

ADVANCING SUSTAINABLE NANOTECHNOLOGY THROUGH LIFE CYCLE ASSESSMENT

Wu-Sheng Shih, Ph.D.

QEEN II: 2nd Quantifying Exposure to Engineered Nanomaterials from Manufactured Products
Workshop

October 9, 2018

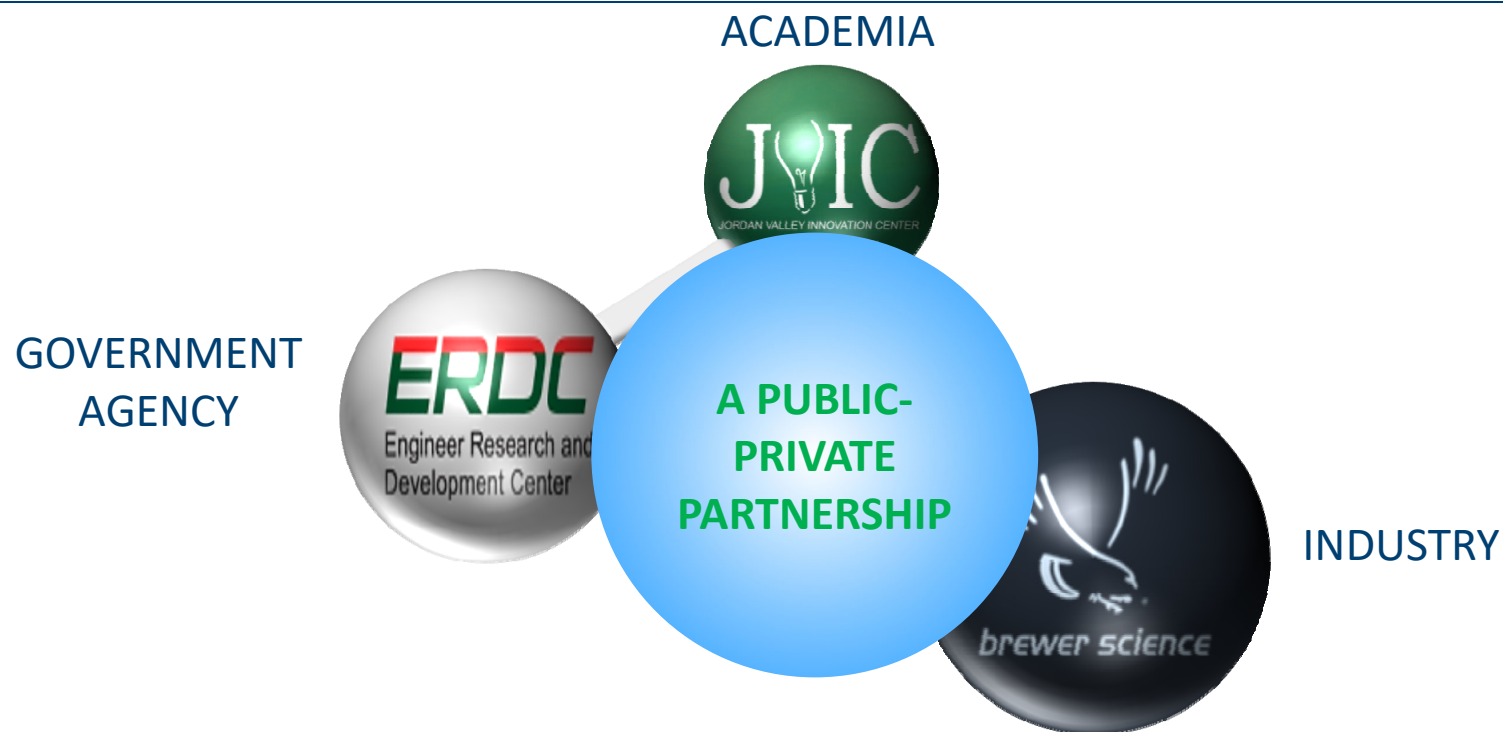
© 2018 Brewer Science, Inc.



What Happened?



