

## Legionella-temadag 2024

LED-baseret UV-behandling af brugsvand - nye muligheder ifm. legionellasikring men stadig med udfordringer.

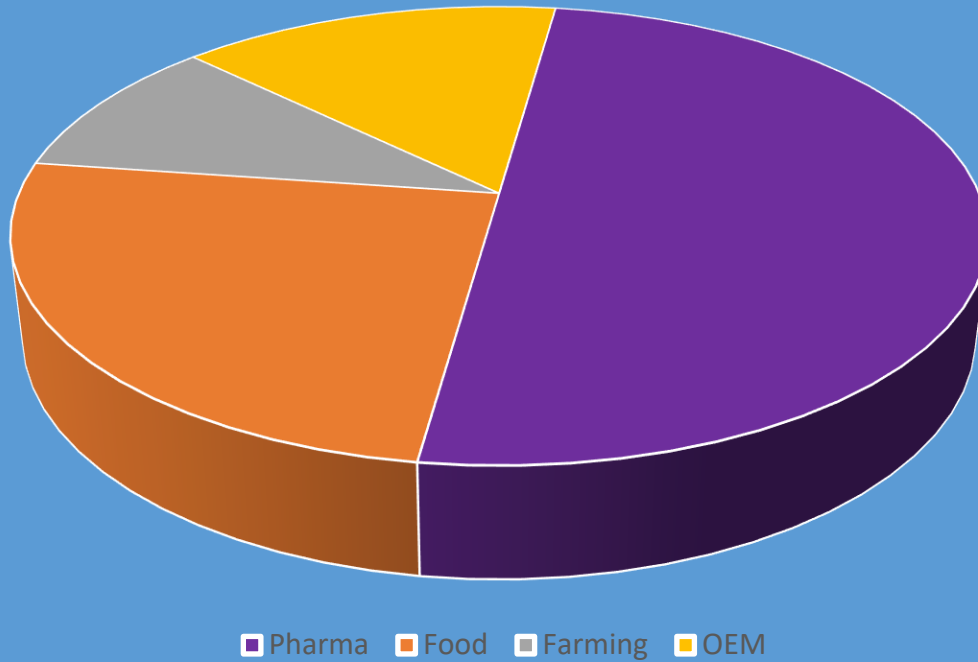
v. Karsten Snitkjær, NATDIS

# Experts in UVC solutions

# NATDiS



## Main markets

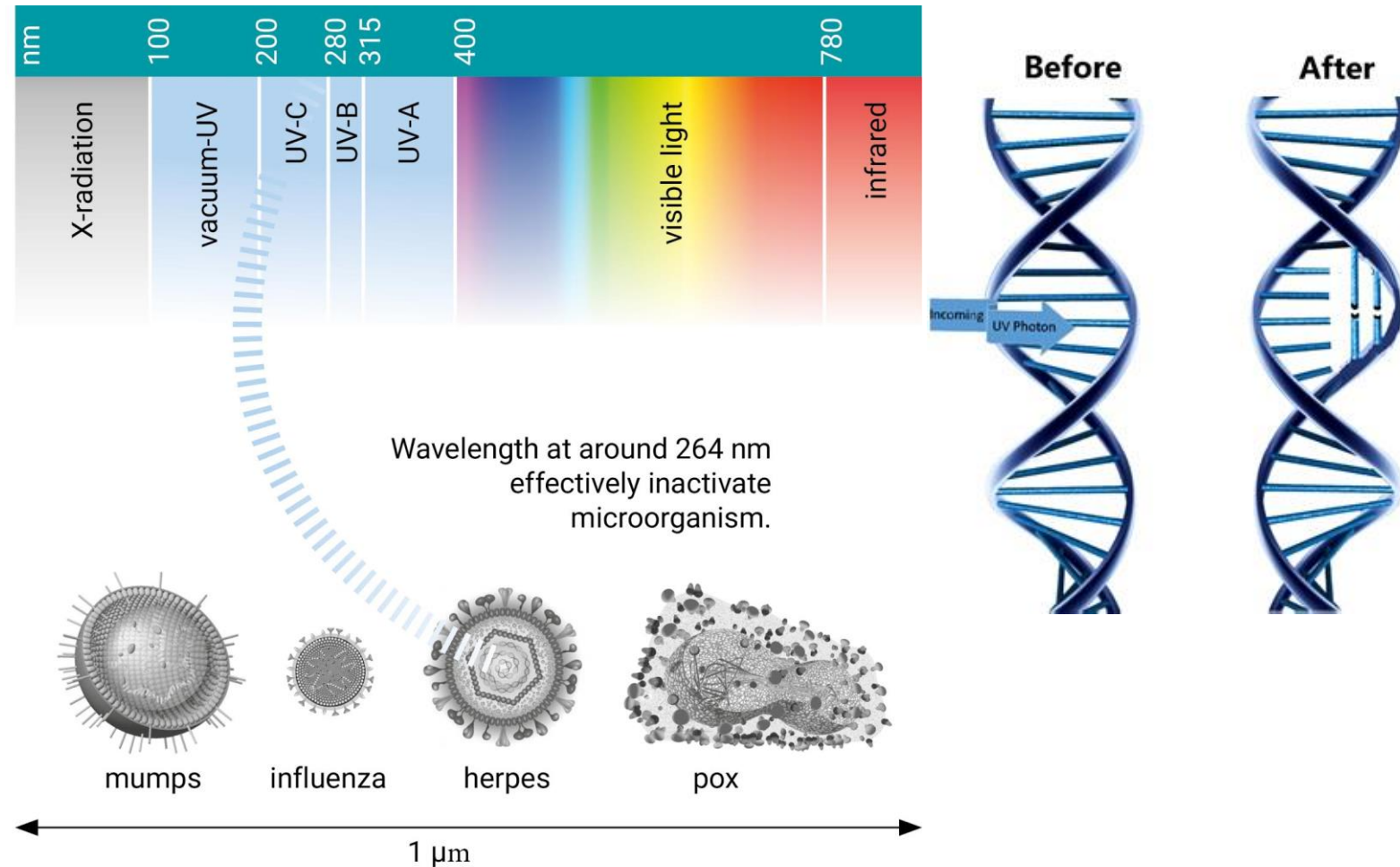


- Pharma:  
Access control, production facilities,  
disinfection tunnels for all size  
goods, sluices etc.  
Air and surface automated disinfection system.
- Food:  
Disinfection tunnels for all size goods, access  
control personnel, air treatment.  
Integrated systems with tailormade functionality.
- Farming:  
Hygiene access control and bio security  
solutions for controlled air  
intakes up to 350 lamps, feed and water  
systems.  
Biosecurity solutions for virus protection.
- OEM:  
Tailored solutions for product lines as “add  
on” disinfection, or as chemical replacer

# UVC Technology

# NATDiS

- UVC damage DNA & RNA
- Peak 260 nm
- Will inactivate
  - Bacteria
  - Vira
  - Moulds
  - Spores
- Safety according to EN 15858:2016 + EN 14255-1



# Solutions for sluices

# NATDiS

## Plug and play units

- Cleanbox for small items
- Cleanaccess for personnel
- Cleanaccess for cargo
  - Size and configured to order
  - Integration with other systems



## Installation in existing rooms

- Lamps for walls
- Lamps for ceilings
  - Up to class B rooms
- LED's in multiple nm with and without personnel present



# UVC for fluids

## Liquid systems:

UVC on circulation of water will reduce bacteria in water flow.  
Treatment of proces water, wastewater, brine, oils and emulsions etc.





# UVC for fluids

## UVC for fluids:

- **Works on the point of implement**
  - Reduction up to 99,999 pr. Pass
  - circulation
- **No effect in the system**
  - Corrosion
  - Pipes, sealings
- **Designed for Hot/cold water:**
  - Mercury lamps
    - Up to 25 degrees Celsius
  - Amalgam lamps (designed for heat)
    - Up to 90 degrees (60 % efficiency)



