



Indiana Pest Management Association, Inc.

TIPS FOR DEALING WITH INCREASING PRICES*

With national gasoline prices hovering around \$4 per gallon, keeping a fleet of cars and trucks --even your one vehicle – fueled and ready for business is an expensive proposition. Small-business owners that rely on vehicles for delivering goods, making service calls or meeting clients off-site are feeling the pinch. While most small-businesses would ideally replace gas guzzlers with more efficient rides, that's a luxury few can afford. Here are some fuel cost-cutting strategies:

- **Locate cheaper gas:** We may be talking pennies, but when you are filling up multiple vehicles with 20-gallon tanks, those pennies add up fast.
- **Train your drivers not to idle, accelerate too hard or speed:** All are major fuel eaters. Ten seconds of idling can use up more fuel than turning off and restarting your engine.
- **Don't get lost:** Looking up directions before heading out or having a GPS device will keep you from wasting gas trying to locate your destination.
- **Lighten the load:** The more weight in a vehicle, the more fuel consumed. Remove excess weight to improve efficiency.

- **Consolidate trips:** It takes planning but it's an easy way to cut fuel costs.
- **Keep vehicles well-maintained:** Just giving your vehicles a regular tune-up and keeping tires inflated improves gas mileage an average of 3 to 4 percent.
- **Tack on a surcharge:** You could raise prices in general, or start a tiered pricing system, charging customers who live farther away a higher price by adding a small fuel surcharge. Regardless, make sure you notify your customers well in advance.

*Reprinted from Kansas Pest Control Newsletter, April 2012.



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ipma dues info

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Indiana Pest Management Association Advertising Rates for 2011

Newsletter
Full Page (7" x 10")

- One Issue \$310
- Year (four issues) \$1,000

One-half Page (7" x 5" horizontal)
One-half Page (3-1/4" x 9-1/2" vertical)

- One issue \$175
- Year (four issues) \$600

One-fourth Page (3.5" x 5")

- One issue \$110
- Year (four issues) \$400

Yearbook of Information

- Full page \$250
- Half page \$125
- 1/4 Page \$75

Non-members of the Association should add an additional \$25 to the cost of each ad printed. Camera-ready copy of the size listed must be submitted for publication. If you are subscribing for less than a full-page ad, copy size may be the equivalent of that listed in the rate table above, as long as it fits within the page format. IPMA Newsletter is published in March, June, September, and December. Submit your ad copy at least 2 weeks prior to the 1st of the month in which your ad is to appear. A confirmation of ad space, however, must be received at least 3 weeks prior to the 1st of the month in which the ad is to appear. The Yearbook of Information is printed annually. Sandy Lindsey and G. W. Bennett, Editors

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IPMA SUMMER MEETING July 13-15, 2012



IPMA invites you to attend the 2012 Summer Meeting at the Hilton Hotel in Indianapolis. An excellent program has been planned for you and the whole family. CCH credits have been applied for. A meeting pre-registration form is included. Mark your calendar, complete the pre-registration form and call for room reservations direct at 1-800-315-1906. Be sure to tell the hotel you are with the Indiana Pest Management Association. Our Summer Meeting Planning Committee, chaired by Syed Shah, will host this meeting and looks forward to seeing you and your family in Indianapolis.

What's Happening:

- Friday Golf Tournament – Winding Ridge Golf Course
- Friday night Hog Roast and Cookout
- Saturday CCH Training
- Saturday - Numerous activities available.
- Supplier Hospitality Suite
- Dinner and Auction Saturday Night (Get your auction items gathered up)
- Other Events still being developed

Program Topics:

- Bed Bugs – What We Know – Tim Gibb
- Regulatory Update – State Chemist
- The Changing Environment of Perimeter IPM – Scott Robbins

Who's Invited:

- Owners
- Managers
- Technicians
- Families

DEADLINE FOR ROOM RESERVATIONS == JUNE 12, 2012

Call 1-800-315-1906

DEADLINE FOR MEETING REGISTRATION == JUNE 12, 2012

REGISTRATION FORM IS AVAILABLE ON PAGE 13



E-MAIL TRACKER PROGRESS

By now, I suspect everyone is familiar with snopes.com, Comand/or.truthorfiction.Com for determining whether information received via email is just that: true/false or fact/fiction. Both are excellent sites.

Advice from snopes.com VERY IMPORTANT!!

Any time you see an email that says "forward this on to '10' (or however many) of your friends" "sign this petition", or "you'll get bad luck" or "you'll get good luck" or "you'll see something funny on your screen after you send it" or whatever – it almost always has an email tracker program attached that tracks the cookies and emails of those folks you forward to. The host sender is getting a copy each time it gets forwarded and then is able to get lists of 'active' email addresses to use in SPAM emails or sell to other Spammers. Even when you get emails that demand you send the email on if you're not ashamed of God/Jesus---- that is email tracking, and they are playing on our conscience. These people don't care how they get your email addresses – just as long as they get them. Also, emails that talk about a missing child or a child with an incurable disease "how would you feel if that was your child" – email tracking. Ignore them and don't participate!