EHS-Inspired Nanotechnology Development

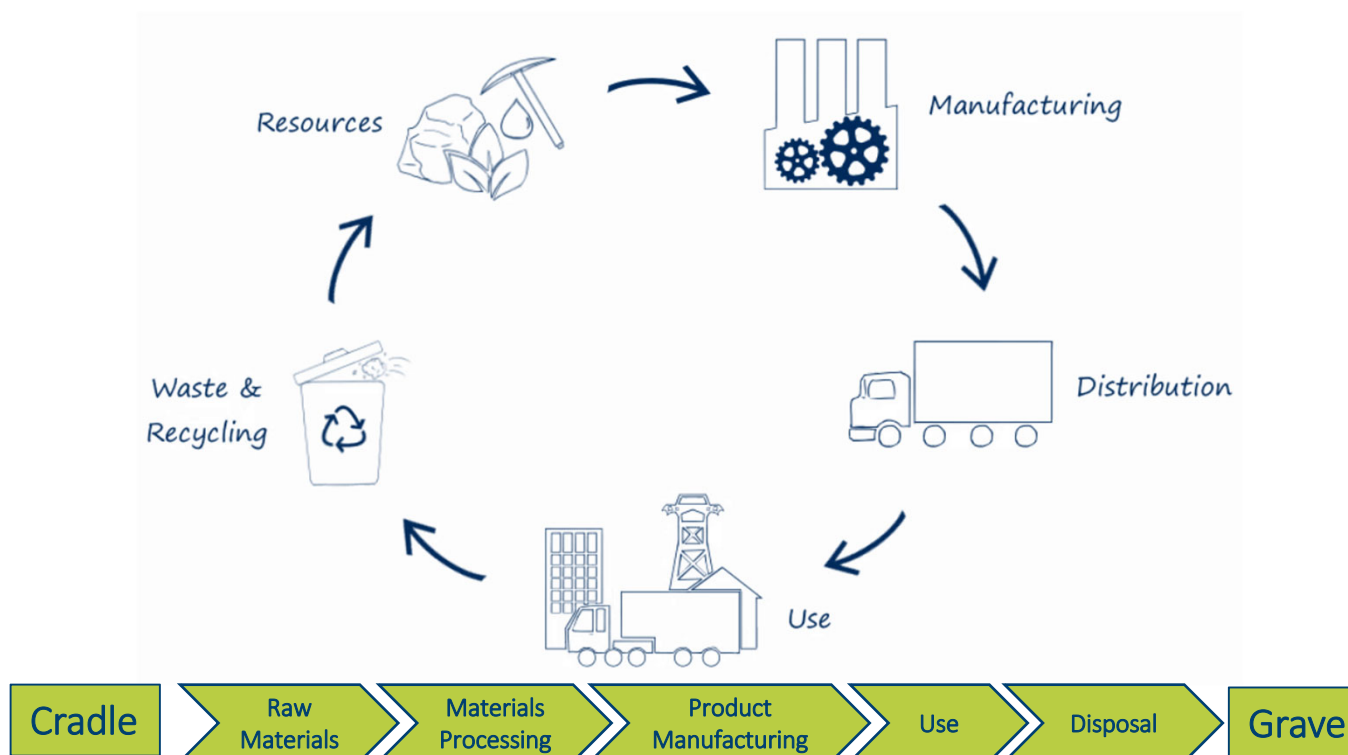


Promoting Safe, Rapid Commercialization of Nanotechnology-Enabled Products
Inspired by “Safety by Design” and “EHS Impact Reduction”
Start from the Very Beginning

EHS-Inspired Nanotechnology Development

“CRADLE-TO-GRAVE” LCI & LCA

Assisting development of technology in an efficient manner by allowing for more informed decision making, which can lead to lower costs, reduced EHS risk, minimized carbon footprint, and business growth.





