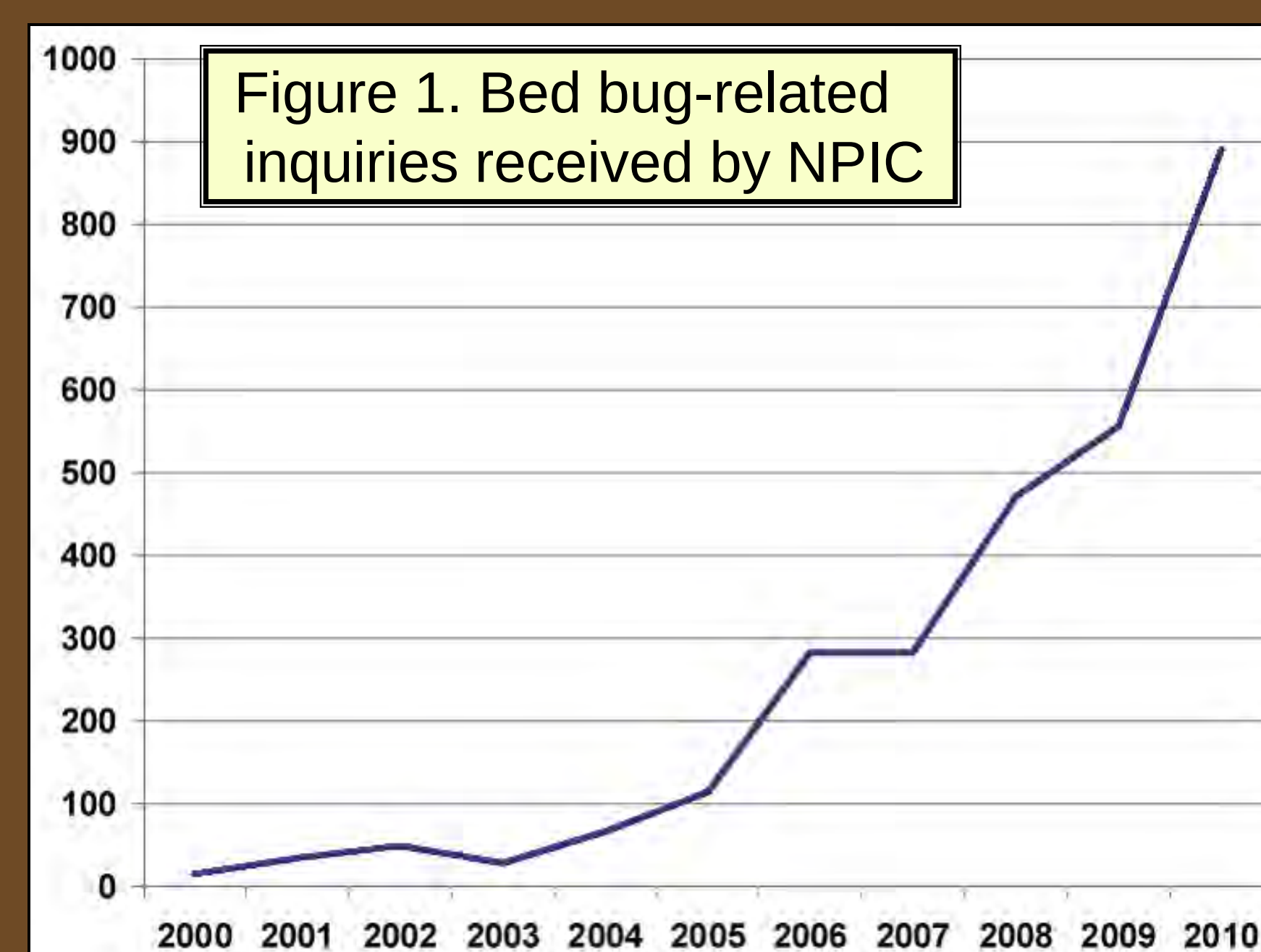


Bed bug-related pesticide incidents reported to the National Pesticide Information Center

Kaci Buhl, MS; Dave Stone, PhD; Laura Power, MS; Department of Environmental & Molecular Toxicology

BACKGROUND

Specialists respond to thousands of questions each year by phone and email at the National Pesticide Information Center (NPIC). Bed bug-related inquiries have been increasing dramatically for ten years (Figure 1). About 7% of those inquiries involve a pesticide exposure, spill or misapplication, and they are considered pesticide "incidents" (Figure 2). The National Pest Management Association (NPMA) and University of Kentucky also documented an increase in bed bug populations over the same period.¹