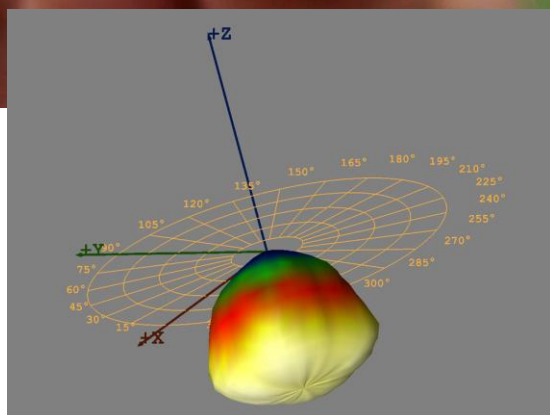
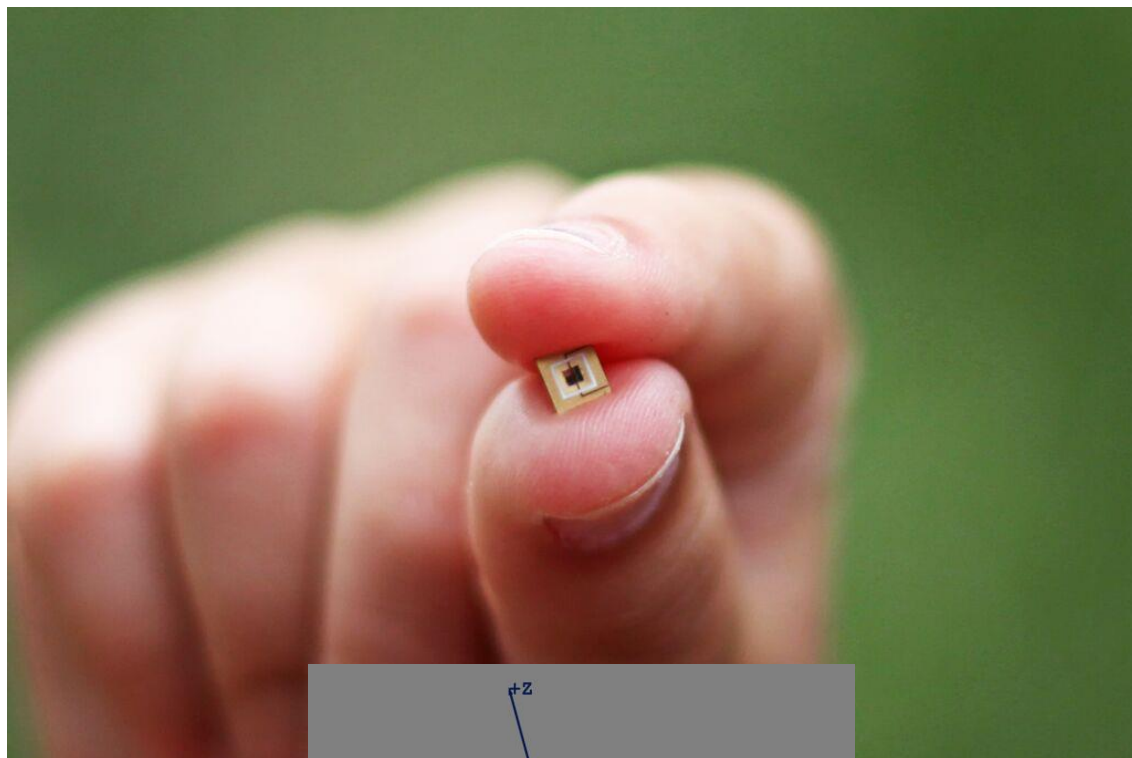
## Point of use disinfection:

- Point of use
- Where can we do the most with the least effort.
  - Installation
  - Energy consumption
  - Safety
    - Data on use
    - Data on efficiency





## Methods of the future



Always on a route for optimizing:

- Next step = LED systems
- WPE 10% +2,5% in pipeline
- + Heat control
- + direction of light
- + endless on/off
- + environmental production process
- Available ??

# UVC Led for liquids

# NATDiS



## PearlAqua Micro 6A

- Up to 2 l/m (120 l/hour) without flowswitch (max 2 bar)
- Mobile systems, RVs, boats, water dispensers, Point-of-use installation
- Compact system
- 230 or 12V systems
- Suitable for many on/off



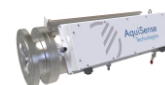
## PearlAqua DECA 30C automate

- Up to max 15 l/m (900 l/hour)
- Water taps/shower, water supply, Point-of-entry
- Integrated flowswitch
- Compact system
- 230 or 12V
- Suitable for many on/off



## PearlAqua Micro 12C automate

- Up to 8 l/m (480 l/hour) with flowswitch
- Water taps, RVs, boats, ice & water dispensers Point-of-use
- Compact system
- 230 or 12V
- Suitable for many on/off

