

# FAQ

## THE BENEFITS OF USING PULSED LIGHT TECHNOLOGY IN A VARIETY OF APPLICATIONS



For example, pathogens such as *Listeria*, *Salmonella*, and *E. coli* can contaminate food products anywhere along the production process. As a chemical-free, non-thermal, and effective technology, Pulsed Light provides the ideal technology to complement any existing decontamination process.

### Q: What is Pulsed Light technology?

**A:** High-intensity Pulsed Light is a non-thermal, chemical-free, and safe technology that involves the application of broad-spectrum xenon light in short, powerful bursts that are 100,000 times the intensity of the sun as measured on the surface of the earth. The high energy destroys pathogens by deactivating its DNA. In fact, Pulsed Light can kill 99.9% of pathogenic and spoilage microorganisms, bacteria, molds, and parasites in a very wide variety of applications. Pulsed Light sources generate light that extends from the deep UV spectrum to near IR—with peak pulse powers that can often be measured in Megawatts (see Figure 1). Because of this, Pulsed Light is suited for breaking chemical bonds, surface treatment, sintering, UV curing, ablating or decontamination.

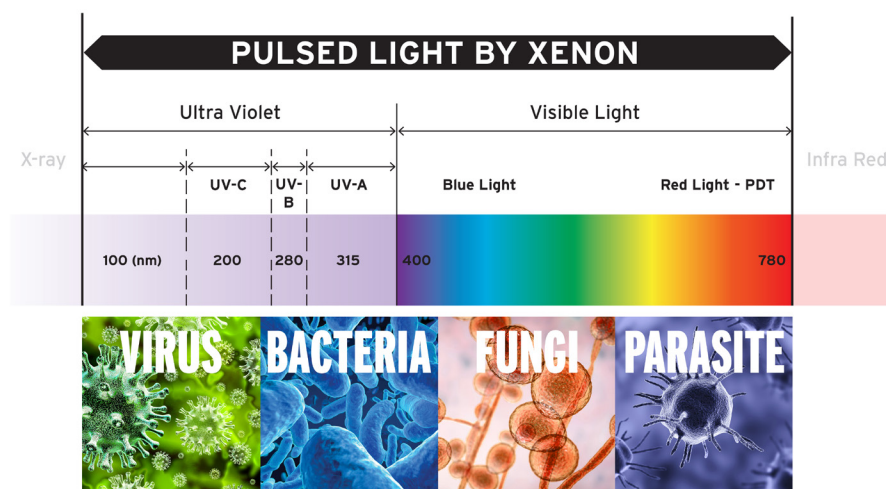


Figure 1

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**Q : What makes it better than other methods on the market?**

**A :** Most products focus on killing the bacteria, mold, or virus, while Pulsed Light provides multi-pathway extinction based on spectra. Different parts of the Pulsed Light spectrum can damage cells in multiple ways; high-peak energies penetrate cells and kill more effectively, in seconds; and the Pulsed Light overpowers the cell repair mechanisms so that the contamination cannot recover (see Figure 2).

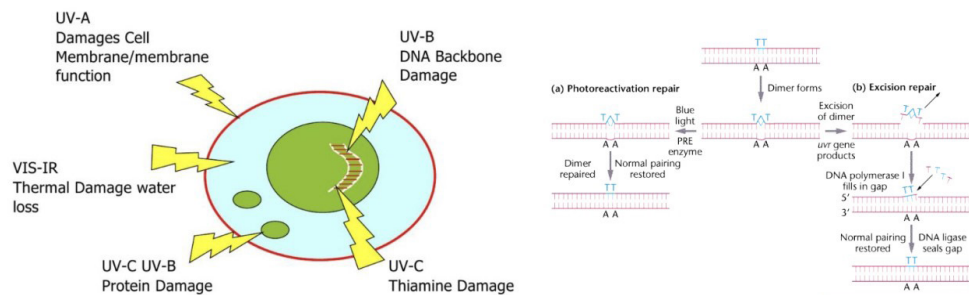


Figure 2

**Q : What makes Pulsed Light valuable in such a variety of applications?**

**A :** Because of tight control of the pulse durations—varied from a few microseconds to milliseconds—Pulsed Light can be customized to work with a multitude of systems in need of four basic functions:

- **Sterilization:** For the food and beverage industry, Pulsed Light is used to extend shelf life, food enhancement, and decontamination. Pulsed Light is used to decontaminate conveyors, packaging materials, and food storage rooms against a wide variety of microorganisms including molds, bacteria, viruses, and more.
- **Curing:** For applications in semiconductor or display production, medical devices, and optical disc production, Pulsed Light easily replaces mercury light with an extremely flexible technology that can deliver complete cures quickly and without heat.
- **Sintering:** For printed circuits, wearable sensors, RFID tags, and diagnostic monitors Pulsed Light provides the sintering capabilities needed to treat metallic inks without harming heat-sensitive substrates—and at speeds compatible with high-volume production.
- **Annealing:** For solar cells, optics, and silicon wafers, Pulsed Light provides annealing in a precisely controlled heating and cooling process that alters the physical and/or chemical properties of the material to increase its ductility and reduce its hardness.

**Q : With such high intensities of light, do I need to be concerned about heat buildup in any of the applications mentioned?**

**A :** Because the xenon light bursts are so short, there is no buildup of heat that could be harmful to the object being treated, as would be expected with mercury vapor lamps, for example. Since pulses can be applied in fractions of a second, instead of the minutes that would be required for continuous UV, Pulsed Light is the ideal choice for a wide variety of applications including food safety.

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**Q : How simple is it to apply Pulsed Light technology to my current system?**

**Q : Are there safety issues that I need to know about?**

**A :** Pulsed Light systems are compact and easy to design into new applications or retrofit into an existing piece of machinery or equipment. This technology is easily scalable to accommodate different speeds of operation up to high-volume production.

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**A :** Although Pulsed Light generates an intense amount of UV, a system is typically deployed in an enclosed stainless-steel lamp housing. The product would go into a space alone, effectively shielding the light from the outside. In cases where stray light might escape, it is perfectly harmless in the sense that once the light is reflected off a surface or two the amount of intensity is so low that it wouldn't affect individuals. Furthermore, you can mitigate exposure by installing proper shielding in and around the equipment. In addition, depending on the system you choose, Pulsed Light systems come with a host of safety features such as software that assures users select and maintain safe energy settings. Diagnostic monitoring can be performed continually for consistent operation, for high voltage disabling if a fault occurs, and an operator alert that corrective action is required. Physically speaking, lamp housings have a quartz window that can be laminated with plastic to prevent glass breakage. Employees are asked to wear safety glasses as well (see Figure 3). There are thousands of Pulsed Light systems on production lines world-wide operating 24/7. Finally, Pulsed Light technology has been reviewed by the FDA and is FDA CFR approved, as well as CE marked.



Figure 3

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**Q : Is there a way to learn more about Pulsed Light technology and how it might be used?**

**A :** There are ample online resources and research available. Companies such as XENON have produced and made accessible a wide range of white papers, application sheets, product and data sheets, and cited sources. They have also produced a specific brochure for the food and beverage industry. Talking with well-established companies about your particular needs is always a good way to gain insight from experienced engineers.



**Realize the full potential of your sterilization, disinfection or decontamination product with the help of XENON.**

With over 50 years of experience in Pulsed Light technology, XENON Corporation has established itself as the go-to Pulsed Light solution provider for OEMs.

Our modular systems and a wide range of optical footprints allow configurations that match a variety of application requirements. We even design and manufacture our own lamps, which allows for gas mixtures to be optimized for your particular application.



**Let's talk about your Pulsed Light needs. Learn more, then contact us at [www.PulsedLight.com](http://www.PulsedLight.com).**



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