Almost all emails that ask you to add your name and forward on to others are similar to that mass letter years ago that asked people to send business cards to the little kid in Florida who wanted to break the Guinness Book of Records for the most cards. All it was, and all any of this type of email is, is a way to get names and 'cookie' tracking information for telemarketers and Spammers – to validate active email accounts for their own profitable purposes.

Do yourself a favor and STOP adding your name(S) to those types of listings regardless how inviting they might sound! Or make you feel guilty if you don't! It's all about getting email addresses and nothing more.

You may think you are supporting a GREAT cause, but you are NOT!

Instead, you will be getting tons of junk mail later and very possibly a virus attached! Plus, we are helping the Spammers get rich! Let's not make it easy for them! ALSO; EMAIL petitions are NOT acceptable to Congress or any other organization – i.e. Social Security, etc. To be acceptable, petitions must have a "signed signature" and full address of the person signing the petition, so this is a waste of time and you are just helping the email trackers.

**Annual Dues Time
Please Remit Your Dues
For Fiscal Year
July 1, 2012-June 30, 2013
See Page 14**

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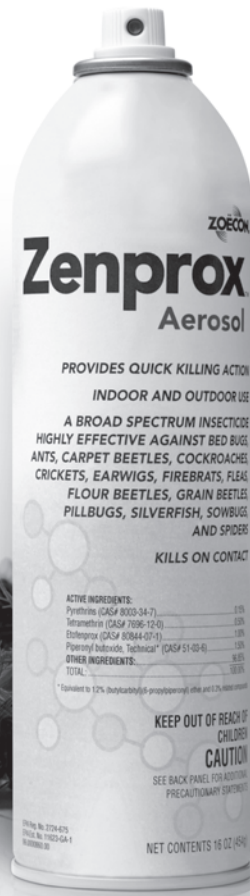
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COMMENSAL RODENT CONTROL IN BRITISH FOOD MANUFACTURING SITES*

The existence of commensal rodent populations in food manufacturing sites is now always considered unacceptable because of the high risk of damage to stock, equipment, and fabric of the building. In order to ensure consistent standards, the retailers' codes of practice specifically direct the manufacturers and their pest control contractors in the way rodents should be managed. These, to some extent dictate some of the methods that should be used. This is understandable and has evolved because of the poor standards delivered by some pest control contractors. Whilst there is value in dictating procedures, no set of rules is universally applicable to all situations and some of the restrictions actually make the job of the pest controller more difficult, and may in fact increase the risk of rodent damage to stock and buildings. What I have found is that although some of the principles are sound, the 'rules' imposed by these specifications sometimes now seem to produce services that are good at complying with the rules, but poor at controlling mice or other pests. Some service companies are more concerned with looking the part and ticking all the boxes rather than pest control efficacy. Sadly they often get away with this because many of the third party auditors either do not have the time or the expertise to identify infestations that are sometimes carefully hidden prior to audits, or go unreported because of the poor quality of inspections.

The control of rodents in buildings should not be left to the pest controller alone; good pest control is primarily exercised by good proofing and exclusion. By keeping pests out they do not have to be killed and cannot cause any damage, contamination or disease. The best way to keep mice out is to maintain the integrity of the external building skin, good door management and rigorous quality control at supplier's sites. If they do get in, further control can be achieved by restricting their ability to thrive through denying them food, water, and breeding sites. Site management should have their own systems in place to identify hygiene and proofing faults. The role of the pest controller should be in support of this rather than a replacement. Lethal pest control solutions should be the last resort should these fail. Suitable 'control' techniques should be in place to remove the casual intruder that gets past these first two lines of defense.

Monitor or control?

Using non-toxic bait is now a standard across the industry where the frequency of inspection is roughly every six weeks. This is almost pointless and mostly ineffective because it gives the mouse significant opportunities to feed, breed and become well established. When control

techniques are eventually applied it is almost always too late, and there is already significant risk of damage and product contamination. The increased incidence of behaviorally resistant mice make this technique even more risky as introducing new bait or trapping boxes in replacement of these non-toxic boxes is inevitably going to generate a significant phobic response by the mouse, making control even more difficult.

Lethal control systems are clearly better as one wants to prevent them wandering around for weeks until the next inspection occurs. This might be toxic bait, dusts or gels, break back traps, electrocuting or gassing devices. The use of live traps is not suitable for a permanent system because of the legal restrictions and industry codes of practice requiring a daily inspection.

