The Role of Certification in Onsite Wastewater Technology Approvals

EPA Decentralized Wastewater Webcast Series

February 19, 2014

Today's Agenda

- **Brief overview of NSF**

- **Overview of Certification in the Global Market**

- **Purpose and Value of Technology Approval**

- **Certification Process**

- **Questions**

NSF International is an independent, not-for-profit non governmental organization

NSF's primary business activities are:

- Developing national voluntary consensus standards that enhance public health and safety.

- Providing product certification services to manufacturers of products primarily in the food service, water treatment, plumbing, and wastewater treatment industries.

- Providing management systems registration.

- Providing testing and auditing services.

- Providing training and education services.
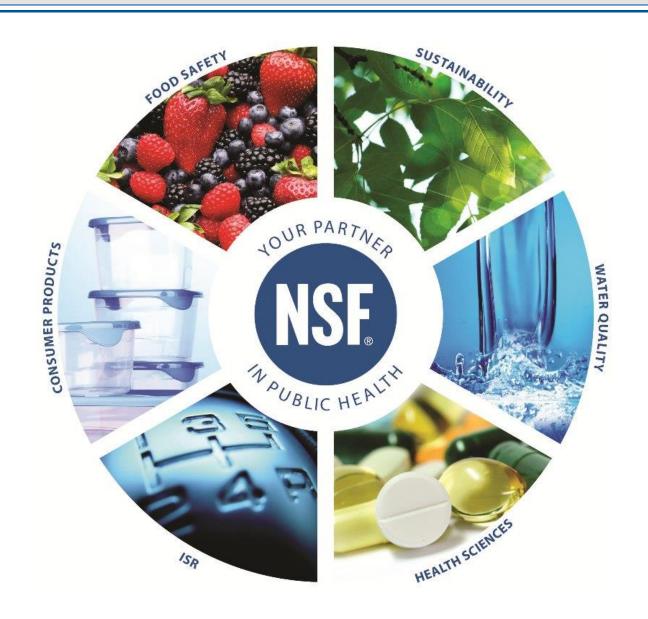
Professional Staff, Facility, and Operations

- 1,700+ experienced professionals: microbiologists, toxicologists, chemists, engineers and public health experts

- 200,000+ square feet of state-of-the-art laboratories in North America, Europe, South America and China, plus partner labs around the world

- Innovative information technology capabilities

NSF Core Business Units

NSF Water Related Programs

- **Wastewater Treatment Systems and Components**
- **Beverages and Bottled Water**
- **Drinking Water Treatment Units**
- **Mechanical Plumbing System Components**
- **Plastics Piping System Components**
- **Pool, Spa, and Recreational Water Products**
- **Water Treatment and Distribution Systems**
- **Water Treatment Chemicals**
- **Water Conservation Technologies**

- **Global system**
  - National product standards provide a framework that is intended to enable one set of test methods by which to generate data.
  - Within the country, or region intended to encompass the standard, data generated from those methods are expected to be applicable and accepted.
  - Criteria for data acceptance goes beyond simply meeting the methods of the standard, e.g. qualifications and independence of the entity generating the data.
  - International standards exist for qualifying laboratories, and similarly for certification bodies.
  - National accrediting bodies exist to evaluate laboratories and certifiers to those standards and criteria.

The Role of Accreditation

- **Provides confidence to governments, businesses and consumers that:**
  - Accredited laboratories provide testing results that assure and verify claims about quality, performance and reliability.
  - Accredited certification bodies provide comprehensive manufacturing assessment to assure products continue to be produced in accordance with specifications of the product as tested, are serviced and maintained as needed, all changes reviewed and approved, non-conformities addressed, etc.
- **Reduce technical barriers for trade and acceptance domestically and globally.**

The Standard for Laboratories

ISO/IEC 17025:*2005* *– General requirements for the competence of testing and calibration laboratories.*

- Accredited laboratories must maintain full compliance to this Standard in all test methods approved in its scope.

- Specifies the general requirements for the competence to carry out tests using standard methods, non-standard methods, and laboratory developed standards.

The Standard for Certification Bodies

ISO/IEC Guide 17065:*2012* – *Conformity assessment - Requirements for bodies certifying products, processes and services*

- Contribute to the consistency, competence, and compliance of product certification bodies

- Scope of accreditation specific to product certifications being granted.

- Where testing is involved, 17025 is incorporated by reference.

  - Extends to contractors where used.

Importance/Impact of product certification for global trade

- An unknown number of sectors, regulators, schemes and CB's run their operation under this requirements with an unknown number of certificates and products, this shows the great importance.

