



# **Product Integrity Concerns in Low-cost Sourcing Countries**

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# Sponsor: Construction Industry Institute

- Budget: \$236,000
- Project Duration: 2 years
- Collaborators:
  - Underwriters Laboratories
  - Hong Kong Polytechnic University
  - University of Glamorgan (UK)
  - National University of Sciences and Technology (Pakistan)
  - Hwa Chin Tech Co. (Taiwan)



# Construction Industry Institute (CII)

- Organization comprised of most of the world's largest construction Owners and Contractors
- Currently 58 owners and 58 contractors
- Long-time research program
- Our project – One of eight (8) sponsored for 2009-2010



# Owners

- [Abbott](#)
- [Air Products and Chemicals, Inc.](#)
- [Ameren Corporation](#)
- [Amgen Inc.](#) [Anheuser-Busch InBev](#)
- [Archer Daniels Midland Company](#)
- [Squibb Company](#)
- [Chevron](#)
- [Codelco-Chile](#)
- [DFW International Airport](#)
- [DuPont](#)
- [Eli Lilly and Company](#)
- [General Motors Corporation](#)
- [Hovensa, LLC](#)
- [International Paper](#)
- [Kraft Foods](#)
- [The AES Corporation](#)
- [Alcoa](#)
- [American Transmission Company](#)
- [Aramco Services Company](#)
- [BP America, Inc.](#) [Bristol-Myers](#)
- [Cargill, Inc.](#)
- [CITGO Petroleum Corporation](#)
- [ConocoPhillips](#)
- [The Dow Chemical Company](#)
- [Eastman Chemical Company](#)
- [ExxonMobil Corporation](#)
- [GlaxoSmithKline](#)
- [Intel Corporation](#)
- [Kaiser Permanente](#)
- [Marathon Oil Corporation](#)



# More Owners

[National Aeronautics and Space Administration](#)

[Naval Facilities Engineering Command](#)

[Occidental Petroleum Corporation](#)

[Ontario Power Generation](#)

[Praxair, Inc.](#)

[Progress Energy, Inc.](#)

[Sasol Technology](#)

[Smithsonian Institution](#)

[Southern Company](#)

[Tennessee Valley Authority](#)

[U.S. Architect of the Capitol](#)

[U.S. Dept. of Commerce/NIST/BFRL](#)

[U.S. Dept. of Health & Human Services](#)

[U.S. General Services Administration](#)

[NOVA Chemicals Corporation](#)

[Vale](#)

[Petroleo Brasileiro S/A – Petrobras](#)

[The Procter & Gamble Company](#)

[Rohm and Haas Company](#)

[Shell Oil Company](#)

[Solutia Inc.](#)

[Sunoco, Inc.](#)

[Tyson Foods, Inc.](#)

[U.S. Army Corps of Engineers](#)

[U.S. Department of Energy](#)

[U.S. Department of State](#)

[U.S. Steel](#)

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January 20, 2009**





# Contractors

- [Adolfson & Peterson Construction](#)
- [Alstom Power Inc.](#)
- [Atkins Faithful & Gould](#)
- [AZCO INC.](#)
- [Barton Malow Company](#)
- [Bechtel Group, Inc.](#)
- [Black & Veatch](#)
- [Burns & McDonnell](#)
- [CCC Group, Inc.](#)
- [CH2M HILL](#)
- [Day & Zimmermann International, Inc.](#)
- [Dresser-Rand Company](#)
- [Fluor Corporation](#)
- [Grinaker-LTA/E+PC](#)
- [GS Engineering & Construction Corp.](#)
- [Aker Solutions](#)
- [AMEC, Inc.](#)
- [Autodesk, Inc.](#)
- [Baker Concrete Construction Inc.](#)
- [Bateman Engineering N.V.](#)
- [BIS Frucon Industrial Services Inc.](#)
- [Bowen Engineering Corporation](#)
- [CB&I](#)
- [CDI Engineering Solutions](#)
- [CSA Group](#)
- [dck worldwide, LLC](#)
- [Emerson Process Management](#)
- [Foster Wheeler USA Corporation](#)
- [Gross Mechanical Contractors, Inc.](#)
- [Hargrove and Associates, Inc.](#)