Most food manufacturing sites do not have mice resident populations and so any system should be designed to deal with the occasional intruder, e.g. permanently sited toxic bait boxes. Interceptor baits are best placed where they are most likely to be encountered; this is going to be where doors are most often open, where door control is most often poor and where stock is moved into or out of the building. This is almost always the warehouse and storage areas and where a lethal control system is most required. The move away from toxic bait in warehouses is unwise without replacing them with something as effective or better.

Non-toxic monitoring in warehouse areas of food factories is unsafe as there are too many favorable conditions for mice to become established and avoid any subsequently located pest control techniques.

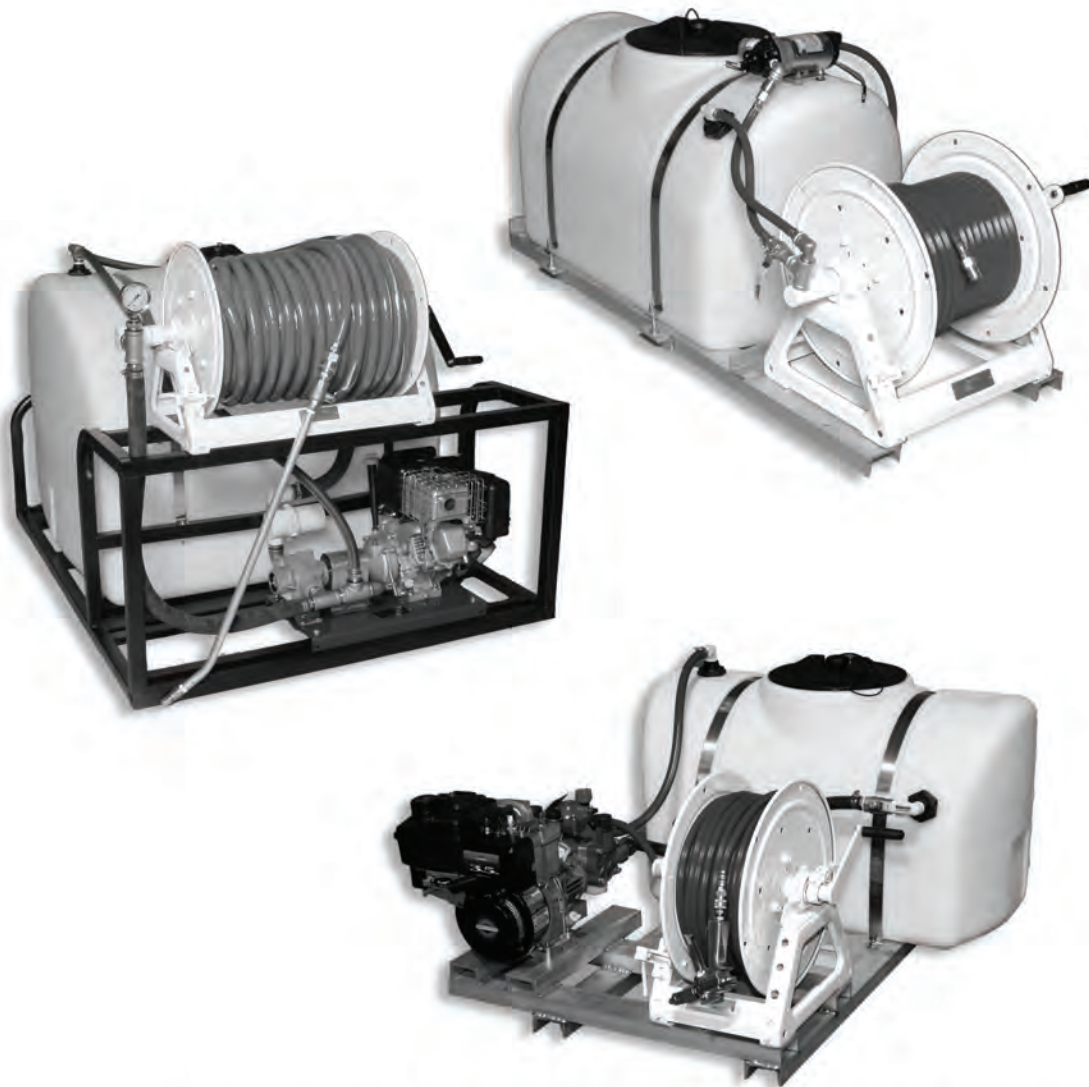
Some specifications require the use of non-toxic monitoring. The use of non-toxic monitoring alone is inappropriate for rodent control and always increases the risk of damage to stock and product contamination when compared with the use of a properly sited control system. However, non-toxic need not mean non-lethal. The use of trapping boxes with lethal devices such as break back traps, CO₂ gas, electrocution or the more recently developed strangulation device all avoid the use of toxic bait but kill the rodent. I have significant experience in the use of non-toxic lethal systems and have found them to be highly effective in managing casual intruder or foraging mice. They are unsuitable for riddance programs where sites have large scale, deep seated infestations. These can only be dealt with by careful and appropriate use of toxic bait, but often using trapping systems as adjuncts.

