ICC 825 and the Future of Onsite Wastewater Treatment

Global Collaboration and Public Health Impact

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Today’s Discussion

- Why ICC 825 was developed
- What makes the standard different
- How the consensus process works
- Major elements of the emerging standard
- Climate resilience and site-specific decision making
- Wastewater reuse
- Public health implications
- Where ICC 825 goes from here

Why Onsite Wastewater Matters

Onsite wastewater systems are essential infrastructure They serve communities where centralized sewer systems are unavailable or impractical Proper siting, design, installation and operation directly protect:

- Human health **key message:** Onsite wastewater treatment is fundamentally a public health function.
- Groundwater
- Surface water
- Drinking water supplies
- Communities and ecosystems

The Challenge

Onsite systems operate under dramatically different conditions:

- Climate
- Soil
- Hydrology
- Topography
- Population density
- Available technology
- Financial resources
- Regulatory capacity
- Operations and maintenance capacity

Enter ICC 825

ICC 825 – Private Sewage Disposal Systems

- New International Code Council standard
- Developed through an ANSI-accredited consensus process
- Intended to establish minimum requirements for private sewage disposal systems
- Globally informed
- Performance and public-health focused
- Designed to support application across diverse environmental and regulatory settings

Why Develop a Global Standard?

- Existing requirements vary significantly among jurisdictions
- Environmental conditions differ widely
- Technology continues to evolve
- Climate-related hazards are changing design assumptions
- Water scarcity is increasing interest in reuse
- Regulators and practitioners need adaptable, science-informed tools

Building ICC 825

Development began in 2023

- The IS-PSDS consensus committee includes perspectives from:
- Regulators
- Engineers
- Scientists
- Public health professionals
- Designers
- Industry representatives
- Other onsite wastewater stakeholders

- **Goal:** Develop requirements through balanced, transparent consensus rather than from a single professional or regulatory perspective.

A Different Kind of Standards Process

Consensus is more than agreement.

- Development requires:
- Reviewing existing practices
- Evaluating technical evidence
- Considering international approaches
- Debating competing solutions
- Addressing implementation realities
- Reaching consensus across disciplines and interests
- Public review and comment

Science Meets Standards

ICC + University of Miami Collaboration

- Academic research incorporated into standards development
- Environmental and public health science inform decision making
- Modeling helps evaluate environmental conditions and risks
- Research is translated into tools practitioners can actually use
- This partnership is one of the distinctive features of ICC 825.

Start Before the Design

Predesign Screening

- A major concept within ICC 825 is evaluating local conditions **before selecting the system or technology.**

Potential considerations include:

- Soil conditions
- Flood risk
- Environmental constraints
- Available financing
- Operations and maintenance capacity
- Local infrastructure and resources

The Predesign Screening Toolkit

Right technology. Right location. Right capacity.

- The toolkit is intended to:
  - Identify local constraints
  - Evaluate risks
  - Consider long-term operational capability
  - Compare potential treatment approaches
  - Help identify appropriate technologies before design begins

This was one of the principal benefits ICC leadership specifically identified for the NOWRA audience.

Designing for Resilience

Yesterday's assumptions may not describe tomorrow's conditions.

ICC 825 considers system resilience related to:

- Sea-level rise
- Hurricanes and extreme storms
- Flooding
- Drought
- Heat
- Changing watershed conditions
- Other climate-related environmental stresses

From Minimum Compliance to Long-Term Performance

Traditional question:

“Does the system meet requirements today?”

ICC 825 encourages another question:

“Can this system continue to perform under the conditions it will experience over its useful life?”

Consider:

- Environment
- Maintenance
- Operator capacity
- Technology
- Changing climate
- Community resources

Wastewater as a Resource

Safe Onsite Wastewater Reuse

ICC 825 is not focused solely on disposal.

The developing standard also addresses requirements for the **safe reuse of treated wastewater.**

Potential benefits:

- Water conservation
- Reduced demand on potable supplies
- Greater resource efficiency
- Increased resilience in water-stressed communities

Protecting Public Health

ICC 825 connects system performance directly to:

- Prevention of human exposure to pathogens
- Protection of groundwater
- Protection of surface waters
- Protection of drinking water sources
- Reliable treatment
- Sustainable long-term operation

What ICC 825 Means for Practitioners

For the NOWRA community, ICC 825 can provide:

- A consistent technical framework
- Better predesign decision making
- Recognition of local environmental constraints
- Greater consideration of long-term O&M
- Climate-resilient system planning
- Guidance supporting appropriate technology selection
- A framework for safe reuse

What ICC 825 Does *Not* Do

Important distinction:

- It does not assume one technology works everywhere
- It does not eliminate the importance of local expertise
- It does not replace good site evaluation
- It does not remove the need for professional judgment

Instead, it provides a structured framework for making better decisions.

Lessons From the Chair

Developing a standard through consensus

Possible lessons to discuss:

- Technical expertise alone is not enough
- Different disciplines define risk differently
- Local experience matters
- Research must translate into practical requirements
- Implementation matters as much as technical accuracy
- Consensus requires listening and compromise
- Public health provides a common objective

Where We Are Today

ICC 825 Development Process

- Standard development initiated
- Consensus committee established
- Draft provisions developed
- Technical issues reviewed
- Public input incorporated into the process
- Continued committee review and resolution
- Movement toward publication

Where This Can Lead

ICC 825 represents an opportunity to:

- Strengthen onsite wastewater practice
- Improve consistency
- Integrate emerging science
- Build climate resilience
- Encourage appropriate reuse
- Support regulators and practitioners
- Protect public health across diverse communities

The Bigger Picture

Onsite wastewater is public health infrastructure.

The future requires systems that are:

Safe
Adaptable
Maintainable
Resilient
Science-informed

ICC 825 is an effort to build a framework capable of supporting that future.

Thank You / Questions

- List of Committee member and ICC staff recognition

- Q & A

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