ISSUE 10
PESTWEST ENVIRONMENTAL

IN THIS ISSUE



# PESTWEST 411

NEWSLETTER

## DID YOU KNOW...

Malaria mosquitos, *Anopheles gambiae*, utilize CO2 from exhaled air to localize humans from a distance, and when near their host, alter their course to human feet. Researchers discovered how female malaria mosquitos use foot odors in the last few meters to guide them to their favorite biting place.

Neurobiology researchers have found that larger-bodied social wasps have larger brains and devoted three times more of their brain tissue to regions that coordinate social interactions such as learning, memory, and complex behaviors. Intra-species, queen wasps have larger processing areas of the brain than worker wasps.

Male Fruit flies, *D. melanogaster*, perform a complex courtship ritual to attract the attention of female flies for mating. The male performs a "song" by extending a wing and vibrating it. The pulsating acoustic signal produced sounds like humming to the human ear. The female fly finds the sound irresistible. A robust male performance is crucial for the success of mating.

## YOU MAY WANT YOUR CUSTOMERS TO SEE RED!

In all cases, we want well-informed, satisfied and happy customers. However, in one case, you may want your customers to see **RED!**

PestWest introduces the Red Bed Bug Clean-Up Bag for your Interception Zone Monitor System.

If you partner with customers in the public health industry, you know the significance of red bags. Red Bio-Hazardous Waste Bags are known for the management of bio-hazardous waste that requires biological inactivation in an approved manner prior to final disposal. Waste includes human cell lines, tissue cultures, DNA, infectious agents, bacteria, viruses, fungi, toxins, blood and blood products, carcasses, body parts, and soils with pathogens. The color red is functional to differentiating types of waste.

PestWest's Red Bed Bug Clean-Up Bag allows you to differentiate Zone Monitors that have captured bed bugs from those that have not, or are clean. More importantly, Bed Bug Clean-Up Bags allow your customer visual results of your bed bug prevention program.

PestWest's Red Bed Bug Clean-Up Bags are both **re-sealable and reusable**. Red Bags give you and your customer a proper ongoing disposal and de-infestation method of bed bugs using Interception Zone Monitor Captures.

The Bed Bug Monitor System is a value-added trap that allows continuous monitoring for bed bug activity. It provides an attractive harborage for bed bugs in numerous harborages between host and bugs. In addition, you can greatly enhance your professional bed bug inspection using **PestWest's Contrasting Specimen Inspection Kit (CSI)**.

This handy CSI Kit contains specialty orange glasses and a 455nm range blue-light lamp which are commonly used in the forensics industry and are combined to add a visual difference to your overall inspection program. Combined, these systems provide your customer with a favorable visual difference and perception of your bed bug services! So for your customers to see red, get the blue! The blue light CSI Kit!

**Go to www.pestwest.com and order your systems today! You can also contact us at 866.476.7378.**

## YOU AND PESTWEST QR CODES

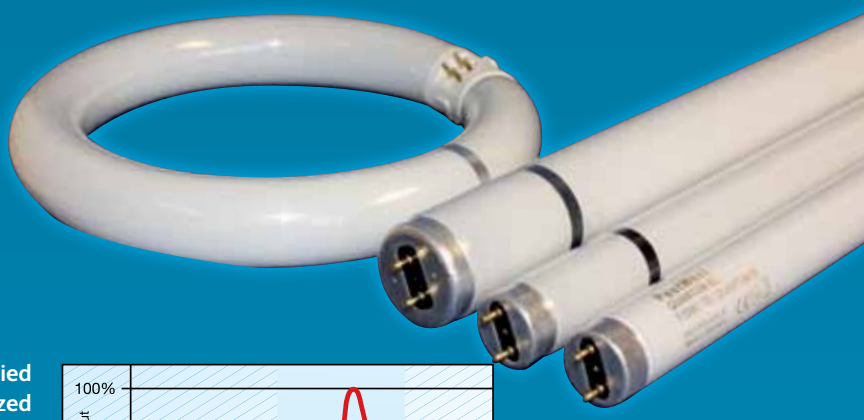
**You will be seeing these symbols that look like mazes on PestWest product, literature and advertisements. What are they?**

They're called QR Codes or (Quick Response Code) enables a mobile phone to scan data and immediately capture information on your mobile device. The code provides immediate access to websites, contact information, calendar entries, images, videos , text, and more! Using your mobile device's camera and a QR reader application (a "reader app"), you can scan and instantly get information at your finger tips. Most mobile devices have an application marketplace, store or world that allows users to search and download free applications. Search "QR" in your device's application marketplace, store or world, and download a QR reader application following the user prompts.

**TRY IT!**

**To view this newsletter online please scan the QR code.**

# BATTLE OF THE BULBS



**For many years, PestWest has been merging science with applied technology to provide a diverse range of professional and specialized electric fly killers. An essential component of this range and part of the PestWest commitment to 'flying insect science' is the innovative, market-leading and highest-specification Quantum BL range of ultraviolet (UV) lamps.**

Keeping with the 'green' theme, an energy-saving recommendation was made to reduce energy consumption in 1997 when PestWest approached Sylvania Lighting International (SLI) to develop a new fly attractant lamp. Until that date, the accepted industry standard was the BL350 based upon the then available phosphor technology.