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Commensal - Continued from page 8

The trapping systems available to all pest control contractors for permanent non-toxic control programs of casual intruder mice are break back traps, electrocuting boxes, and in England only, the Nooski strangulating trap. The CO₂ gassing box is currently only available to one pest control company. The most common and most cost effective lethal trapping system is the break back trap in a trapping box.

Often the first objection to using such a device is that break back traps need to be checked every day. This is incorrect. In essence there is very little in legislation about the use of traps for rodent control. In short, break back traps do not have to be checked at all for animal welfare purposes. There is clearly a practical reason for checking at a reasonable frequency to remove any bodies and to ensure the trap remains functional. All of the above devices might be considered humane; they all have limitations but if used properly all fall within the European guidelines governing the humane trapping of mammals. Pest control shouldn't be, but unfortunately has become, more of a commodity to be purchased at the lower rate. Under these conditions cost to the food manufacturer becomes a governing factor and so the cost of solutions also becomes an important factor in efficacy. From a commercial perspective the break back traps, being much cheaper than any of the other units, are much more likely to be used in numbers that actually work at keeping intruder mice under control than the more expensive electrocuting or gassing boxes.

Is a trapping system for control of casual intruder mice better than one based on toxic bait? If a mouse will go into a box then a lethal trapping box is generally better than a bait box as it immediately removes the rodent from the area. It confines the body to the tunnel or box, it prevents the possibility of a rodent wandering around a factory for a week or so whilst the poison takes effect, doing whatever damage it can and leaving up to 80 droppings a day. The corpse will, in most cases, be removed by the pest controller during the next routine visit before any colonizing blowflies have time to reach maturity. If the mouse is found in a box immediately next to an open door it is clear that it has wandered. The trap's advantage is that by immediately killing it and retaining the body, numerous follow ups are unnecessary.

Conversely, reliance on a solely toxic bait system means that an intruder mouse may (or may not) eat the bait. If so it will then continue to forage for up to five days causing damage and contamination. Once it finally succumbs to the rodenticide there is no control over where it dies and where it might end up. After a couple of days the corpse is also prone to infestation by blowflies which, because most mouse corpses are never found,

will escape into the factory environment. In my experience I have found the most effective preventative systems are a 'belt and braces' approach using both techniques.

Buildings with a resident population cannot be cleared quickly with traps as the rodents are most likely to be resident in wall, floor or ceiling voids where traps are unlikely to be set in sufficient quantities to do the job quickly. It is possible with complex buildings that the rate of reproduction keeps pace with the rate of trapping, and elimination is impossible. It is important for the contractor to carry out a proper inspection and determine what the most appropriate control method is in the light of local circumstances and the risk to product.

Rodents living in pallets or stacks are impervious to almost any pest control technique except physical breakdown of each pallet, or fumigation. In such circumstances the 'divide and conquer' technique of breaking stacks down one at a time and using a product like Mobe Moat (a glue roll form Barretine) to isolate/quarantine stacks that have already been cleared is a practical alternative where modest volumes are concerned.

There are populations of mice that are behaviorally resistant to bait boxes and demonstrate strong phobic responses to traps, bait trays and glue boards. These may also show aversion or inability to digest carbohydrates, the main constituent of all commercial baits. Control of these mice is a specialized skill. Those, like us, who have developed this skill are naturally reluctant to share this knowledge as it provides a commercial advantage over competitors.

The reduction of the service to box checking inevitably misses the key indicators of a resident population which requires time and expertise to identify and then design the most suitable control strategy. Simply adding a few extra bait boxes won't do the trick, particularly if the mice are avoiding the bait boxes or traps in the first place. Unfortunately this time and expertise comes with a price which can make the contractor seem uncompetitive, however the very real costs of a product recall make these additional costs seem miniscule and it is worth food manufacturers considering expertise and efficacy in assessing the service offering rather than the lowest price.

In conclusion, some of the restrictions on how pesticides should be used need to be challenged where there is behavioral resistance. Non-tox as a monitoring method is redundant and should now be considered an unsafe method of monitoring unless boxes are checked daily. Lethal trapping systems are a suitable replacement but should be monitored at least every six weeks, more frequently is not generally necessary if boxes are placed in sufficient quantities and suitable locations. The withdrawal of contact preparations and concentrates is going

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Commensal - Continued from page 10

to make pest control more difficult where mice show clear food preferences that don't involve cereal products.

