Ultraviolet LEDs Prove Effective in Germicidal Applications

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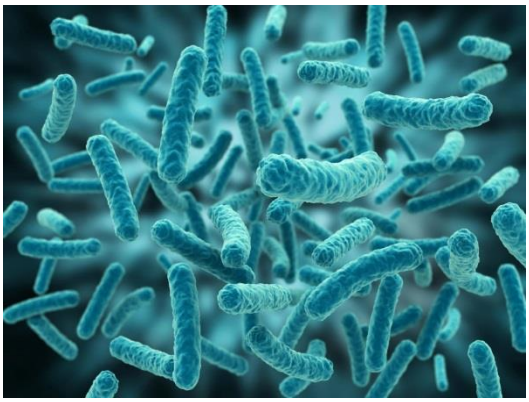
Chemicals are widely used in hospitals and households for disinfecting applications, but they can be toxic and long-term exposure may result in health problems. Ultraviolet (UV) light is more effective than chemical disinfectants because it destroys the bacteria's DNA structure. Unfortunately, this technology is not popular because the lamps used to generate UV light are bulky, fragile, and contain mercury. They also have a short lifetime (2,000 to 10,000 hours) and are slow to warm up or cool down. Moreover, a majority of the lamp's energy (about 60 percent) radiates as infrared energy. An alternative technology was required that could generate UV light without the shortcomings of a mercury lamp, and LEDs fit the bill.



Germicidal UV LEDs were introduced in 2012 and since then, the market has rapidly grown. In addition to being more energy efficient than mercury lamps, UV LEDs offer other advantages:

- They are instant on-off lamps that can be pulsed without sacrificing life.
- They can be manufactured to operate at wavelengths to target specific types of bacteria.
- They have no design constraints; currently available UV LEDs are small enough (about the size of a quarter) to be easily mounted on flat or cylindrical surfaces such as mobile devices or doorknobs
- Their power levels can be precisely controlled.

The small size of germicidal UV LED chips allows for easy integration with devices. RayVio, a leading manufacturer of UV LED products, has designed a UV LED chip for germicidal purpose that's smaller than a quarter. The tiny chip can easily be integrated with medical equipment, bathtubs, doorknobs, and even mobile devices.

California-based company RayVio has developed UV LED products that can eliminate bacteria such as listeria and salmonella in less than a minute. The RayVio product was independently tested by AEMTEK, a third-party laboratory accredited by the American Association for Laboratory Accreditation and recognized by the US Food and Drug Administration. Researchers irradiated samples of bacteria with RayVio's deep UV LED light and measured the bacteria population after 5 and 80 seconds. They observed that 99.99 percent of bacteria were eliminated within 5 seconds and 99.9999 percent were gone within 60 seconds. These impressive results demonstrated that UV LEDs can effectively kill bacteria faster than chemicals, a game-changer for healthcare and hospitality sectors as well as for residential applications.