IUVA HEALTHCARE WORKING GROUP

WORKING TOWARDS UV DISINFECTION DEVICE EFFICACY STANDARDS FOR THE HEALTHCARE INDUSTRY

IUVA HEALTHCARE WORKING GROUP - AGENDA

- History of the Healthcare/UV Working Group
- What We've Learned
- Where We're Going
- End Goal

IUVA HEALTHCARE WORKING GROUP - HISTORY

- Started as a Citizen's Regulatory Initiative 5+ years ago
  - Proposed Simplistic Standard: "5 Ft. for 5 Minutes" for a 3-Log_{10} Reduction in *C.-diff*
  - Tried a direct Federal Approach
    - ✓25 Congressional Letters, 4 Staffer briefings, One Rep. Meeting
  - *Consistent response:*

    "Why Not Let the Marketplace Work It Out?"

IUVA HEALTHCARE WORKING GROUP - HISTORY (cont.)

- Found IUVA covered the UV Disinfection Marketplace well, joined with them and never looked back
  - First Panel at IUVA Americas – Austin (Feb 2017) Thanks Alumni!
  - Next 2 Panels - IUVA Americas – Redondo Beach (March 2018)
  - Yale Workshop (Sept. 2018) – 75+ Attendees,
    - ✓Industry, Academia, Medical; International (Canada, France, Uruguay)
  - NIST Workshop (Jan, 2020) – ~150 Attendees
    - ✓Industry, Academia, Medical & Federal; International (7+ countries)
  - Other Presentations: SPIE, APIC, RadTech, ASHRAE, ISO

IUVA HEALTHCARE WORKING GROUP - HISTORY (cont.)

- At IUVA-Redondo, Formed the Healthcare/UV Working Group
  - Initially ~20 people; now at 42 members & counting
  - Membership is
    - ✓*Multi-faceted*: members also in ASHRAE, ASTM, SHEA, SPIE, IES, and APIC
    - ✓Multi-talented: includes OEM CEO's, Research PhD's, Practicing MD's & MPH's, and current IUVA Board Members
    - ✓Multi-national: USA, Canada, Israel, France, Sweden, China, Germany
    - ✓ Open: Any IUVA Member can join us

IUVA HEALTHCARE WORKING GROUP - WHAT WE'VE LEARNED

➢The Problems and Solutions are Multi-Dimensional

- When Measuring UV Light, One Size Doesn't Fit All
  - ✓Light Source Matters
    - Gas Discharge - LP Hg, MP Hg, Xenon, etc.
    - Solid State - UV LED's
    - Others - Lasers, Pulsed Sources
  - ✓Wavelength Matters
    - Single Wavelength, Multiple Wavelengths, Broad Spectrum
    - UV-C (260nm+/-), Far UV (207-220nm), Near-UV (~407nm)

IUVA HEALTHCARE WORKING GROUP - WHAT WE'VE LEARNED (cont.)

➢The Problems and Solutions are Multi-Dimensional (cont.)

- *When Measuring Biological Efficacy, Variables Compound*

✓Large Variation in UV Pathogen "Established Deactivation" Values

- e.g., 67,567 µWsec/cm^2 to 342,667 µWsec/cm^2 for *C-diff at 3-Log$_{10}$* (~500%) *[Boyce]*

✓No Standardized Method for Testing in Healthcare Setting

- Large Variation in Numbers of Items & Surfaces
- How Many Samples Needed? Using Which Pathogens?
- What's the right target for reduction? 2-Log$_{10}$, 3?, 4?

IUVA HEALTHCARE WORKING GROUP - WHERE WE'RE GOING

- On UV Light Measurement, Collaborating on Multiple Fronts
  - with Illuminating Engineering Society (IES) as a partner leading to ANSI certification - Alex Baker (Panel III)

  - with IUVA's Medium Pressure Hg Bulb Task Force on Gas Discharge Sources– Dr. Jim Bolton
  - with IUVA's UV LED Task Force on Solid State Sources – Dr.'s Gordon Knight & Natalie Hull
- Led by Dr. Cameron Miller (Panel III) & Dr. Ashish Mathur (Panel IV)

IUVA HEALTHCARE WORKING GROUP - WHERE WE'RE GOING (cont.)

- **On Establishing UV Pathogen Deactivation Values**

  Developing the standardized method for determining UV dosage values (flux, wave length & duration) necessary to deactivate a given pathogen by 99.9%

  - Effort led by Dr John Boyce (Panel II) – APIC & SHEA

- **On Measuring Biological Efficacy in Healthcare Settings**

  - Developing the standardized efficacy testing protocol in a simulated hospital patient room, randomized sampling locations, exposure & sampling protocols using a specified pathogen
  - Effort led by Dr. Matt Hardwick (Panel III) – APIC, HSI & ASTM

- **Selection of a Collaborating SDO(s) is TBD**

IUVA HEALTHCARE WORKING GROUP - END GOAL

- **Objective:**

  Nationally Recognized UV Disinfection Efficacy Standards for Environmental/Non-Medical applications

  - ANSI, ASTM, ASHRAE, and/or ISO

- **Expected Result:**

  More UV Disinfection in Healthcare Environments

- **Measure of Success:**

  Reduction of Deaths due to HAIs

IUVA HEALTHCARE WORKING GROUP
- END GOAL (cont.)

- End Goal:

  National UV Disinfection Efficacy Standards that

  - The UV Industry Can Live By
  - The Federal Regulators Can Accept and Adopt
  - The Healthcare Industry Can Use when Deciding on UV Technology Investments

Thank You for Working With Us

-- It's All About Saving Lives --