EHS-Inspired Nanotechnology Development

NanoEHS TOOL DEVELOPMENT

The screenshot displays two web interfaces side-by-side. The left interface is the 'NanoEXPERT' landing page, featuring a header with a magnifying glass over the word 'NanoEXPERT' and a sub-header 'Nano Materials Experiment Based Predictor of Environmental Risk and Toxicity'. Below the header are several tool icons: Toxicity Visualization Tool, Bioaccumulation Tool, Dose Metric Tool, Number Density Tool, Soil Map, Environmental Modifying Factor Tool, DLVO, CEA Tool, Surface Area, and Eco Tox Bioaccumulation. The right interface is the 'Nano NAV-PAL' landing page, titled 'Welcome to Nano NAV-PAL!'. It contains three paragraphs of text: 'The Nano-enabled NAVigation for Product Acquisition and Liability is a tool designed to help small businesses access the information and tools they need to make informed decisions about producing or integrating nano-scale materials in their products.', 'Future enhancements to Nano NAV-PAL will incorporate screening functionality that will guide users to the information and tools specific to their needs, and will expand to other important decision criteria such as Life Cycle Assessment, Material Properties, Insurance, and more.', and 'Nano NAV-PAL connects users to information and tools specifically focused on nano-related regulations and risks. These resources will help businesses evaluate the environmental health and safety (EHS) risks associated with their products, as well as understand and maintain compliance with regulatory statutes in the United States.' To the right of the text is a circular diagram with 'Decision' in the center, surrounded by 'Regulations', 'Risks', 'Life Cycle', '[insert others...]', and 'Material Properties'. At the bottom of the right page is a red warning box with a castle icon and the text 'This product is for informational purposes only and is not intended to be prescriptive. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.' and a 'Get Started' button.