SLI applied the knowledge obtained from extensive research sponsored by PestWest in conjunction with entomologists and the Quantum BL was born.

The phosphors used in the Quantum BL range have always been 100% lead free. Only the seals holding the filament elements at the end of the lamps were until recently made of lead glass because of its lower melting point and even this has now changed.

Similarly, the amount of mercury used per lamp is the lowest practical level achievable and consistent with reliable manufacturing techniques.

PestWest and SLI have used the environmentally friendly water-based phosphor technology, with the added benefit of maintained high UVA output, for over a decade.

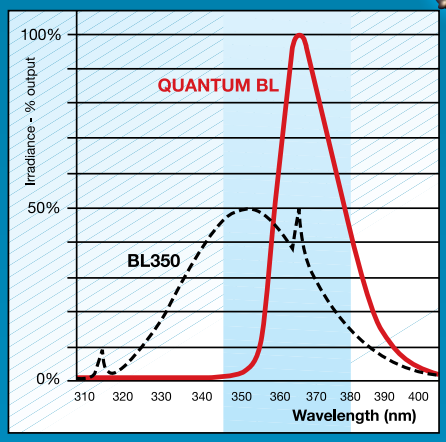
So Quantum BL lamps have always been environmentally friendly, even before it was fashionable to be 'green.'

The spectral distribution of the UV light produced by the Quantum BL lamps is designed to match closely the spectrum of sensitivity of the housefly. In Quantum BL lamps, an increased UV light output over standard lamps can also attract more insects and cover a larger area.

A closer look at the Quantum BL range reveals that PestWest has continued to have HACCP at the forefront of their thinking by supplying these lamps with a shatterproof coating. One of the best materials for shatterproof sleeves is the FEP coating. This can be expensive but it is the best the industry offers and is used exclusively on PestWest's range of high quality UV lamps.

Tests have shown the FEP coating allows maximum UVA transmission as this coating reduces the UVA output by only a minimal amount.

Other features of the FEP coating include a guarantee that the product will not flake, melt, discolor or drip.




*Power distribution curve of Quantum BL compared to standard 350BL ultra-violet lamps. The distribution of the UV light produced by the Quantum BL lamps matches closely the spectrum of sensitivity of the housefly.*

| | Lamp Brand | |
|---|---|---|
| Key Features | Quantum BL | 350 BL |
| Lead Free | ✔ | |
| Reduced Mercury | ✔ | |
| Aqueous Phosphors | ✔ | |
| Optimal Spectral Distribution | ✔ | ✔ |
| High UVA output | ✔ | ✔ |
| Shatter resistant | ✔ | ✔ |
| Various sizes and lengths | ✔ | ✔ |

Where there is no intention to make an application for authorization under BPR of a product already on the UK market, or where an unsuccessful application for authorization has been made, the company should seek to take the product off the market and phase it out of the supply chain.

There are questions rising about the future of fluorescent lamps as we traditionally know they contain elements such as lead in the glass, and mercury in phosphors or both. In the European Union, action has already been taken as of January 1, 2011 to eliminate the sale, import or export of fluorescent lamps that contain both of these elements. You can bet other countries will certainly take a hard look at the same, including the US.

A CoE will be granted to cover this period of time. In general, these CoEs will support a sequential phase out of the product over a total period of 18 months, allowing 6 months to cease first placing on the market (i.e. by the manufacturer/formulator), a further 6 months to cease retail sale (i.e. by distributors and retail outlets), and a final 6 months to cease use (amateur and professional) and for storage and disposal.

PestWest®
FLYING INSECT SCIENCE

# DO YOUR CLIENTS UNKNOWINGLY SUFFER FROM CIMICOSIS?

*By Stuart Mitchell, DO, PhD, MPH, BCE*

**With the rapid and alarming progression of bed bugs across the U.S., the proverbial "sleep tight and don't let the bed bugs bite" becomes a startling reality for many unsuspecting victims. As a blood feeding parasite, the bed bug has re-emerged as a medically significant issue.**

In this article we will examine bed bugs from a medical view. *Cimicosis* is defined as lesions produced by the repetitive feedings of bed bugs, *Cimex lectularius*, or bed bug bites.

Reactions to insect bites and stings are common and a frequent cause for a visit to a physician. Bite reactions grouped or in a linear fashion experienced after waking up in the morning are more recently suspected to be bed bug bites. Reactions itch intensively and persist over several days (or even upwards of 17 days in some individuals).

Area-wide bullous (a blister or fluid-containing, elevated lesion of the skin) reactions to bed bug bites are rare and may obscure the correct diagnosis if adequate patient history is unavailable. Bed bug bites must now be considered in differential diagnosis of rapid onset bullous eruptions.