# More Contractors

- [Hatch](#)
- [Hilti Corporation](#)
- [JMJ Associates Inc.](#)
- [Kiewit Power Construction](#)
- [M. A. Mortenson Company](#)
- [Mustang](#)
- [Pathfinder LLC](#)
- [Primavera Systems, Inc.](#)
- [S&B Engineers and Constructors, Ltd.](#)
- [Siemens Energy, Inc.](#)
- [Technip](#)
- [Victaulic Company](#)
- [The Weitz Company, Inc.](#)
- [WorleyParsons](#)
- [Zachry](#)
- [Hill International, Inc.](#)
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- [KBR](#)
- [The Lauren Corporation](#)
- [McDermott International, Inc.](#)
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- [Pegasus Global Holdings](#)
- [R. J. Mycka, Inc.](#)
- [The Shaw Group Inc.](#)
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- [Worldwater & Solar Technologies](#)
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# Research Team 264

- **Co-Chairs**

- **James Dvorscek**, Technical Consultant, Abbott
- **David N. Traffanstead**, Director Quality Assurance & Inspection, Foster Wheeler USA Corporation



# Research Team 264

- **Swami Arunachalam**, Siemens Energy, Inc.
- **Douglas C. Bergmann**, Group Manager, Sourcing, Black & Veatch
- **Max R. Casada**, ConocoPhillips
- **Tom Ceynow**, BP America Inc.
- **Robert Damon**, Procurement Manager, CB&I
- **Tielman de Villiers**, Bateman Engineering N.V. (So. Africa)
- **Dongping Fang**, Tsinghua University
- **Zhe Feng**, BP China Holding Limits. (PRC)
- **Mark Fleet**, Sunoco, Inc.
- **Ted Kelly**, Mustang
- **R. Edward Minchin, Jr.**, University of Florida



# Research Team 264

- **Vince Molina**, Air Products and Chemicals, Inc.
- **Brian Monks**, Underwriters Laboratory
- **William Moreland**, Occidental Petroleum Corporation
- **Jiayi Pan**, Tsinghua University
- **Christopher L. Parker**, WorleyParsons
- **Jay Pendergrass**, Fluor Corporation
- **Richard Quito**, WorleyParsons
- **Edward M. Ruane**, Fluor Corporation
- **Gregory J. Tardanico**, NEPCO
- **Gene Till**, ConocoPhillips
- **Russell Walters**, University of Florida



# Justification / Need

- Counterfeiting “industry” does twice the business worldwide as illegal drug trade
- Construction Industry
  - China – high speed railroad
  - Welder
  - Pipes/valves/connections



# Justification

- Counterfeiting
- Copyright Infringement
- Intellectual Property Violations
- Grey Market
  - aka Parallel Market
- Passing fake raw materials off as the real thing
- Deliberate manufacture of inferior products...
  - ...and bribing officials to accept them
  - ...and selling them to a local contractor who installs them and covers them up before the prime or the owner sees them



# Justification

- Top Five Countries for exporting “low quality” products to the US
  - Based upon confiscation by US officials
    1. China (80%)
    2. Hong Kong (5%)
    3. Taiwan (2%)
    4. Pakistan (2%)
    5. United Kingdom (2%)



# Questions to Be Answered

- What countries are the sources of the substandard construction items?
- What particular items constitute the problem for the construction industry?
- What are the most likely destinations for problem items from each source country?
- What is the economic impact of counterfeiting to target countries?
- What would be the economic impact to source countries of eradicating counterfeiting?



# Questions to be Answered

- Is a US contractor more or less likely to unknowingly receive low-quality items on site while working in the United States than the same contractor working on site in, say, the U.A.E.?
- What is being done now by the source countries to help the situation?
- Is a US contractor more likely to face this problem than, say, a Chinese contractor?
- What are things that a contractor or owner can look for to identify counterfeit or otherwise poor quality items?
- What can the industry in general, and CII and other industry groups in particular, do to lessen or eliminate this problem?