PUBLIC HEALTH PESTS

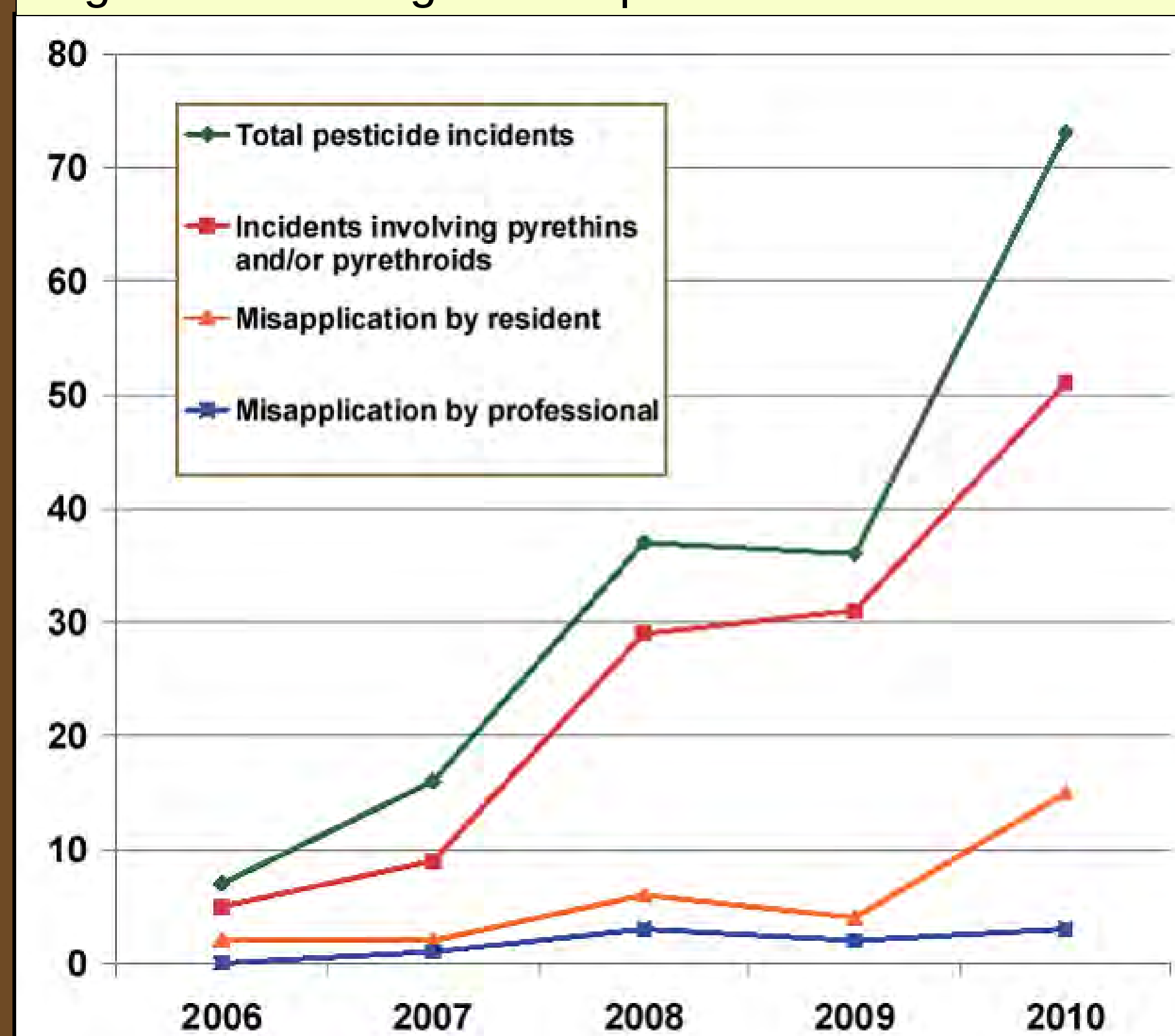


Photo courtesy of Dr. Harold Harlan, Armed Forces Pest Management Board Image Library

Although they are not known to transmit any disease, bed bugs are important public health pests. Bites can illicit allergic reactions up to and including anaphylaxis, and they are potential entry points for pathogens. Infestations can have psychological effects including insomnia, anxiety, and social isolation. The high cost of control presents a financial burden as well.² The Centers for Disease Control and Prevention and the U.S. Environmental Protection Agency recently issued a joint statement about the public health significance of bed bugs.³

PYRETHRINS & PYRETHROIDS

Figure 2. Bed bug-related pesticide incidents



Throughout this poster presentation, years are defined as October 1 – September 30. For example, 2010 = 10/1/09 – 9/30/10.

