

# Evacuating safely ... in complete darkness

*The photoluminescent solution when all power systems fail*

*By Thomas Bencsics*

The power outage occurred quickly and rippled across a large area. Cities affected included New York, Cleveland, Ohio, Detroit, Michigan, and Toronto and Ottawa, Canada. August 14<sup>th</sup> 2003 will be remembered by millions of people as the day 21 power plants shut down almost simultaneously depriving them of electricity and egress lighting.

For decades, power failures in prominent facilities have left building occupants struggling to evacuate in total darkness, or in an environment so thick with smoke that normal lighting was invisible.

Following the World Trade Center bombing in 1993, more than 60% of the evacuees took over an hour to leave the building once a complete power failure, including emergency lighting, plunged it into darkness. In 1980, the fire in the MGM Grand in Las Vegas killed 85 people, many of whom had been left in total darkness without direction. More recently in 2002, evacuation slowed to a crawl at Montreal's Royal Victoria Hospital when the back-up generator failed following a facility-wide power failure.

These and other incidences have prompted changes to building safety codes throughout North America, and encouraged facility managers to install photoluminescent pathway markings and safety signs in their buildings.

On June 7, 2004, just weeks following hearings held by the Federal 9/11 Commission, the City Council Committee on Housing and Buildings voted to make New York City high-rise buildings safer. By adopting 13 of 21 recommendations made by the World Trade Center Building Code Task Force, New York City is making good on some lessons learned from the tragic events of September 11<sup>th</sup>, 2001. A section of the code requires that by July 1, 2006, all high rise commercial buildings (75 feet or taller) in New York City shall be equipped with approved photoluminescent signs and markers.

Since 1989, California law requires pathway marking and low-level exit signage in all new assembly, educational, health care and hospitality facilities. After a cruise ship fire that killed 158 people in 1993, the International Maritime Organization (IMO) passed a similar requirement.

In Europe, safety codes in many countries have required photoluminescent wayfinding systems for buildings, ships, and other facilities for many years. Recently installed in the space shuttle, United Nations and at the Pentagon, photoluminescent (PL) products are quietly being recognized as the 'failsafe' alternative for emergency lighting and pathway delineation.

Ultimately, during fires and other disasters, egress from buildings, ships and tunnels must occur as quickly as possible. To safely guide the occupants out of a building, evacuation routes must be clearly and continuously visible throughout the structure. Often, the only reliable solution is a wayfinding system using photoluminescent materials.

## How does photoluminescence work?

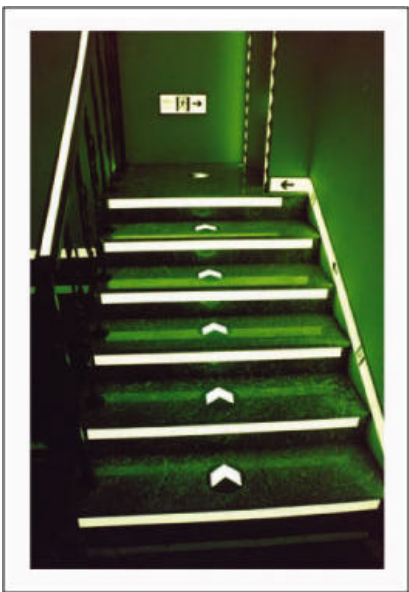
Photoluminescent (PL) materials (often called ‘glow-in-the-dark’) have been around for decades. This material contains a non-toxic, non-radioactive compound which absorbs energy from any ambient or UV light source. In the event of total darkness, the energy is released as a strong yellowish glow.

During egress from buildings, ships and tunnels, evacuation routes must be visible, and the new advances in PL technology offer a safe, reliable and cost-effective lighting solution **not** dependent on electric power.

Recent studies, such as the one by the National Research Council of Canada (November 2000, Institute for Research in Construction), show that PL wayfinding systems can be just as effective as conventional emergency lighting during an evacuation.

Moreover as smoke rises during a fire, the visibility of standard high-level safety signs are obscured and glare created by emergency lighting sources has been known to obstruct vision. PL material can easily be installed close to the floor, where it is less likely to be obscured by rising smoke and offer direction during a crisis.

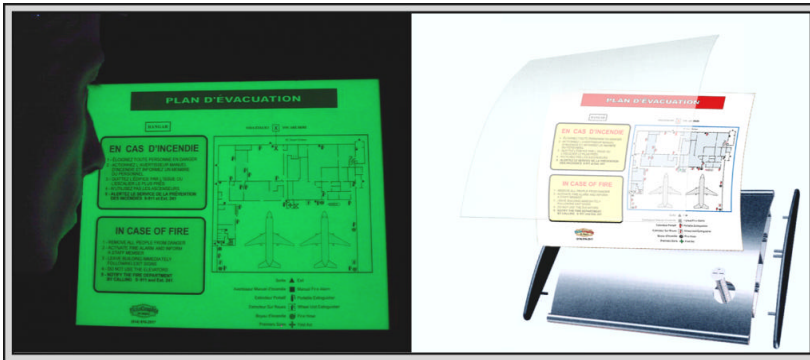
## The PictoGraphix Difference



PictoGraphix, Inc. combines professional evacuation map and safety sign services with new product innovation using (PL) technology.

In addition to providing high quality building evacuation maps, PictoGraphix produces and distributes an array of photoluminescent safety products to industry and supplies Local Law 26 compliant products to high-rise buildings in New York City.

Unlike the glow-in-the-dark novelty items of old, PL products distinguish themselves by using strontium-aluminate based pigments instead of zinc sulfide. This new high performance pigment combined with specially formulated additives deliver 10-15 times more luminescence than earlier PL products.



UL/ULC listed EXIT signs, pathway marking disks, stair nosing, railing covers and various directional markers and signs are all produced with durable substrates, including aluminum. Apart from signage

applications, photoluminescent material is available in several different forms. As a vinyl it can be used on products ranging from, safety vests, helmets and other clothing. Ceramic tile coated with photoluminescent glaze can illuminate walls, floors and other architectural features for path finding during darkness. Used in a clear epoxy or acrylic paint medium, a photoluminescent coating can be applied to just about anything.

PL's application is potentially unlimited, and only requires a light source to keep it charged between periods of darkness. There are no light bulbs to change or wires to install. Not only are PL products an incredibly dependable and cost-effective lighting alternative during emergency situations, they are reliable for over 20 years, instantly releasing stored light energy for many hours.

50 foot viewing Distance



75 foot viewing Distance

*Thomas Bencsics is an owner and product development manager at PictoGraphix Inc., a signage product development company. To find out more about the range of photoluminescent products available, contact PictoGraphix Inc. at 1-800-504-3822 or visit [www.evacmap.com](http://www.evacmap.com) on the internet.*