Overall the reduction of pest control to a lowest price commodity is creating rodent problems as technicians are encouraged to service boxes as fast as possible rather than stop, look properly and think. The tendency seems now to be 'slaves to the specification', encouraging compliance with the rules but poor pest control. Overall, food manufacturers need more time and expertise from their contractors rather than barcodes and boxes.

*Written by Michael DS Ayers, Precision Pest Management, Professional Pest Controller, March 2012.

NEW MEMBERS

Niles Wildlife Pest Control; Randy Hushower; 58300 Indian Lake Road; Dowagiac, MI 49047; Phone: 269-684-1016; email: rrhush@gmail.com

Walker and Associates Insurance; Kristen Wilson; 7364 E. Washington Street, Indianapolis, IN 46219; Phone: 317-353-8000; cell: 317-910-9102; fax: 317-351-7145; email: Kristen@walkeragcy.com

NOMINATIONS FOR OFFICE

July 1, 2012-June 30, 2013

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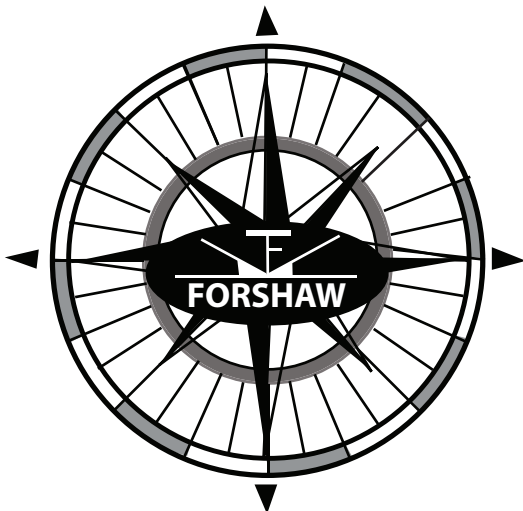
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Secretary: Gary Bennett

Director (At Large): Scott Glaze

Director (South): John Walton

Resources for PMPs



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IPMA ONLINE

JUNE 2012- Second issue of the IPMA Newsletter online --- we welcome comments and suggestions. Please keep us informed by emailing changes to gbenett@purdue.edu or phoning 765-494-4564. With member's input we continue to make improvements and additions to the site.

IPMA web address: <http://www.ipma.us>
Newsletter direct site: <http://extension.entm.purdue.edu/IPMA/newsletter/>



NEWS FROM NATIONAL

EPA Revises Its Rodenticide Risk Mitigation Decision for Professional Use Products

NPMA and the Association of Structural Pest Control Regulatory Officials (ASPCRO) today received notice from the U.S. Environmental Protection Agency (EPA) of notable changes to rodenticide labels, revisions NPMA and ASPCRO worked on with the Agency officials in the last several months and that provide additional, much needed flexibility for PMPs to manage rodent infestations. Specifically, the new label language:

- Extends the distance from which rodenticides can be placed from buildings from 50 feet to 100 feet and replace the word "building" with the term "man-made structures". (The phrase "man-made structures" is broadly defined, however, it expressly excludes "fence and perimeter baiting, beyond 100 feet from a structure....").
- Permits the use of first-generation anticoagulant and non-anticoagulant professional products to treat burrows that are further than 100 feet from buildings and man-made structures.

In a March 20th letter, EPA provided additional clarification relating to the use of first and second-generation anticoagulants and non-anticoagulants applied to rodent burrows. In the letter, EPA specifies that the following language should appear on the revised labels:

- On all second-generation anticoagulant products labeled for application in rodent burrows: "This product may only be applied to active burrows to control Norway rats and roof rats within 100 feet of buildings and man-made structures constructed in a manner so as to be vulnerable to commensal rodent invasions and/or to harboring or attracting rodent infestations provided that infestations of these rodents have been confirmed. Efforts should be made to remove food trash, garbage, clutter, and debris." "Bait must be placed no less than 6 inches into active Norway/roof rat burrows. Do not broadcast bait."
- On all first-generation anticoagulants and non-anticoagulants professional and agricultural products labeled for application in rodent burrows: "This product may be applied to active rodent burrows to control Norway rats, and roof rats within or beyond 100 feet of buildings and man-made structures, provided that infestations of these rodents have been confirmed." "Bait must be placed no less than 6 inches into active Norway/roof rat burrows. Do not broadcast bait." "Because Norway/roof rat infestations may occur in areas farther than 100 feet from buildings and man-made structures

when the rodents have ample supplies of food and cover, efforts should be made to remove food trash, garbage, clutter, and debris."