In the United States, many of products available for use in homes contain pyrethrins and/or pyrethroids. They affect the nervous system of insects and mammals. However, systemic toxicity is low when people are exposed by inhalation or skin contact. People may also experience parasthesias on exposed skin resulting in itchy, tingly, or stinging sensations. These sensations may be confused with bed bug bites. A cycle may be initiated, involving repetitive applications of pyrethrins or pyrethroids, followed by stinging sensations.⁴

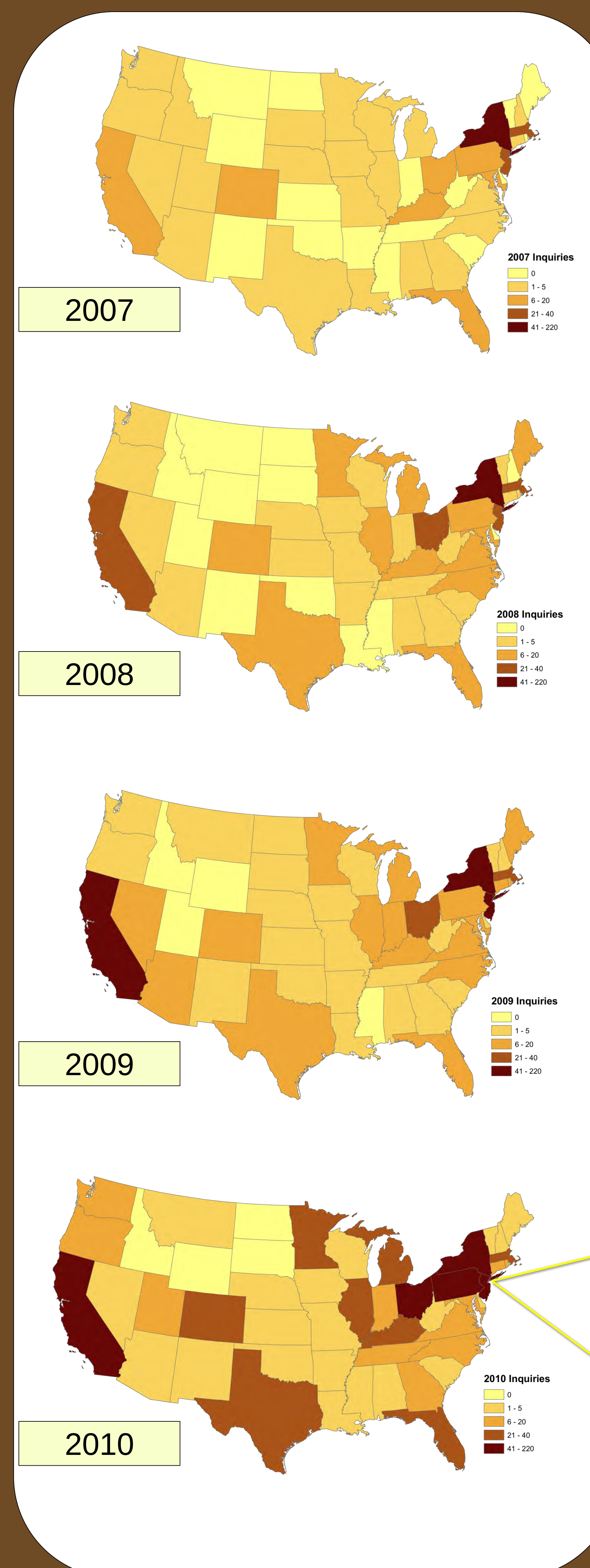
Most pyrethroids can be identified with a characteristic suffix "-thrin." For example, permethrin, cyfluthrin and bifenthrin are insecticides in the pyrethroid family. Fluralinate and esfenvalerate are also pyrethroids.

"Misapplications" are defined as applications that were inconsistent with label directions.

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DISTRIBUTION



PESTICIDE INCIDENTS

In addition to the physical, psychological and financial impacts of bed bugs, the over-use of pesticides can result in adverse health outcomes. Bed bug control often involves the application of pesticides in the most intimate parts of the home, including beds, couches and recliners. Upon reviewing thousands of incidents related to bed bug control, we identified three major themes.