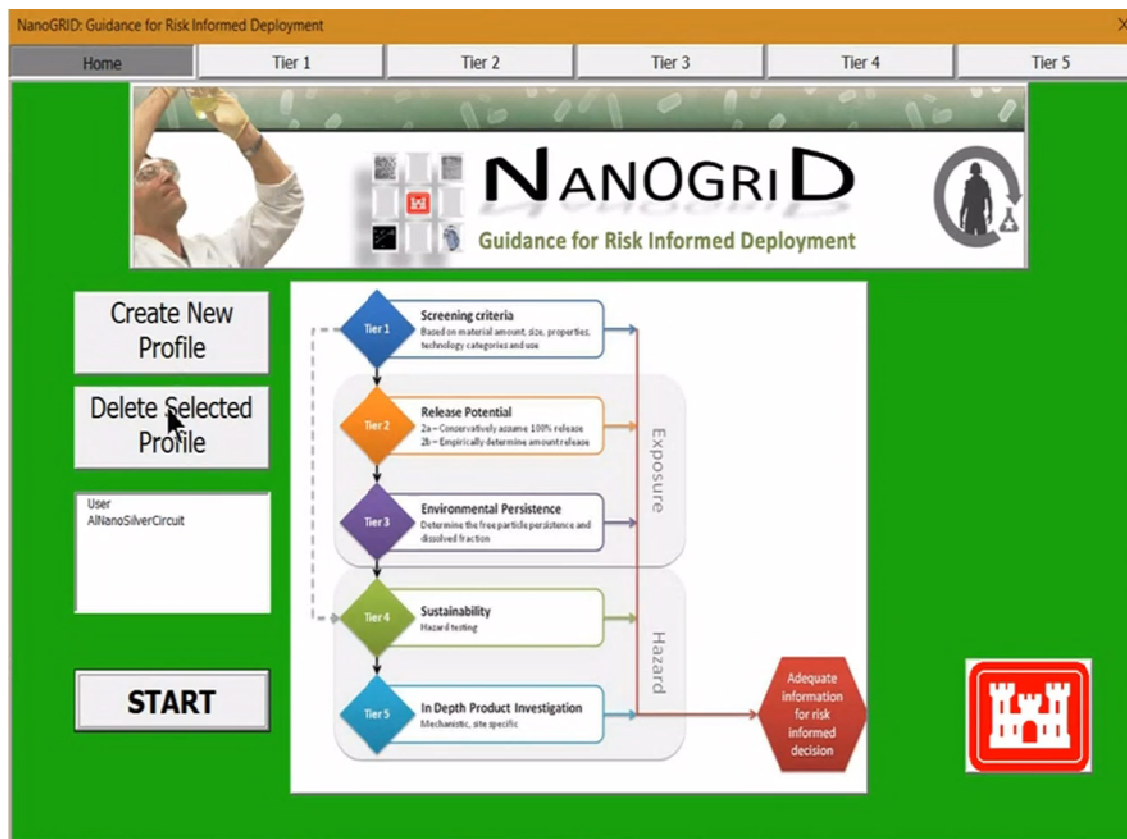
<https://nano.el.erdc.dren.mil/>

POC: Al Kennedy, 601-634-3344
Alan.J.Kennedy@usace.army.mil



EHS-Inspired Nanotechnology Development

NanoEHS TOOL DEVELOPMENT



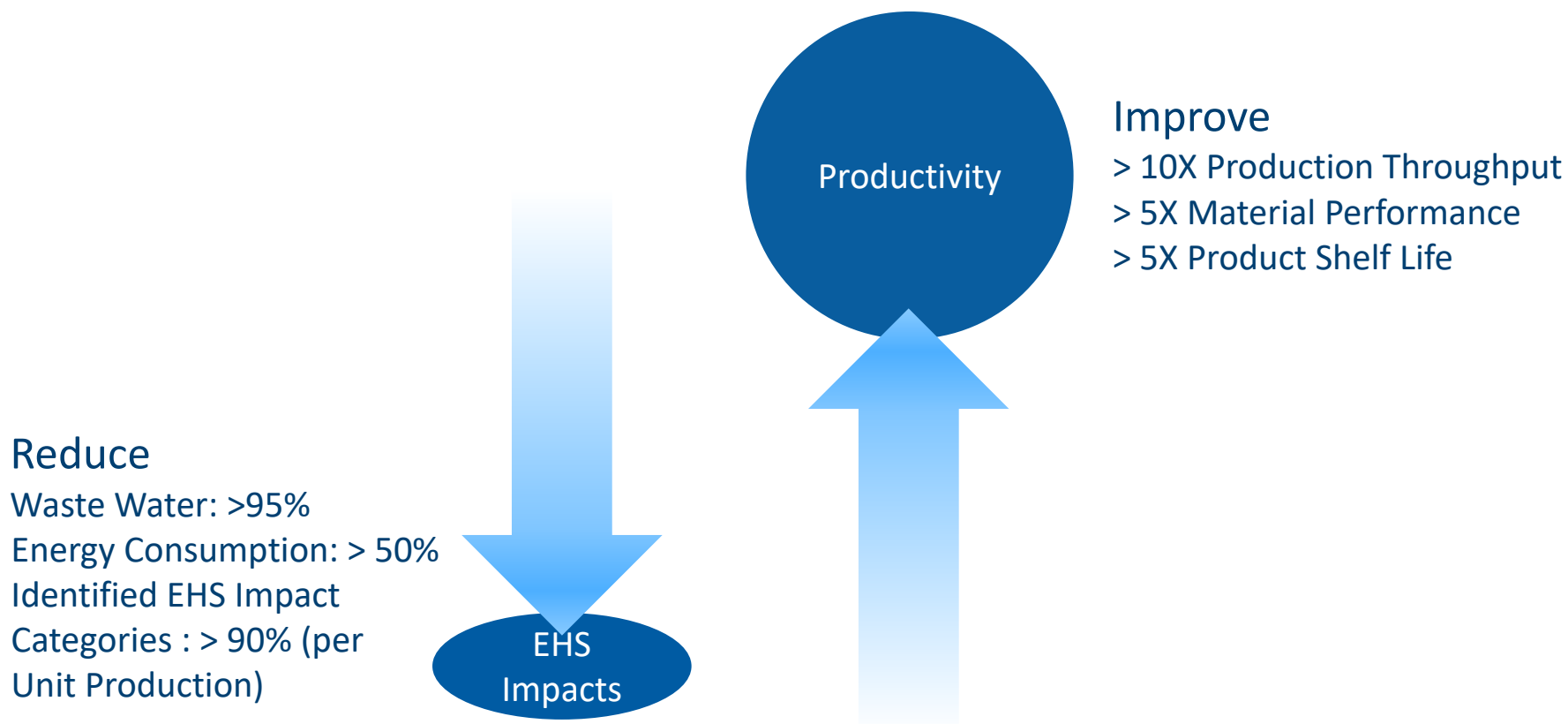
Incorporation
Into DoD
Systems
Acquisition
(OSD) Guidance
Document