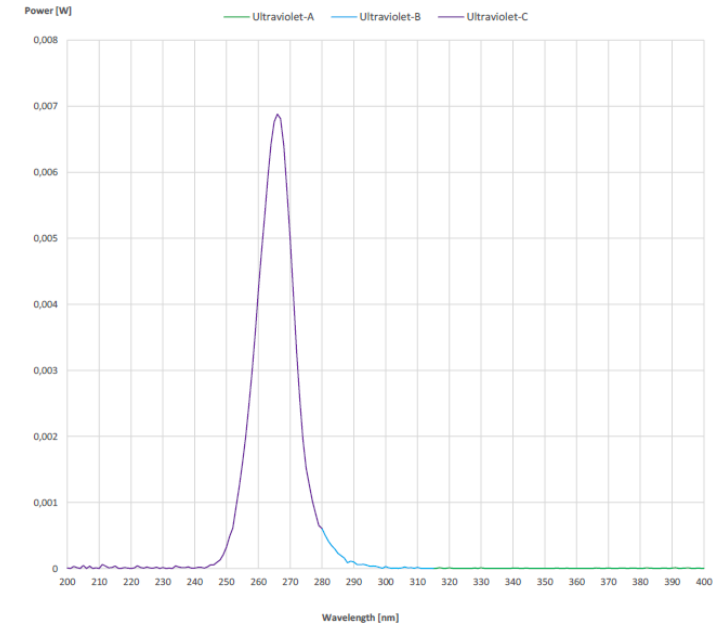
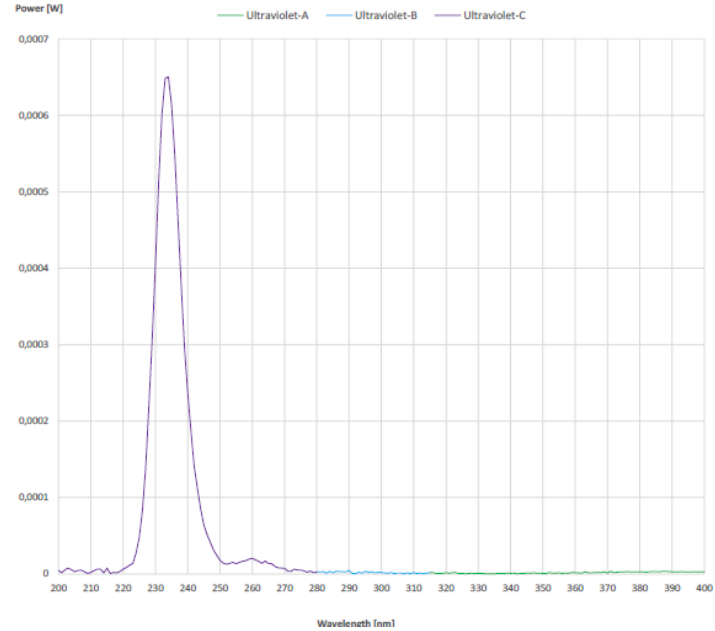
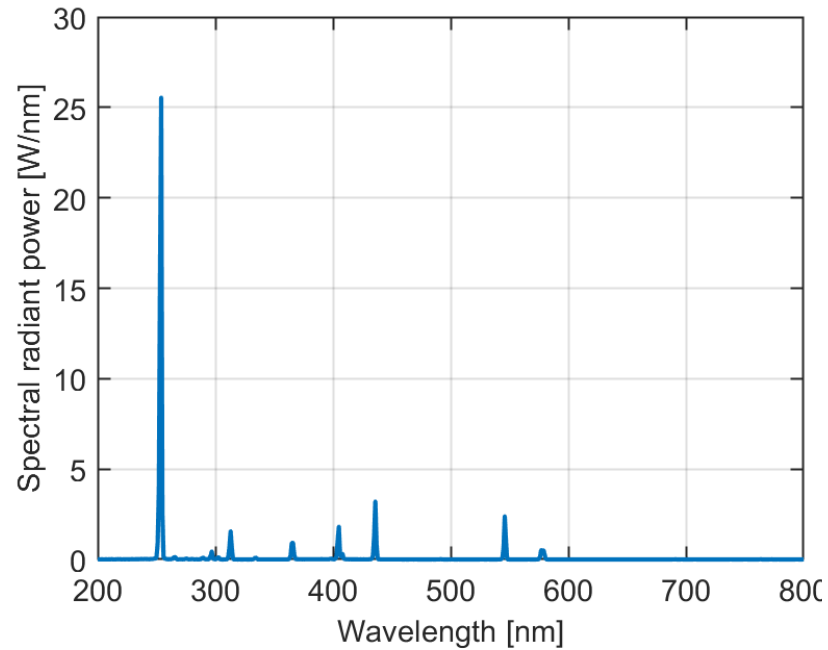


## PearlAqua Kilo

- For industrial applications
- Max. 10 bar
- Scalable to requirements

# LED:

## Only 260 nm ?



## Methods of the future

### LED 265 nm / 235 nm

- *Aspergillus Brasiliensis*.



# LED:

## Positive:

- Installation on point of use
  - Integrated in mixing battery
  - Integrated in shower head
- Integrated feed back
  - Active/not active
  - Integrated in CTS
- Works on vial and spores

## To be solved:

- Design
- Power integration
- Potential heat management
  - Above 45 degrees Celsius



## Functions

- Instant on/off
- Flashing for decontamination
- Liquid transparency
- Overheating
- LED efficiency
- Flow/no flow

# Legionella in water systems:

# NATDiS

## UVC is a part of a solution:

- Circulation systems
  - Up to 8.000 L/hour on 105 W lamp
    - Up to 99,999 % reduction
- Point of use
  - 16 l/minute
  - Up to 99,99 % reduction
- Solution based on system design and pollution:
  - UVC as a permanent installation 24 hours
  - UVC at point of use
  - Biocide once a week/month/year