NPMA cautions PMPs that this language will appear on products in the future but that products currently being used must be used in accordance with their current labeling. With the potential for three different labels to be on rodenticide packaging, it is essential that you advise your technicians to look at the product and confirm that they are using the rodenticide according to the label on that container!

NPMA Working with HUD to Renew the NPMA-99 Forms

NPMA has been working with the Department of Housing and Urban Development (HUD) to renew the NPMA-99 forms* since they expired on February 29, 2012. HUD published a notice in the Federal Register in October 2011 regarding the renewal process and we are now awaiting approval from the Office of Management and Budget (OMB), who will provide a new form number and expiration date. We have been assured that OMB approval will take place in the very near future and that in the meantime, HUD will continue to accept expired NPMA 99a and b forms in the meantime if a bank or lender has questions about the use of "expired" forms, they may contact Kenneth Walker at HUD at (202)402-2073.

*The NPMA 99a form is completed by the builder following a preconstruction termiticide application documenting warranty information provided by the builder. The NPMA 99b forms are completed by pest management firms to document preconstruction termiticide applications.



PRE-REGISTRATION SUMMER MEETING

Indianapolis, Indiana – Hilton Downtown
JULY 13-15, 2012

For planning purposes (guarantees must be given), we must use a pre-registration system again this year. Please submit your pre-registration and the appropriate fees prior to June 12, 2012 to: Indiana Pest Management Association; c/o G. W. Bennett; Department of Entomology; Smith Hall, 901 W. State Street; Purdue University; West Lafayette, IN 47907-2054

Company Name _____

Name _____

Address _____ City _____ State _____ Zip _____

Spouse's Name _____ Children's Names _____

Name of others in your party _____

Table with 3 columns: FEES, #Attending, Fees. Rows include Registration (\$120/office, \$140 after 6-12-12), Indianapolis Zoo Tickets, Golf Outing Friday, Friday night - Hog Roast and cookout, Saturday night - Dinner & Auction, and TOTAL AMOUNT REMITTED*.

*Suppliers should add \$100.00 to this amount if they care to help sponsor the hospitality suite. Please note that suppliers have decided not to exhibit this year, but will be recognized on the program and in the hospitality suite.

NEW OPPORTUNITY FOR SUPPLIERS - If you'd like to help sponsor the golf outing, please add an additional \$50.00 to your registration.

FOR ROOM RESERVATIONS, CALL 1-800-315-1906, and mention you are with the Indiana Pest Management Association. Our room rate is \$115/night, and this rate applies to Thursday, Friday and Saturday nights. (Golfers: We have an 11 a.m. tee time, so you may want to come in Thursday). Room reservations must be made before June 12, 2012, to receive our group rate.

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MEMBERSHIP DUES INVOICE
FOR IPMA/NPMA JOINT MEMBERSHIP
FOR JULY 1, 2012 THROUGH JUNE 30, 2013

Joint Membership Dues Breakdown:

Table with 5 columns: DUES CLASS, ANNUAL SALES VOLUME, NPMA DUES, STATE DUES, TOTAL DUES OWED. Rows A through J showing sales volume ranges and corresponding dues amounts.

Joint Membership Dues Amount for 2012-2013

(See Total Dues Owed column above) \$ _____

Dues for those choosing State Membership only \$75.00 \$ _____

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TOTAL \$ _____

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DELUSORY PARASITOSIS

(Partial story- to be continued in next issue)

The caller says that she is being attacked by invisible mites. The attack has been going on for months and she has visited a half dozen physicians, but none was able to help her. Two prescribed Kwell lotion (See Glossary), but the sensations persist. She has treated her skin with alcohol, vinegar, Lysol, bleach, kerosene, and various home remedies. She has boiled her bed linens and clothing daily. She can describe the life cycle of the pest and has been able to extract specimens from some of the wounds. She offers to send you samples. She says the irritation is driving her crazy and you are her last hope.

How do you respond?

At some time nearly everyone experiences a sensation of something burrowing in, crawling on, or pricking the skin (Potter 1992). These tactile perceptions may be caused by a variety of causes, because different stimuli evoke the same limited range of neurocutaneous responses. The conviction that insects are crawling on, biting, or burrowing in the skin, when no arthropod is involved, is termed "delusory parasitosis." The medical profession defines "delusion" as referring to "a fixed belief" unswayed by evidence to the contrary. By comparison, the term "illusion" refers to situations in which the individual perceives stimuli as produced by arthropods but acknowledges other explanations once they are demonstrated. Although there are some problems with terminology, delusory parasitosis is the phrase used most commonly in the literature, so will be perpetuated here. These cases typically are bewildering to pest control operators, professional entomologists, and medical professionals, who shuffle these sufferers back and forth. Physicians examining the patient determine that the lesions were produced by an insect and recommend calling a pest control company to have the patient's house treated. Conscientious pest control operators perform an inspection and are unable to locate a pest, so refuse to make an insecticide application (St. Aubin 1981).