International level
IEC CB Scheme:
74 National Certification Bodies
382 CB Testing Laboratories
45 Satellite Laboratories
2800 Manufacturer's Testing Laboratories
70'000 CB Test Certificates issues in 2011

Asia

Japan
JIS-mark : 25 certification bodies
JAS-mark: 142 certification bodies
PSE-mark: 10 certification bodies
PSC-mark : 9 certification bodies
PAL : 13 certification bodies
China:
35 accredited Certification Bodies
10 Certification Bodies response for China Compulsory Certification (CCC)
50,728 companies with 280,000 certificates for CCC

Europe:
New Legitlation Framework (NLF) over 20 European Directives, Trade volume 1500 mrd €, about 2000 Notified Bodies
974 accredited certification bodies in Europe
(source: European Co-operation Accreditation)

Germany:
GS-mark
91 bodies

New Zealand/Australia
36 certification bodies for product certification
70 product certification schemes delivered by 36 accredited bodies

Brasil
70 accredited Certification Bodies

USA
120 Accredited Certification Bodies

2012-09-26, Christian Priller, Convenor

Primary NSF Accreditations

- **ISO/IEC 17065:2012**

    Product certification requirements.

- **ISO/IEC 17025:2005**

    Laboratory competence.

- **ISO/IEC 17021:2006**

    Mgmt Systems certification requirements.

*NSF has over 50 accreditations, certifications and licenses.

Who is ANSI?

American National Standards Institute (ANSI)

- **ANSI does not test or certify products, nor do they write standards.**

- **ANSI accredits organizations to ISO Standards for the following scope of services:**

  1. Product Certifiers.

  2. Standards Writing Organizations.

  3. Quality Management System Registrars.

  – NSF is ANSI accredited in all three categories.

Why test treatment units?

Why is certification important?

Compliance/Uniformity/Accountability

- **Testing & Certification ensures:**
  - Product is in compliance with the relevant standards for the technology.
  - Evaluation is performed by credible, competent, independent laboratories.
  - Product tested is the same as the product manufactured, as demonstrated in audits.
  - Manufacturer is held accountable for compliance in all certified products to the requirements of the standard.
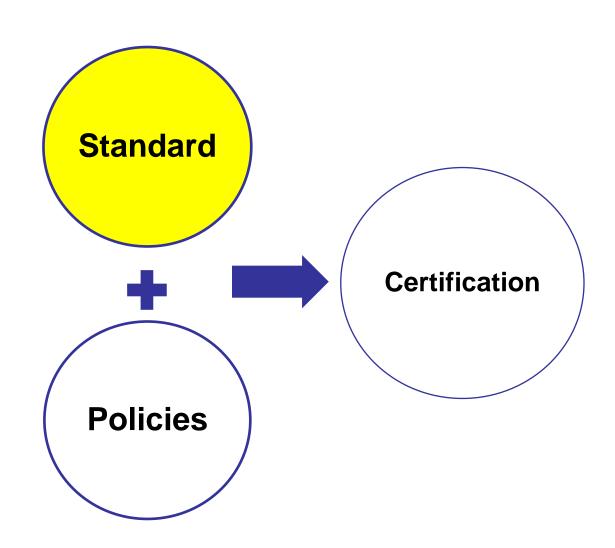
Who Benefits?

- **<u>Regulatory Community</u>** through initial demonstration of performance and, long-term continuous compliance

- **<u>Industry</u>** through a common measure of compliance, providing a level playing field and understood criteria

- **<u>Buyers and users</u>** for confidence in product selection/purchase/reliability

NSF Onsite WW Treatment Unit Certification

- **Develop American National Standards**
- **Provide Third-party Product Certification**
  - Product Testing
  - Facility Audits
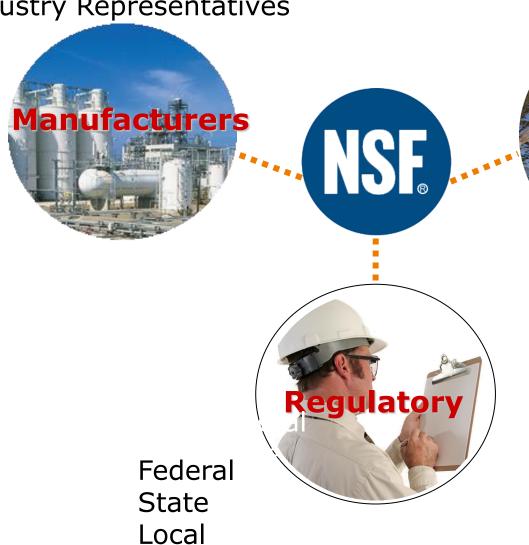 - Fulfillment of Service and Maintenance Requirements

Goal: Ensure a national program of product compliance that (1) provides consistent methods and measures of performance, (2) a reliable third-party source for data, and (3) demonstrated long-term compliance.

