Risk-Based Approach to Conformity Assessment

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Agenda

1. Overview of the National Institute for Standard and Technology (NIST)
   • NIST’s role in commerce

2. Mitigation of the Risk from counterfeit / fake consumer products with standards
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1. Overview of the National Institute for Standard and Technology (NIST)
   • NIST’s role in Quality Infrastructure

2. Mitigation of the Risk from counterfeit / fake consumer products with standards
Where NIST Fits Within Commerce

Wilbur Ross
Secretary of Commerce

National Oceanic and Atmospheric Administration
International Trade Administration
Patent and Trademark Office
National Institute of Standards & Technology
Economics and Statistics Administration

Walt Copan
Under Secretary of Commerce for Standards and Technology and NIST Director
National Institute of Standards and Technology

Promotes U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life.

**Measurement science**
Create the experimental and theoretical tools – methods, metrics, instruments, and data – that enable innovation

**Standards**
Develop and disseminate physical standards and provide technical expertise to standards that enables comparison, ensure interoperability, and supports commerce

**Technology**
Drive innovation through knowledge dissemination and public-private partnerships that bridge the gap between discovery and the marketplace
Measurements and Standards are Critical to Innovation & Trade

*If you know how to measure something, you can design it, improve it, and compare it.*

NIST measurement science provides the foundation for innovation in every industry and economic sector.

*Up to 92% of U.S. exports affected by standards / technical regulations*
NIST: Who We Are and What We Do

**NIST is a world-class scientific and technical agency** uniquely focused on driving innovation and economic competitiveness through:

- **a world-leading scientific research program** – measurement, technology, and standards solutions to our stakeholders

- **a Manufacturing Extension Partnership** – focused on strengthening our nation’s small and medium manufacturers --- thousands of small manufacturers in 50 states and Puerto Rico rely on the NIST MEP program for hands-on technical and business assistance to assist them in competing in the global marketplace

- **an Advanced Manufacturing National Program Office** – facilitating expansion of a nationwide network of Manufacturing Innovation Institutes (14)

- **a Baldrige Performance Excellence Program** – used to assess performance excellence in the nation’s companies and organizations. Criteria from the BPEP are recognized, utilized, and emulated around the world
NIST’s Strengths

• NIST is recognized as having deep technical excellence

• NIST is seen as an uncompromising measurement science laboratory, the best in the world

• NIST is known for its neutrality, providing unbiased results

• NIST is industry-focused, providing extensive ties to companies, consortia and associations

• NIST is non-regulatory and doesn’t make (but can inform) policy, allowing open discussions with stakeholders
NI ST Laboratories

- Measurement Research
  > 2,200 publications/year

- Standard Reference Data
  > 65 types available
  > 20 on-line databases
  virtually all NIST databases available
  free on-line

Standard Reference Materials

> 1,300 types available
> 32,000 units sold/year

- Calibrations and Tests
  > 3,000 items/year
Technical Inquiries from Over 80 Countries in 3 Years
NIST’s Unique Role in Documentary Standards

• Legislated Roles:
  - NIST coordinates standards policy among federal agencies
  - NIST Director is President’s principal advisor on standards

• 400+ NIST technical staff in 100+ standard committees

• Leadership in international standards bodies like ASTM, IEEE, ISO, IEC

 NIST studies of fire behavior led to changes in U.S. building codes, which saved lives

 NIST robotics standards are catalyzing U.S. manufacturing transformation

 Standards and conformity assessment requirements for public safety comms equipment is transforming emergency response
Hazard Identification and Risk Assessment
How much confidence is needed?

Perceived Risk

Independence and Rigor of Conformity Assessment

Supplier’s declaration
1st party conformity assessment

Accreditation of Testing
3rd party conformity assessment

Certification
3rd party conformity assessment
How much confidence is needed?

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Source: NIST Special Publication 2000-01, Draft ABC’s of Conformity Assessment
NIST’s Roles in the US Quality Infrastructure
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Increase in counterfeiting is due to...

- **High Profitability**
- **Evolving Technology**
- **Globalization**

Total global economic value of counterfeit and pirated products was **$650 billion** in 2008, and is expected to increase to **$1.7 trillion** by 2015.

Source: Frontier Economics study commissioned by ICC BASCAP

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**Consumer Electronics**
recently became the top commodity seized at **22%**, a title previously held by **footwear (9%)** dating back to 2005.

**Cell phones**
accounted for approximately one third of counterfeit consumer electronics.
Certificates and Mandatory Third-Party Testing

Every manufacturer or importer of all consumer products must issue a general certificate of conformity based on testing of the product and stating that the product complies with the applicable standard, regulation, or ban.

The manufacturers or importers of children’s products to certify that the products comply with all relevant product safety rules by issuing a certificate supported by tests performed by a CPSC-accepted third-party testing laboratory that has been accredited.
Nano-structured Certificates of Authenticity

1. CREATE: Use probe arrays to create nanostructured CoAs

2. READ: Handheld scanners to interrogate CoAs.

3. VERIFY: interpret and compare output

4. SAMPLE PRODUCT FORM FACTORS

GOOD – NO GOOD indicator
Standards for Traceability and Authentication

- **SEMI T20-0710**: Specification for Authentication of Semiconductors and Related Products
- **SEMI T20.1-1109**: Specification for Object Labelling to Authenticate Semiconductors and Related Products in an Open Market
- **SEMI T20.2-1109**: Guide for Qualifications of Authentication Service Bodies for Detecting and Preventing Counterfeiting of Semiconductors and Related Products
- **SEMI T20.3-0710**: Specification for Service Communication for Authentication of Semiconductors and Related Products
- **SEMI T21-0212**: Specification for Organization Identification by Digital Certificate Issued from Certificate Service Body (CSB) for Anti-Counterfeiting Traceability in Components Supply Chain
- **SEMI T22-0212**: Specification for Traceability by Self Authentication Service Body and Authentication Service Body

New ISO Standard In the Works

Security and resilience — Authenticity, integrity and trust for products and documents — General principles for product fraud risk
ISO/TC 292

Security and resilience

Secretariat

Sweden - Swedish Standards Institute (SIS)

Participating Members (43)  
Observing Members (15)  

NIST
National Institute of Standards and Technology
U.S. Department of Commerce
Take Home Messages...

• **Conformity assessment does not have to be complicated or expensive.**
  – The parties involved depends on the activities needed, related risks, and level or rigor required.
  – There are tools out there to help you

• **ISO TC292 is developing standards to mitigate counterfeit products**
  – SEMI has a suite of standards to mitigate counterfeit electronics

• **But You Must Participate in the International Standards Setting Process!**
My Contact Information

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What Can We Do Together?