products and labels, and state the regulatory status required for any product used under the Standard.

**Reason:** The APVMA decisions should not be generalised automatically to every conceivable use of either chemical, but neither should a 2026 national draft make favourable claims without confronting directly relevant Australian regulatory findings.

## Comment 18 - Make natural-pool conformance normative and coherent

**Clause: Appendix G | Draft page: 107-112 | Type: Technical / drafting | Priority: Critical**

**Issue:** Natural pools are included in scope, but an informative appendix states that Sections 3, 4 and 6 chemical residual requirements do not apply. An informative appendix cannot reliably displace normative requirements. The indicative microbiological values also differ substantially from the alternative-system pathway.

**Requested change:** Move the necessary exemptions and conformance requirements into the normative body, define applicable microbiological limits and monitoring, explain the risk basis for different pathways, and correct the apparent reference from Clause I.8 to Clause G.8.

**Reason:** The present structure creates uncertainty about whether and how natural pools can conform.

## Comment 19 - Remove unsupported mineral-pool benefit claims

**Clause: Appendix H | Draft page: 113-115 | Type: Technical / consumer information | Priority: Major**

**Issue:** Appendix H correctly explains that magnesium or potassium chloride electrolysis generates chlorine from chloride, but it also lists improved clarity, reduced skin and eye irritation and enhanced comfort as commonly associated characteristics without identifying supporting evidence.

**Requested change:** Retain the clear disclosure that the process is chlorination, but remove or substantiate health, comfort and performance claims. Clarify the status of magnesium-adjusted saturation calculations where Appendix C says no standard LSI adjustment exists.

**Reason:** A normative Standard should not reproduce marketing-style benefit claims without traceable substantiation.

## Comment 20 - Apply equal evidence requirements to incumbents and alternatives

**Clause: I.1 and I.2 | Draft page: 116 | Type: Technical / governance | Priority: Critical**

**Issue:** Appendix I applies only to systems that do not maintain conventional chlorine or bromine residual as their sole means of control. Conventional systems are accepted by reference to a long-established efficacy record and do not undergo the same three-tier verification.

**Requested change:** Apply one outcome- and risk-based evidence framework to all treatment systems. If conventional systems receive deemed-to-satisfy status, publish the evidence map, operating assumptions and continuing verification that justify the exemption.

**Reason:** Historical use may be relevant evidence, but it should not automatically excuse one technology class from requirements imposed on competitors, particularly toxicological and by-product assessment.

## Comment 21 - Disclose the evidence for the conventional benchmark

**Clause: 3.1.1, I.2 and I.3 | Draft page: 18 and 116-118 | Type: Technical / evidence transparency | Priority: Critical**

**Issue:** The draft states that conventional chlorine and bromine have a long-established efficacy record, but it does not identify the efficacy reports, formulations, operating ranges or full-scale field trials used to establish the benchmark under the conditions prescribed by this draft. APVMA's current pool-and-spa efficacy guidance says every new sanitiser product must demonstrate efficacy, encourages combined laboratory and field evidence, and says both components are important. Its field guidance calls for busy public pools, significant and variable bather loads and a trial of not less than six months under actual use conditions.

**Requested change:** Publish an evidence map for the conventional benchmark. For each relied-upon product or active system, identify the organisms, log reductions, contact times, pH, cyanuric acid, temperature, demand, formulation, residual, controls and field conditions. Identify Australian or scientifically bridged field trials, including bather load, rainfall, other chemicals and microbiological outcomes. If reports are confidential, provide an independently reviewed non-confidential assessment containing enough methodological and outcome detail for public scrutiny. Do not treat registration, historical use or a generic active ingredient as proof for every operating condition.

**Reason:** A technology may be an appropriate comparator without being an evidence-free comparator. The draft's intended regulatory role requires the benchmark and its limits to be traceable.

## Comment 22 - Scale the three-tier pathway by risk and claimed use

**Clause: I.3 | Draft page: 117-118 | Type: Technical | Priority: Major**

**Issue:** Every alternative system must complete all three tiers, with substantially the same framework for residential and public applications. The draft does not provide proportionate routes for different pool types, bather loads or limited claims.

**Requested change:** Create risk-scaled validation pathways for residential, ordinary public and high-risk public pools. Permit justified use of existing accredited laboratory data, certification and field evidence to avoid unnecessary duplication while preserving public-health safeguards.