Two Components of Certification

Standard

+

Policies

Certification

Industry Representatives

Manufacturers

NSF

Users

Consumers
Laboratories
Utilities
Consultants

Regulatory

Federal
State
Local

NSF Joint Committee

- **Consensus body of experts that oversees development of NSF Onsite Wastewater Standards.**
- **Balanced membership of external stakeholders.**
  - Public Health
  - System Manufacturers
  - Users
- **Responsible for all new standards and maintenance/revision of current.**
- **Broad, fully open process for participation by anyone interested**
  - Not limited to Joint Committee members
  - 100's of participants today

NSF/ANSI for Onsite WW Treatment Systems

- **NSF/ANSI 40 *Residential wastewater treatment systems***
- **NSF/ANSI 41 *Non-liquid saturated treatment systems***
- **NSF/ANSI 46 *Evaluation of components and devices used in wastewater***
- **NSF/ANSI 240 *Drainfield trench product sizing for gravity dispersal onsite wastewater treatment and dispersal systems***
- **NSF/ANSI 245 *Wastewater treatment systems – nitrogen reduction***
- **NSF/ANSI 350 *Onsite residential and commercial water reuse treatment systems***
- **NSF/ANSI 350-1 *Onsite residential and commercial graywater treatment systems for subsurface discharge***
- **NSF/ANSI 360 *Wastewater treatment systems – field performance verification***
- **More under development**

Product Testing

- **Test Facilities**
  - Actual diverted wastewater
- **Laboratory Facilities**
  - Simulated wastewater
  - General assessments
- **Field Evaluations**
  - Individual installations
- **Analytical support**

Test Facilities

- **Current Test Facility Locations:**
  - Waco, Texas
  - Buzzards Bay, Massachusetts
  - Vancouver, British Columbia
  - Alfred, Ontario
  - Aachen, Germany
- **Relevant Standards**
  - Residential system evaluations
    - NSF/ANSI Standards 40, 245 and 350
    - NSF/ANSI Standard 240 drainfield products
    - NSF/ANSI Standard 46 disinfection devices
    - CAN/BNQ 3680-600
    - ~~EN 12566-3~~

Laboratory Testing

- **Testing under more simulated conditions**
  - Creating artificial challenge water
  - Standard 350; residential graywater
  - Standard 46; disinfection
  - Standard 41; compost toilets
- **Field testing of commercial systems**
  - Standard 350

Analytical Support

- **Test facility must be supported by qualified, accredited analytical laboratory**

- **Microbiological and Chemical analyses**

- **Routine and non-routine**

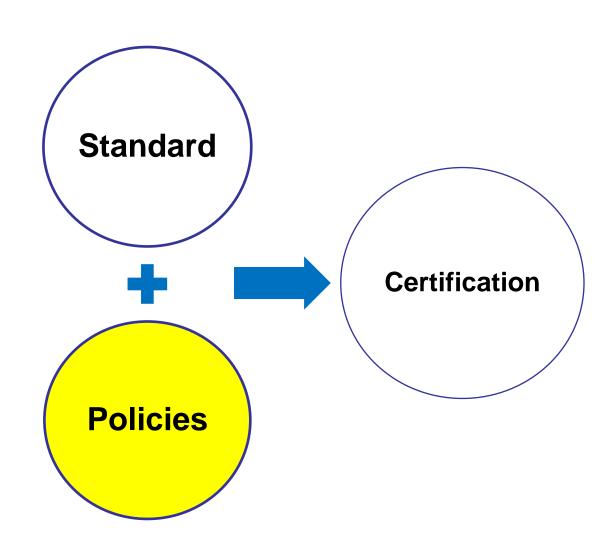- ***Standard Methods for the Examination of Water and Wastewater***

Product "Families"

- **Scale-up of tested product to larger systems based on proportionality**
  - Allows certification of a family of models spanning a range of flows using a single test.
- **May be added based on similarity of design and construction without testing**
- **Similarity established by fundamental scientific principles**
- **Similarity shall be equivalent to or more conservative performance**

