# IHS NEWSLETTER

The Power of Connectivity

There are times when who you know makes all the difference to learn information and obtain resources. At IHS, we are working to use a methodology called Social Network Analysis (SNA) to map out the relationship networks of people and organizations operating in the Critical Infrastructure Protection space to enhance security and information sharing. We partnered with SHSU Security Studies faculty member Dr. Nate Jones to develop an AI assisted tool for mapping the response networks of two major disasters that hit the greater Houston region (2017 Hurricane Harvey and 2021 Winter storm Uri). This is a screen shot of the resulting network:
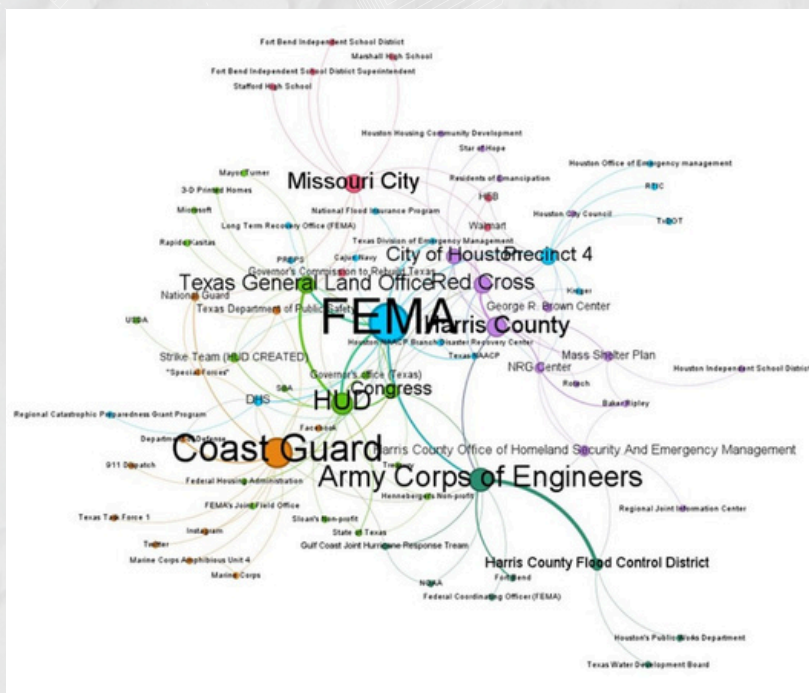
We would expect to see major players (FEMA, US Coast Guard) as key actors in the network. We are more interested in the peripheral organizations that are not as well connected to the response network. We can use these findings to improve communication and response planning by identifying the relationship "gaps". At IHS, one of our focus sectors is Healthcare. We are working with both large and small provider networks to analyze similar networks to generate relationship-based data sets for response and resilience planning. Mapping out friendly networks is just one application of SNA. Practitioners can also map out illicit organizations to develop disruption strategies to keep criminal networks disorganized and fractured. The Center for Intelligence and Crime Analysis offers a course on SNA as part of a larger crime analysis certificate. If you are in the private sector and want to learn how to incorporate this methodology for threat analysis in your work, reach out to us at ihs@shsu.edu! We are looking for partners to share this methodology to provide innovative, value-added knowledge tailored to the needs of industry and public institutions, to protect critical infrastructure supporting Texas and the nation's economy! Be part of our network!
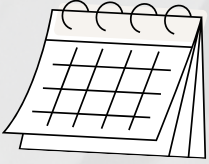
RESEARCH

Water and Wastewater Systems: An Appraisal of the Cyber Risks and Threats Facing This Critical Infrastructure

Narasimha Karpoor Shashidhar and Cihan Varol

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The stability and national security of our country is very strongly correlated with the robustness of our water and wastewater systems. The health, well-being, technological advances, and prosperity of our nation is intricately tied to our country's ability to prevent water-borne, communicable pathogens, and associated diseases, protecting our precious natural resources, and in general to maintaining and protecting our flourishing natural environment.