**Reason:** A single expensive pathway may create an avoidable barrier for small manufacturers without improving safety in proportion to risk.

## Comment 23 - Correct the scientific bases in Table I.1

**Clause: Table I.1 | Draft page: 117-118 | Type: Technical | Priority: Critical**

**Issue:** The table uses US EPA OCSPP 810.2200, a hard-surface disinfectant guideline, as the viral basis for pool water. It cites the superseded 2023 MAHC and imports a public-venue secondary-treatment Cryptosporidium criterion into a pathway applying to all residential and public alternative systems.

**Requested change:** Use water- and pool-specific sources, including US EPA OCSPP 810.2600 where relevant, the current 2024 MAHC in its proper scope, and OECD Guidance Document 170 with departures clearly identified and justified.

**Reason:** A performance standard should not transpose criteria from materially different use settings without a documented scientific bridge.

## Comment 24 - Validate the novel 21-day protocol before making it normative

**Clause: I.4.1-I.4.4 | Draft page: 118-121 | Type: Technical | Priority: Critical**

**Issue:** The 1,000 L, 21-day simulated-use protocol appears to be a novel composite method. The draft provides no validation study, inter-laboratory comparison, precision and bias statement, repeatability or reproducibility data, or complete control and replication requirements.

**Requested change:** Subject the method to independent scientific review and validation before publication. Specify negative and positive controls, replicates, acceptance statistics, uncertainty, calibration, neutralisation, test-laboratory scope and reporting requirements.

**Reason:** A normative approval pathway must be reproducible between laboratories and capable of producing comparable decisions.

## Comment 25 - Remove or justify test-medium asymmetry

**Clause: I.4.3 | Draft page: 119 | Type: Technical | Priority: Major**

**Issue:** The body-fluid analogue expressly includes constituents that bind copper and silver and says that it stress-tests mineral and ionisation systems. Conventional chlorine systems are not required by Appendix I to demonstrate performance under the same protocol.

**Requested change:** Either require a parallel conventional chlorine benchmark under identical conditions or demonstrate through independent validation that the challenge medium is neutral and representative for all treatment mechanisms. Specify how interfering substances and active concentrations are measured throughout the test.

**Reason:** A test deliberately stressing one technology class should not be described as equivalent or neutral without comparative controls.

## Comment 26 - Test chlorine under the same degraded-water and biofilm conditions

**Clause: I.2 and I.4.1-I.4.4 | Draft page: 116 and 118-121 | Type: Technical | Priority: Critical**

**Issue:** Appendix I imposes a 21-day degraded-water, repeated-challenge and biofilm-coupon protocol only on alternatives. Yet the draft itself states that conventional residual disinfectants only partially control biofilm, that biofilm-associated bacteria may be 150 to more than 3,000 times more resistant to hypochlorous acid, and that established biofilm may persist until superchlorination or other remediation. The asserted chlorine benchmark is therefore not demonstrated under the same real-world stress conditions imposed on alternatives.

**Requested change:** Require a parallel conventional-chlorine control in the same rig, using the draft's prescribed free-chlorine, pH and cyanuric-acid conditions, and report active residual, chlorine demand, organic loading, biofilm and microbiological outcomes throughout the 21 days. Link the laboratory comparison to independent full-scale field evidence at busy public pools. Record all secondary chemicals and remedial interventions needed to maintain conformance.

**Reason:** The draft cannot rely on clean-water or historical benchmark assumptions while acknowledging that biofilm and accumulated contamination materially change real-world performance. An identical control is necessary to distinguish a valid health criterion from a technology-specific burden.

## Comment 27 - Define turnover and post-challenge safety criteria

**Clause: I.4.4.3 | Draft page: 120 | Type: Technical | Priority: Critical**

**Issue:** The rig must achieve a 3-log reduction within one turnover period. Residential turnover may be long or undefined, and the clause does not establish an immediate post-challenge maximum count during that period.

**Requested change:** Set a defined maximum time tied to public-health risk, specify the applicable turnover for every test configuration, require time-series sampling and establish post-challenge water-quality limits. Explain how a 3-log reduction from at least 10^4 CFU/mL relates to the missing Table 3.1.4 criteria.