<https://nano.el.erdc.dren.mil/>

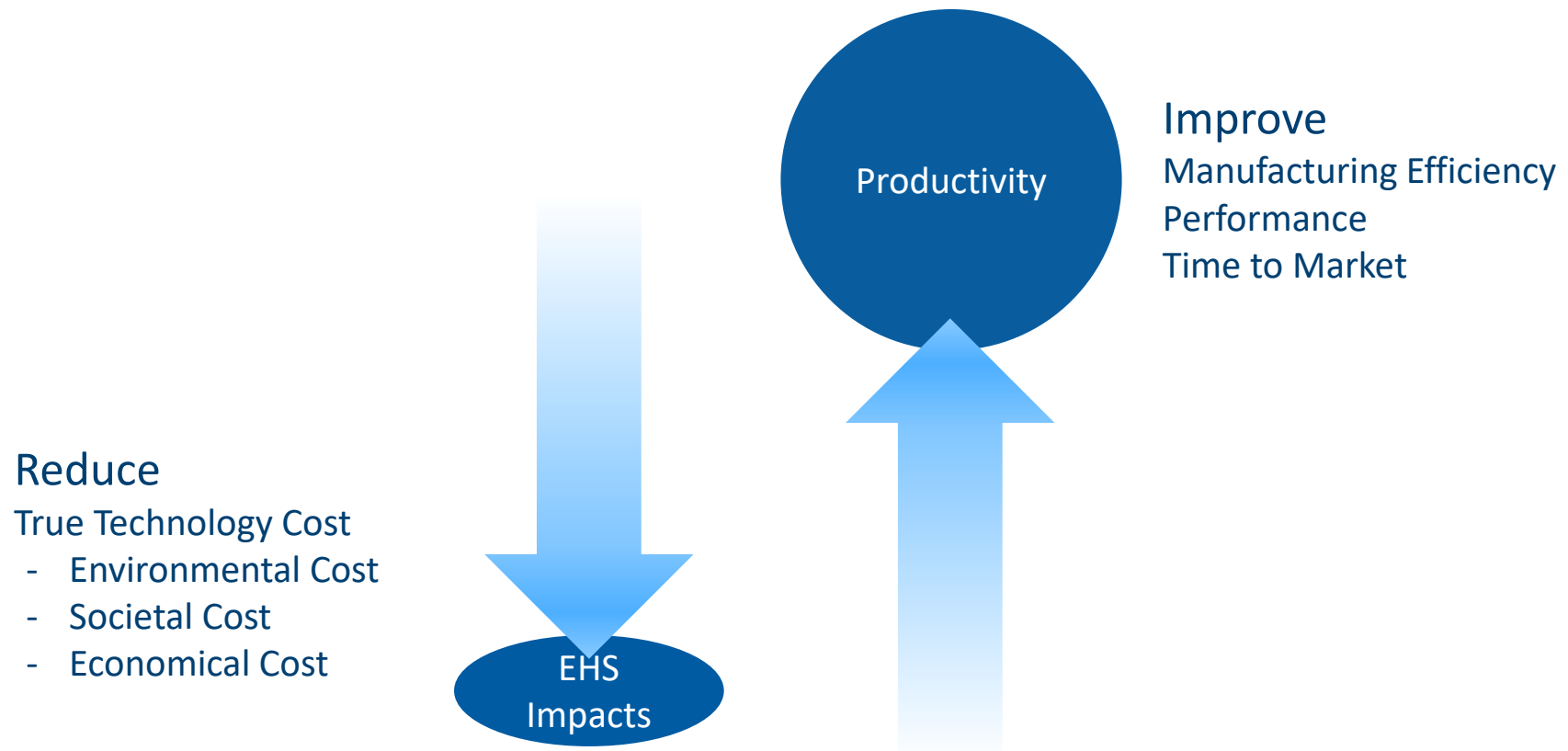
Collier et al., Journal of Nanoparticle Research, 2015. 17(3):155

POC: Al Kennedy, 601-634-3344
Alan.J.Kennedy@usace.army.mil

EHS-Inspired Nanotechnology Development



EHS-Inspired Nanotechnology Development





THANK YOU!

Dr. Wu-Sheng Shih
wshih@brewerscience.com
573-364-0444 X2922



QEEN II: 2nd Quantifying Exposure to Engineered Nanomaterials from Manufactured Products
Workshop
Washington, DC 2018
October 09, 2018

© 2018 Brewer Science, Inc.