It is self-evident, therefore, that we pay utmost attention to the threats and risks that the systems encapsulating the water and wastewater treatment facilities face on a regular basis. The economic disasters that befall our country as a result of an ill-secured water infrastructure are catastrophic and the costs dire. A successful cyberattack on water or wastewater systems could lead to the contamination of water supplies, resulting in widespread health crises and massive economic costs for remediation and recovery. The consequences could range from public panic to long-term damage to the environment and public trust. Given the myriad avenues of attack on this critical infrastructure such as denial of service, injection of noxious chemicals, subverting SCADA systems, our broad goal in this project is to conduct an appraisal of the cyber risks and threats facing this critical national infrastructure. Protecting our water infrastructure is not just about safeguarding public health and the environment; it is also about preserving national security and economic stability.

TEAM MEMBER HIGHLIGHT <<<

Dr. Ryan Randa
Deputy Director

Ryan W. Randa, Ph.D., serves as the Deputy Director of the Institute for Homeland Security at Sam Houston State University, where he specializes in research on risk assessment, decision-making, and public safety. His work addresses critical issues related to homeland security, focusing on how individuals and organizations assess and respond to risks, particularly in crisis situations. Dr. Randa has contributed significantly to understanding the sociological and behavioral aspects of decision-making in varied contexts, with research on topics such as identity theft, stalking victimization, and threat assessment. He has authored or co-authored over 30 peer-reviewed articles, several book chapters, and an edited volume, establishing himself as a leading voice in criminology and public safety.

>>> EVENTS <<<

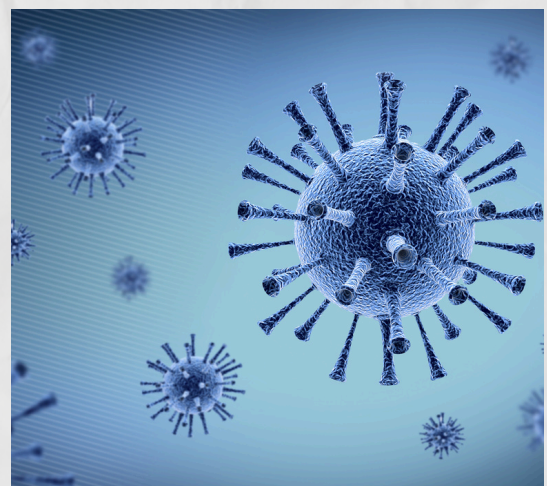### WATER ENVIRONMENT ASSOCIATION SECURITY SYMPOSIUM

- **Date**: October 22, 2024
- **Contact**: Reyna Loosmore at rll040@shsu.edu
- **Title**: Operational Preparedness: Protection Our Future Water Supply: Safety, Cyber and Infrastructure Security Symposium

THOUGHT LEADERS CONFERENCE

- **Date**: October 15, 2024
- **Time**: 8am - 3:30pm
- **Location**: SHSU Woodlands Center
- **Link**: Register Here
    - Join us on October 15th for the IHS Thought Leaders Conference! This conference aims to take a tri-focus approach, highlighting cutting-edge information, strategic defense, and expert insights.

PODCAST <<<

What safety or security concerns do *you* have? Would you enjoy a gamified cybersecurity exercise, or would you be worried if your boss came by with a checklist? In this episode, we talk with Dr. Robert Emery and John Suarez about collaborative risk management techniques, strategies for reducing "oblivious" cybersecurity threats and resources for disease outbreaks at the Texas Epidemic Public Health Institute. Dr. Robert Emery is the Vice President for Safety, Health, Environment & Risk Management for The University of Texas Health Science Center at Houston and Professor of Occupational Health at the University of Texas School of Public Health. John Suarez is a project manager for the health and public health sector at the Institute for Homeland Security.

https://ihsonline.org/podcast