Pesticides misapplied to human skin:

- A woman applied pesticides directly to her bed bug bites and hair before bed, sleeping with a hairnet
- A person reported dousing himself, his bedding and mattress with an insecticide; he reported red, itchy, burning skin
- A caller applied an insecticide to her own skin regularly while treating her home over several months; she reported muscle twitching
- A mother applied insect repellents to her young children before bed for months; the kids had skin and respiratory problems
- A landlord planning to inspect for bed bugs sprayed herself heavily with insecticides; she reported itchy, red, burning skin

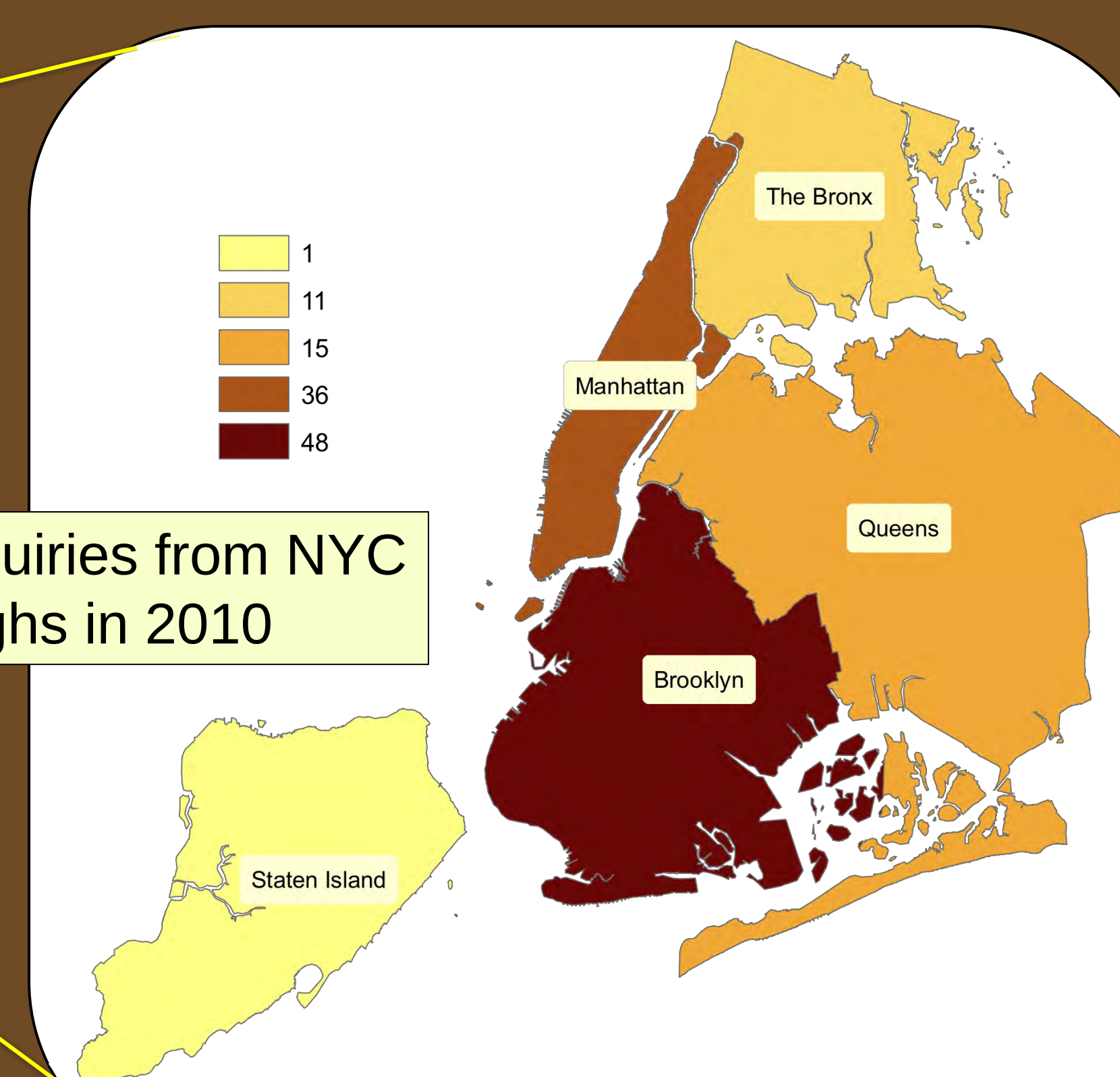
Application of cancelled pesticides in homes:

- Report of aldrin use in 2008; cancelled in 1987
- Report of bendiocarb use in 2007; cancelled in 1999
- Report of acephate use in 2009; indoor uses cancelled in 2001
- Report of malathion use in 2010; indoor uses cancelled in 2006

Application of pesticides in ways that disregard labeling:

- A person hired three pest control companies and applied five types of pesticides herself, including misapplications to her ceiling and walls
- A person sprayed his recliner with insecticides until wet, used the chair with exposed legs, and developed red bumps on his skin
- A person used a total release fogger and another product to control bed bugs in her car
- One couple reported spraying their sleeping area (couches) until damp every night before sleeping, and during the night as needed

Bed bug inquiries from NYC boroughs in 2010



The National Pesticide Information Center is a cooperative effort of the U.S. Environmental Protection Agency and Oregon State University. It is housed in the Department of Environmental and Molecular Toxicology.