Skin Temperature vs. Body Temperature

Skin temperature is the temperature of the outermost surface of the body. Normal human skin temperature on the trunk of the body varies between 33.5 and 36.9 °C (92.3 and 98.4 °F), though the skin's temperature is lower over protruding parts, like the nose, and higher over muscles and active organs. Recording skin temperature presents extensive difficulties.

Although it is not a clear indicator of internal body temperature, skin temperature is significant in assessing the healthy function of skin. [21 The physiological significance of skin temperature has been overlooked, because clinical analysis has favored measuring temperatures of the mouth, armpit, and/or rectum. Temperatures of these parts typically are consistent with internal body temperature.

Patterns in skin temperature often provide crucial diagnostic data on pathological conditions, ranging from locomotion to vascular diseases. Such information can prove significant to determination of subsequent therapeutic treatments.
The process is environmentally friendly in that there are no dangerous or toxic chemicals that require specialized storage or handling. Since no chemicals are added to the air/water, there are no process byproducts to be concerned with. The UV bulbs do not require special handling or disposal either, making the system a green alternative to chemical disinfectants.

Below are some general guidelines for safe operation of UV sanitation lights:

- Never look directly at the light when it is activated
- Use protective eye and face gear
- Cover the hands, arms, neck, legs and other exposed body parts
- Setup signs, markers or cones around the area to warn others of ongoing sanitation
- Do not handle a broken or cracked UV lamp with bare hands

Additionally, we recommend using respiratory masks when performing UV sanitation in potentially contaminated areas. These vital safety accessories have two benefits: prevents individuals from breathing in deadly viruses/toxic chemicals and reduces direct contact when touching the face/mouth.

**Light Maintenance and Care**

Periodically check the UV lamp before and after use for damage (especially when experiencing light flicker). If the lamp becomes too hot to touch, allow it to cool down before inspection. Do not handle broken or cracked UV bulbs with bare hands.

**Benefits**

While there are definite limitations to UV-C disinfection technologies, there are many benefits as well. Disinfection times are fast, with a typical disinfection cycle lasting about 15 minutes. This allows for extremely fast turnover times for rooms or other spaces being disinfected. Due to its simplicity, UV-C disinfection is extremely easy to understand. All surfaces within a certain distance will observe an assured level of disinfection in a certain amount of time as long as the light is not blocked from shining on that surface. It becomes very easy to plan the use of a UV-C disinfection system when the parameters and limitations are easily established and understood. There is no need to establish air flow patterns with UV-C as you would with a fogging system. Nor is there a need to isolate rooms from HVAC systems or seal doors. This, along with the lack of chemical mixture, makes the preparation time quick to setup and start a UV-C disinfection cycle.

The cost to run UV systems is very low, as systems are powered by regular wall outlets and batteries. With that, a typical UV-C treatment costs under two cents. UV systems also require little maintenance and upkeep due to their simplistic nature. UV bulbs last thousands of hours at their peak output, limiting the need for routine consumable change out and maintenance.

**Drawbacks**

While UV is effective at inactivating a wide range of microorganisms, there are limitations for its use. As it involves light waves, UV operates in a “line-of-sight” fashion, only irradiating surfaces within its sightlines. Surfaces can be blocked from the light if objects are in the way, much like a beach umbrella offering protection from the sun. These
areas that become blocked from the UV light are commonly referred to as shadow areas. Surfaces in these shadow areas do not receive adequate disinfection as UV light does not have the ability to reflect well off surfaces. Shadow areas are typically dealt with by moving the UV light source to a second position to accommodate disinfection of the surfaces blocked from UV disinfection the first time.

Distance also plays a factor into the efficacy of UV light. The strength of the UV-C light decreases the further away it gets from the light source, following the inverse square law. This means that at twice the distance, the UV-C will have $\frac{1}{4}$ of its power that was present at the original reference point. This relationship limits how far a single source of UV light is effective before it is too weak to provide adequate disinfection. Most systems deal with this by quantifying their UV-C output at a given distance and using that distance to generate treatment times. Sensors are available which can measure the UV-C output of the UV systems at any location, such that adequate treatment times can be interpreted for that specific location.

UV light does not penetrate well into organic materials, so for best results UV-C should be used after a standard cleaning of the room to remove any organic materials from surfaces.

**Applications**

UV light can safely be used for a variety of disinfection applications. Systems are available to disinfect rooms and high touch areas, ambulances and other emergency service vehicles, ductwork, tools equipment inside a disinfection chamber, continuous UV-C pass-through conveyors, and many other applications. It has long been available for biological safety cabinet disinfection and home water treatment as well. It provides a chemical free method of disinfecting soundproofing materials that are traditionally chemically incompatible.