# Research Team

Edward Minchin  
Russell Walters

Brian H. Monks

Zhaomin Ren (UK)

Dongping Fang  
Jiayi Pan



Rafiq M. Choudhry (PK)

Patrick Fong (HK)

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# Research Team

- National Coordinators
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    - Senior Lecturer, University of Glamorgan
  - Dr. Patrick Fong (HK)
    - Associate Professor, Hong Kong Polytechnic
  - Dr. Pi-Chu Chiu (TW)
    - Consultant, Hwa Chin Tech Corporation
  - Dr. Rafiq M. Choudry (PK)
    - Asst. Professor, National U. of Science and Technology



# Deliverables

- **Assessment**
  - Current
  - Future
  - Based upon answers to questions on last two slides
- **Detailed Recommendation**
  - Individual Companies
  - Advocacy Groups



# Assessments

- Extent of counterfeit items
  - Material
    - Raw
    - Example: Flyash
  - Equipment/tools
    - Replacement Parts
    - Example: Caterpillar
  - Products
    - Manufactured and sold as a unit
    - Example: Valves



# Assessments

- Contractor Liability
- Sources of Counterfeit Items
  - Countries
  - Suppliers
  - Distributors
  - Brokers



# Assessments

- What is being done now
  - Government Agencies
  - Psuedo-govt. Agencies
  - Contractor / Construction Advocacy Groups
  - Project Level
    - Owners
    - Contractors



# Recommendations

- What should be done
  - Government Agencies
  - Psuedo-govt. Agencies
  - Contractor / Construction Advocacy Groups
  - Project Level
    - Owners
    - Contractors



# Recommendations

- How to identify Counterfeit Items
  - At source (corporate level)
    - Country
    - Suppliers
    - Distributors, etc.
  - At project
    - “certain ‘red flags’ for certain products
    - Eyeball tests for project personnel



# Recommendations

- People
  - Who to contact for assistance
    - Independent (Third) Party Consultant?
    - U.S. Govt. Agency
    - International contacts
      - National Coordinators
    - Congress
      - Know who your friends are



# Recommended Research Approach / Method

- Interviews
- Literature
- Focus on “Type B” Counterfeiting



# Types of Counterfeiting

- Type A
  - Really good stuff
    - Not as dangerous
  - Not as prevalent
    - Not as much profit to be made
- Type B
  - Looks authentic
  - Fits and seems to work well for a short time
  - Passes typical industry QA/QC testing
  - Fails
- Type C
  - Junk
  - Anyone can see that it is not authentic

“Type C” – Of course, we’re all about Construction





# Interviews

- Mostly face-to-face (up to 2/3)
  - At least 1/3 via telephone
  - Conducted by PIs
- At least 240 interviews planned
  - At least 150 in US
  - At least 70 in China
  - At least five in each of the other source countries
    - Pakistan
    - Taiwan
    - UK
    - Hong Kong
- Cultural dynamics may have to be worked around
  - May impact makeup, length, number, and content of international interviews



# Interviews

- Mostly accomplished via Week-long trips
- Standard Interview Instrument (needed)
- December trip to New York
  - Drs. Minchin and Walters w/ Mr. Monks
- January trip to China
- Eight more week-long trips to North American Cities
  - Manufacturing
  - Importing
  - Governmental Agencies
  - Construction
  - Approx. 10 interviews per trip



# Literature Search

- Ongoing
  - Chinese grad student (Tongji U.) chosen for this project
  - Meeting weekly since early September
    - American student will be added later
- Plethora of information on issues
- Almost nothing on construction
- Report just in



# Areas Identified - Need for Assistance

- Contacts in major metropolitan / manufacturing centers in China
  - For interviews
  - To introduce us to those who would agree to interview
  - How about you? Or someone in your organization?
    - English-speaking skills not important



# Questions?

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