Testing Beyond the Standard

- **Additional parameters outside of the scope**
  - Individual state requirements
  - Anticipated standards
  - Included in the report
- **Higher performance than required of the standard**
  - Test report reflects actual performance
  - Enables one test to satisfy standard and individual market requirements beyond the standard
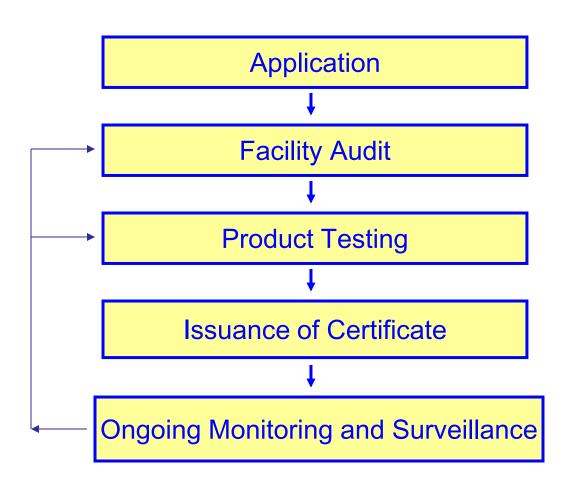
Two Components of Certification

Standard

+

Policies

→

Certification

Certification

- **Certification**
  - Objective is assurance and verification the facility maintains its control measures
  - Focus on policies, programs, procedures, records, implementation, continuous improvement, verification and validation
  - Certification Body verifies execution and compliance during the assessment/audit
  - *Ongoing* annual recertification

NSF Product Certification Process

Application

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Facility Audit

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Product Testing

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Issuance of Certificate

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Ongoing Monitoring and Surveillance

Policy Tie to Standards

- **All include an "Annex A"; <u>informative only</u>**
- **Key elements of a certification program for components and devices used in wastewater treatment systems**
  - Marking
  - Testing
  - Audits
  - Corrective Action and Enforcement
  - Administrative review and Appeals
  - Complaints
  - Advertising
  - and more

Surveillance for Continued Compliance

Certified systems undergo:

- **Production Facility Audits**

- **Field Audits**

- **Periodic Reassessment**

Certification that the tested system is the manufactured and sold system

Wastewater Program Audits

- **Manufacturing Facilities:**
  - Focus on proper product specifications.
  - Annual, unannounced audit of all production locations.
- **Residential treatment systems:**
  - Focus on service obligations.
  - Minimum four audits/year by NSF of a companies authorized representatives, including three installations for each audit.
  - Minimum 10% audits/year by manufacturer, submitted to NSF.
  - Manufacturers required to keep list of all authorized representatives current with NSF.

Service Obligations of the Manufacturer

- **Residential treatment systems**
- **Once in the standard, <u>now in policy</u>**
- **Service Related Obligations**
  - Two year initial service policy, four site visits
  - Extended policy available for fee
  - Stand-by parts in stock
  - Service within 48 hours
- **Responsibility often transferred to authorized representative; compliance ultimately resides with the manufacturer**

Product Retesting

- **Many NSF certifications mandate complete product testing at defined intervals**

- **Onsite wastewater: product review and reevaluation every five to seven years**
  - If sufficient number of approved changes to question the system performance – partial or complete retesting is performed

Investigation of Complaints

Certified Systems:

- **All complaints investigated.**

- **Anyone can bring a complaint to NSF regarding an NSF certified product, including issues related to service.**

- **Investigations independently conducted by NSF.**

- **Corrective action brought if complaint shows product/company out of compliance with requirements of certification.**

Product Modifications

Certified Systems:

- **Review of all design changes**

- **Review of all product series**

- **Must be reviewed and approved in writing prior to production and use of the NSF Mark**

- **May require no additional testing**

- **Determine impact on all requirements of the standard**

NSF Certification - Enforcement

- **If a certified product is found to be out of compliance, the following actions may be taken by NSF:**
  - Product hold
  - Product recall
  - Public notice
  - Administrative hearing
  - Withdrawal of certification
  - Customer appeals process

Compliance/Uniformity/Accountability

- **Testing & Certification ensures:**
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Summary

- **Many assessment tools exist today for the proper evaluation of onsite wastewater treatment systems.**
  - All NSF standards are consensus driven, and all represent the <u>American National</u> Standards.
  - No standard is ever complete, but instead undergoes regular revision to keep current with the changing market.
- **Products meeting these standards have demonstrated compliance with strict measures of performance.**
- **Certification is a long-term commitment to third-party demonstrated compliance.**

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