**Reason:** A pass criterion based on an undefined or lengthy turnover does not provide a consistent safety outcome.

## Comment 28 - Use a water-specific viral method

**Clause: I.4.5 | Draft page: approximately 122 | Type: Technical | Priority: Critical**

**Issue:** The viral criterion permits a 3-log reduction within 60 minutes and relies on a hard-surface source. The draft does not fully specify controls, replication, active-system operation or how MS2 results represent the claimed virus range.

**Requested change:** Adopt a validated water-specific viral protocol, specify organism preparation, disaggregation where relevant, neutralisation, controls, replicates, detection limits and operating conditions, and justify the selected contact time against pool-specific guidance.

**Reason:** The method and claim must be scientifically connected to the intended pool-water use.

## Comment 29 - Test the complete operating treatment system

**Clause: I.5.1 | Draft page: 123 | Type: Technical | Priority: Critical**

**Issue:** Conditioned water is removed from the rig and transferred to a bench containment facility for pathogen challenges. Equipment-bound processes such as UV, ultrasonics, electrochemical oxidation or in-line advanced oxidation may no longer be operating on the sample.

**Requested change:** Require the complete validated treatment train to remain engaged during confirmation, or prescribe a validated scaled apparatus that reproduces hydraulic exposure, energy input, active generation and contact conditions. Define how multi-barrier contributions are preserved.

**Reason:** Testing extracted water alone may measure only substances remaining in the sample, not the performance of the complete system.

## Comment 30 - Reconsider the 3-log-in-60-minutes bacterial criterion

**Clause: I.5.2 | Draft page: 123 | Type: Technical | Priority: Critical**

**Issue:** The criterion requires only a 3-log bacterial reduction within 60 minutes from a starting count of at least 10^6 CFU/mL. A 3-log result can leave 10^3 CFU/mL. OECD Guidance Document 170 lists 4-log reduction for key bacteria, generally within 30 seconds for E. coli, Pseudomonas aeruginosa, Legionella pneumophila and Staphylococcus aureus, with Enterococcus also included.

**Requested change:** Use the OECD pool-specific target set or publish an independent scientific justification for every departure. Include Legionella and Enterococcus or explain their omission, define replicate and control requirements, and add a final acceptable concentration criterion.

**Reason:** The draft claims harmonisation with OECD guidance but adopts materially different organisms, reductions and contact times.

## Comment 31 - Fully specify the protozoan pathway and its scope

**Clause: I.5.3 | Draft page: 123-124 | Type: Technical | Priority: Critical**

**Issue:** All alternative systems, including residential systems, must show 2-log Cryptosporidium and 3-log Giardia control. The clause does not adequately specify the organism or surrogate, inoculum, viability method, contact time, per-pass versus system-wide basis, replicates or acceptable combinations of filtration and treatment. The cited MAHC requirement belongs to public aquatic-venue secondary treatment and varies by venue type.

**Requested change:** Define a complete validated method and scale it to the claimed pool category. Apply equivalent protozoan risk-management requirements to conventional systems, acknowledging that the draft itself says chlorine residual does not control Cryptosporidium.

**Reason:** The present clause is both difficult to reproduce and asymmetrical in application.

## Comment 32 - Apply Tier 3 consistently to conventional chlorination

**Clause: I.6 | Draft page: 124-125 | Type: Technical / health | Priority: Critical**

**Issue:** Every alternative system must identify and assess treatment by-products, including inhalation, dermal and genotoxic concerns. The same normative assessment is not imposed on conventional chlorine or bromine systems, notwithstanding recognised trichloramine and trihalomethane risks.

**Requested change:** Move the lifecycle risk framework into the main body and apply it to every treatment route, with recognition of existing high-quality evidence where appropriate. Include exposure minimisation and monitoring for high-risk indoor facilities.

**Reason:** Equal risk should receive equal assessment. A note saying chlorination is included does not overcome Appendix I's limited normative scope.

## Comment 33 - Broaden and clarify recognition of existing evidence

**Clause: I.7 | Draft page: 125 | Type: Technical / drafting | Priority: Major**

**Issue:** The clause says existing Australian and international evidence shall be relied upon, but its note refers only to overseas registration and peer-reviewed assessment. It does not clearly address NATA/ISO 17025 testing, NSF/ANSI 50 certification, regulator-supervised trials, long-term field monitoring or a transparent evidence-equivalence process. The example is incomplete.