With bed bugs, repetitive bites may exhibit immediate wheal and flare symptoms, followed by a papule (solid elevation of the skin with no visible fluid, varying in size), a vesicle (fluid-filled type blisters or vesicles) that drain and scab over, or a blister, suggesting immediate or delayed-type skin reactions. Such reactions indicate a hypersensitivity to the proteins in bed bug saliva. One specific protein is nitrophorin.

Pathogenesis is the mechanism by which the disease is caused. The term can also be used to describe the origin and development of the disease and whether it is acute, chronic, or latent. The word comes from the Greek, pathos, "disease," and genesis, "creation." Hypersensitivity reactions to *C. lectularius* remain obscure to date. It has been identified that a bullous (a large vesicle described as a rounded or irregularly shaped blister containing serous fluid) allergic hypersensitivity results from bed bug bites mediated by Immunoglobulin E (IgE). IgE is one of the 5 major antibody types which are found in the lungs, skin, and mucous membranes. They cause the body to react against foreign substances such as pollen, fungus spores, and animal dander as well as bed bug saliva containing nitrophorin. Antibodies are substances made by the body's immune system in response to bacteria, viruses, fungus, animal dander, foreign compounds, or cancer cells.

Skin inflammation occurs as an immediate reaction (minutes) and a late-phase reaction (6–12 hours). Immediate reactions are from the activity of histamine (dilates blood vessels), prostaglandins (one of a number of hormone-like substances causing inflammation), and others that cause an increase in vascular permeability leading to inflammation (swelling).

Immediate reaction is followed by release of leukotrienes (a group of naturally occurring chemicals in the body that promote inflammation in asthma and seasonal allergic rhinitis and in other diseases in which inflammation is important).

Chemokines, a large group of proteins that act as lures and were first found attracting white blood cells. Such mediators recruit other leukocytes to the site of inflammation, causing a late-phase reaction. In bug bites, late-phase reactions cause illness due to the development of sustained edema (swelling), vesicles, blisters, and intense pruritus (itching).

Another pathophysiological response to bed bug antigens that have diffused into the deeper layer of skin called the dermis is a local type III hypersensitivity reaction triggered by circulating specific (IgG) antibodies. This reaction is formed by immune complexes binding to receptors on leukocytes and activating complement which creates a local inflammatory response. Individuals previously sensitized by bites experience local T-cell mediated delayed-type hypersensitivity or type IV hypersensitivity reactions over one to three days. Such a response is over several hours to days, so the developed response appears only one to three days after the bite.

Advances in molecular biology and biochemistry allow better understanding of complex proteins found in parasite saliva. Vertebrates protect against volumes of blood loss by activating blood-clotting mechanisms induced by platelet aggregation at the injury. To feed, blood-sucking arthropods, including bed bugs, have developed mechanisms that counteract such host responses. Bed bug saliva is potent with an array of antiplatelet (antiplatelet effect is used to prevent blood clot formation inside blood vessels) anticlotting, and vasodilatory (dilation of blood vessels) compounds.

While blood sucking, salivary nitric oxide (not be confused with nitrous oxide (N2O), an anesthetic) is used as a main vasodilator. Nitric oxide gas is stored and transported from the salivary glands to the host skin by nitrophorin or a hemoprotein (these perform diverse biological functions including oxygen transport in the blood) abundant in saliva. Bed bug saliva inactivates aggregating platelets (preventing the blood from clotting).

Bed bugs became widely uncommon after the WWII in both Europe and the USA. Knowledge about potential antigens involved with hypersensitivity reactions is limited.

The immune reaction to insects such as honey bees or mosquitoes has been well-studied. This research has led to detailed knowledge about antigen nature and specific proteins relevant for the human immune response.

A dramatic increase in global bed bug infestations has been observed over the past decade worldwide prompting future advancement of immune therapeutic strategies for severe systemic reactions is plausible.

Potential hypersensitivity reactions may pose risks to people following repeated exposure to bed bug bites. Future studies in a larger group with known hypersensitivity to bed bugs will clarify whether nitrophorin is the only allergen contained in the saliva of bed bugs. In the meantime, pest management professionals can lower or eliminate the culprit causing *cimicosis*.

PestWest.com™
CONTRASTING SPECIMEN INSPECTION KIT

# CSI:

CONTRASTING SPECIMEN INSPECTION KIT

## Enhance your bed bug inspection methods using forensic technology!

PestWest introduces the Contrasting Specimen Inspection Kit (CSI). This technology is brought to you from the forensic detection industry. The CSI lamp within the kit provides specialty blue light used in conjunction with orange contrast glasses to fluoresce or contrast proteins from bed bugs, blood, feces, caste skins, and eggs.

Using our forensic blue light source to see hidden objects in a different way than under normal light gives Inspectors a new perspective and a visual difference between the common and cutting edge.

## Got a smart mobile device?

Scan the QR code here for a CSI kit informational video
Visit get.neoreader.com to automatically
find a barcode reader app for your device.

For additional information contact your favorite distributor or contact PestWest at 866.476.7378.

**www.pestwest.com/bedbugs**