Description of Delusory Parasitosis

Descriptions of delusory parasitosis sufferers are remarkably consistent (Koblenzer 1993) with common attributes (Table 1). The most common symptoms include paresthesia, pruritus, (See Glossary), and a biting sensation (Hinkle 1998).

The classic delusory parasitosis case remains that of J. R. Traver (1951), a zoologist who published her personal account of 17 years of dealing with an "infestation" in her own body; the following descriptions correspond to common delusory parasitosis attributes listed in Table 1. According to Poorbaugh (1993), (A) she was 40 years old at onset of symptoms and suffered with them for another 40 years until her death at age 80. (B) She was

female. (C) She used pesticides both dangerously and repeatedly, applied home remedies to her body, and mutilated her body by "digging out" mites with fingernails. (D) she collected material from her scalp and body and mailed sample to parasitologists for examination. (E) She provided extensive descriptions of the mites and their behavior. (H) She visited numerous physicians, including a dermatologist, an oculist, a neurologist, as well as the family physician; "little help"was forthcoming from this source." (I) Duration of the infestation was 17 years at time of publication. (J) Sensations were described as "itching," "crawling, scratching and biting." (K) She was referred for psychological evaluation: "the patient, however, succeeded in convincing the neurologist that she had no need of his services," and she published a 25 page treatise to prove that she was not crazy. (L) "To date, no treatment employed against the mite has been completely effective." (M) The delusion also was shared by two other family members.

Traver's (1951) article provides notable documentation of the effort expended extracting and "identifying" specimens. In addition to the above characteristics common to delusory parasitosis sufferers, Traver described the pests as primarily active at night and identified animals as

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the likely infestation source, other commonalities (Hinkle 1998). Reflecting the often cited bias of delusory parasitosis cases toward women (Trabert 1995, White 1997), 22 (65%) of the past 34 delusory parasitosis cases I have had were female and 12 (35%) were male. Of these, three pairs involved folie a deux, the phenomenon occurring in up to one-third of cases (Koblentz 1993), in which close associates experience the same delusion.

Although the prevalence of delusory parasitosis may be considered low by the medical profession (Driscoll et al. 1993), the pest control industry and medical entomologists encounter it all too frequently (Schrut and Waldron 1963, Kushon et al. 1993) Of the 21 cooperative extension specialists providing estimates of their delusory parasitosis cases, the average number was 17 per year (range, 4-45), occupying 2.4% of these specialists' time (Hinkle 1998).

Many delusory parasitosis sufferers who come to entomologists already have received a prescription for Kwell (lindane) from a physician, implying that scabies had been diagnosed. However, scabies is the default diagnosis for any idiopathic dermatitis or pruritus (Pariser and Pariser 1987). Frequently, the placebo effect of such medications will effect temporary remission of the symptoms, but they almost invariably recur (St. Aubin 1981). Typically, the cause is not any insect or other arthropod but, instead, is some physical (Blum and Katz 1990, Potter 1992), physiological, or psychological stimulus. Victims attempt to correlate what they see, or think they see, with their physical perceptions. Thus, sufferers intently examine the area experiencing the sensation, digging out blackheads, hair follicles, and other normal skin components to account for the sensation (Lynch 1993). Descriptions by some delusory parasitosis sufferers of their pests are listed in Table 2.

Table 1. Common attributes of DP sufferers*

- A. Most common in older people (Lyell 1983, Webb 1993, Trabert 1995, Goddard 1995, White 1997)
- B. Disproportionately female (St. Aubin 1981, Lyell 1983, Webb 1993, Trabert 1995)
- C. Exhibit behaviors such as:
 - 1. Quitting their jobs (Monk and Rao 1994, Goddard 1995)
 - 2. Burn/destroy furniture (St. Aubin 1981, Lyell 1983, Gieler and Knoll 1990, Goddard 1995)
 - 3. Abandon homes (Waldron 1962, Lyell 1983, Driscoll et al. 1993, Goddard 1995)
 - 4. Obsessive laundering/dry cleaning (St. Aubin 1981, Lyell 1983) boil clothing and bed linens (Ebeling 1978)
 - 5. Use pesticides dangerously/repeatedly (Lyell 1983,

Goddard 1995, White 1997); repeated applications of insecticides to body (Monk and Rao 1994); have used Kwell®, Elimite® (Webb 1993)