**Requested change:** List eligible evidence types and establish criteria for relevance, quality, comparability, independence and gap analysis. Require written reasons where existing accredited or certified evidence is rejected. Complete the BPR example.

**Reason:** A clear recognition pathway avoids unnecessary duplication and arbitrary treatment while preserving scientific scrutiny.

## Comment 34 - Strengthen independence and accreditation requirements

**Clause: I.8 | Draft page: 125 | Type: Technical / governance | Priority: Critical**

**Issue:** The manufacturer-managed model uses 'should' for testing, allows the manufacturer to build and operate the rig, and leaves final interpretation to an undefined independent competent person. Only certain microbiological analyses expressly require an ISO/IEC 17025 laboratory.

**Requested change:** Use mandatory language for independence-critical steps. Require the laboratory's accredited scope to cover the methods used, independent witnessing or auditing of rig operation and data integrity, predefined statistical analysis, conflict declarations and an independent technical decision-maker with specified qualifications.

**Reason:** The credibility of a new deemed-to-satisfy route depends on transparent, consistent and genuinely independent assurance.

## Comment 35 - Obtain and publish independent multidisciplinary review

**Clause: Committee composition and finalisation process | Draft page: committee list | Type: General / governance | Priority: Critical**

**Issue:** The published committee list names seven organisations, but does not itself demonstrate independent expertise in water microbiology, toxicology, occupational hygiene, competition effects, consumer interests or alternative multi-barrier treatment. This does not establish that individual members lack relevant expertise; it leaves the capability question unresolved.

**Requested change:** Before resolving critical comments, publish a de-identified discipline and capability matrix and obtain independent review from suitably qualified experts who were not responsible for the disputed drafting. Publish the disposition and reasons for major technical comments.

**Reason:** The breadth of the draft and its intended regulatory role require expertise beyond conventional pool-industry practice alone.

## Comment 36 - Complete an editorial and internal-consistency review

**Clause: Whole document | Draft page: multiple | Type: Editorial | Priority: Major**

**Issue:** The draft contains numerous apparent defects, including duplicated Table 3.1.4; an incorrect mineral-pool appendix reference; 'whatever the size of poo'; an incomplete BPR example; a self-reference in I.2; an apparent G.8/I.8 error; 'Avoid excessive dosing 2 above'; inconsistent terminology; and Figure D.3 percentages that appear not to total 100%.

**Requested change:** Conduct a complete technical-editing and cross-reference audit after the substantive issues are resolved, then publish a clean corrected draft for renewed comment where changes are material.

**Reason:** The density and significance of the errors reduce confidence that the public has been given a stable and reviewable text.

# Supporting evidence available

Enviroswim formal complaint under Standards Australia Complaints Policy PO 700, 10 July 2026.

Tweed Laboratory ES1 and ES3 efficacy reports and associated chain-of-custody records.

NSF/ANSI 50 certification and supporting third-party test records.

Dr Simon Toze technical reports and qualifications in water microbiology and pathogen risk.

Public-pool and monitored field records, including historic Sleeman Centre and later monitored-site material.

APVMA correspondence and FOI records concerning the evidence identified in response to Enviroswim's requests.

Comparative disinfection-by-product, indoor-air, chemical-handling and occupational-exposure material previously supplied to Standards Australia and other regulators.

## Authoritative external sources relied upon

OECD Guidance Document 170 - pool and spa disinfectant efficacy

US EPA Series 810 Product Performance Test Guidelines

US EPA OCSPP 810.2600 - Disinfectants and sanitizers for use in water

CDC - current Model Aquatic Health Code edition

2024 Model Aquatic Health Code, fifth edition

APVMA - Demonstrating efficacy of pool and spa sanitisers

APVMA Gazette No. 15, 28 July 2020 - final decisions for specified pool and spa sanitiser products

Australian Government - chemical-security awareness factsheet

Australian Government - chemical-security retailer brochure

Australian Government Chemical Security Warnings video - https://www.youtube.com/watch?v=-7LQImWtrJg

WorkSafe Victoria - swimming pool chemical mixing causes toxic gas

## Conclusion

Enviroswim respectfully submits that DR AS 3633:2026 is not ready for finalisation. The defects identified above affect normative conformance, scientific validity and equal access to the proposed alternative pathway. The appropriate course is to correct and independently review the draft, publish the evidence and disposition of major issues, and provide a renewed opportunity for informed public comment.