

NQ Industries, Inc. recently introduced a revolutionary Titanium Dioxide (TiO₂) technology to augment its existing UVGI based air purification technology producing the most powerful odor and pathogen reduction system available on the market today. We have introduced this new photocatalytic technology as a result of growing concerns of harmful air pollutants becoming more prevalent in our indoor air. An explanation of the technology is as follows:

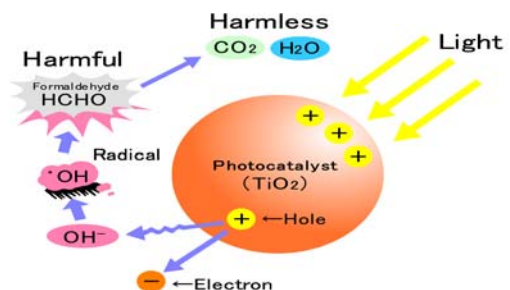
TiO₂ is a photocatalyst coating that is activated via UV light, which causes the coated surface to have a strong oxidative property (*see diagram*). A hydroxyl radical reaction takes place-allowing gasses to attach to the surface of the TiO₂ coating, which in turn convert these harmful gasses into harmless H₂O and traces of CO₂ thereby eliminating the harmful substance.

With this principle, Photocatalysis can be utilized in many steps of environmental purification, such as air treatment, and atmospheric Nitrous Oxide removal.

At this moment, due to its non-hazardous, non-toxic nature, Titanium Dioxide is mostly used as a Photocatalyst; already widely used in Cosmetics, Toothpastes, Pill whitening, and other white colors. The products are very safe and pose no additional pollutants such as ions or ozone in the air.

The Diagram shows the schematic of the typical Photocatalytic reaction.

Exposed to UV Light - energy is given and the electrons in TiO₂ can move around freely, which brings the stage that opens a hole, (*an unstable electron*) which is given off creating the Hydroxyl radical which breaks down organic substances.



Since electrons are charged as negative, Holes, which electrons come out, are charged to be positive. Just as filling deficiency of missing portion, Holes extract electrons of the Hydroxides, which exist on the TiO₂ surface. The Hydroxide, which extracted electron by hole, becomes unstable; (*highly active*), these highly activated Hydroxides are called Hydroxyl-Radical, one of the most powerful scrubbing agents in nature.

This new, revolutionary system will eliminate virtually all of the airborne pollutants; VOC's and other organic gasses that are present are rendered into harmless water vapor and minute amounts of CO₂.

The reaction takes place within the unit in billionths of seconds and will continue uninterrupted for long periods of time as long as UV light, water vapor and TiO₂ are present. This odorless and colorless reaction occurs within the interior of the unit in our 6-step filtration process so all that is discharged is pure, clean air.