- 6. Mutilate body attempting to remove offending vermin (St. Aubin 1981, Lyell 1983, Zanol et al. 1998)
- 7. Use home remedies (St. Aubin 1981, Lynch 1993):
 - a. Gasoline (St. Aubin 1981, Koblentz 1993, Monk and Rao 1994)
 - b. Kerosene (St. Aubin 1981, Lynch 1993)
 - c. Other solvents (St. Aubin 1981, Lynch 1993)
 - d. Harsh cleaning compounds (St. Aubin 1981, Lyell 1983)
- D. Provide skin scrapings, bits of debris (in paper, small jars) (Pomerantz 1959, Waldron 1962, Lyell 1983, Goddard 1995) "One characteristic sign in delusory parasitosis is the complainant's eagerness to provide samples of their alleged parasites in small containers" (May and Terpenning 1991). Samples provided in adhesive tape, plastic bags, or vacuum bags (Webb 1993, Koblentz 1993, White 1997) "there are millions of them" – yet specimen cannot be obtained.
- E. Can provide extensive, elaborate, involved descriptions of the pests, their life cycle, and behaviors (Lynch 1993, Monk and Rao 1994, Zanol et al. 1998)
- F. Social isolation (Koblentz 1993, Trabert 1995), self-employed (Lyell 1983), abandon family to avoid infesting them (Lynch 1993, Monk and Rao 1994)
- G. Emotional trauma such as job loss, divorce/separation (Lyell 1983, Grace and Wood 1987, Webb 1993, Lynch 1993)
- H. Have seen numerous physicians, all to no avail (Driscoll et al. 1993, Lyell 1983)
- I. Mean duration of delusion was 3.0+4.6 years (median, 1 year) (Trabert 1995); "Years of suffering" (Pomerantz 1959, Driscoll et al. 1993), 12-year history (Monk and Rao 1994), 40 years (Poorbaugh 1993)
- J. Complain of "itching, crawling, pinprick biting sensations" (White 1997), "formication" (Koo and Gambla 1996)
- K. Reject possibility of psychological or other explanations (Trabert 1995) "I'm not crazy." "I am not imagining this." Vehemence indicative of LDP (Zanol et al. 1998). "Exceptional strength of conviction regarding infestation" (Lynch 1993) almost diagnostic for DP (Webb 1993)
- L. Express desperation, "you are my last hope" (Nutting and Beeman 1983, Lynch 1993)
- M. Delusion eventually shared by another family member (St. Aubin 1981) in up to 1/3 of cases (Koblentz 1993)

*Citations are illustrative of some of the published descriptions.

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GLOSSARY

Delusion: a false belief that persists despite the facts.

Dermatitis: inflammation of the skin.

Elimite: a permethrin cream used to treat for scabies and lice.

Erythema: abnormal redness of the skin.

Formication: the sensation of ants crawling on the skin.

Idiopathic: of unknown cause.

Illusion: misinterpretation of perception of something objectively existing.

Kwell: prescription lindane formulations used in scabies (cream) and lice (shampoo) treatment.

Paresthesia: a sensation of pricking, tingling, or creeping on the skin.

Pruritus: itching.

Scarification: wound or cut marks from scratching.

Urticaria: stinging or burning itch.

Table 2. DP sufferers' descriptions of what is infesting them

1. Black and white, but change colors (Waldron 1962, St. Aubin 1981, Monk and Rao 1994)
2. Jump or fly (Waldron 1962, St. Aubin 1981, Monk and Rao 1994)
3. Have eight little legs and a small sucker (Gieler and Knoll 1990)
4. Half moon shape, like the end of a fingernail (Lyell 1983, Hinkle 1998)
5. Moth-like creatures (Monk and Rao 1994, Hinkle 1998)
6. Waxy looking fuzz balls (Schrut and Waldron 1963, Hinkle 1998)
7. Granules about the size of a grain of salt (Schrut and Waldron 1963, de Leon et al. 1992, Hinkle 1998)
8. Long hairs that move independently (Hinkle 1998)
9. Tiny white worm with a brown bulb on its head (Hinkle 1998)
10. Worm-like coating around the hair root, with a black bulb attached (Hinkle 1998)
11. Greenish-grey cigar shaped things (Hinkle 1998)
12. Infest inanimate objects: automobiles, furniture, clothing, rugs (Grace and Wood 1987)

Physical Causes

Physical causes include any external stimulus that yields a sensation of paresthesia, pruritus, urticaria, or similar irritation. Blum and Katz (1990) summarized potential physical causes that could be attributed to delusory parasitosis symptoms. These included static electricity, chemicals such as some pyrethroid insecticides, or mechanical irritants such as fiberglass filaments and paper shards. Volatile chemicals from manufactured

building materials such as paneling and carpeting can produce itching and stinging sensations (Jaakkola et al. 1994). There are many non-arthropod agents capable of producing delusory parasitosis symptoms; under these circumstances an industrial hygienist can survey and make recommendations (Potter 1992).

Dry, sensitive skin is particularly susceptible to these sensations. Particles impinging on the skin as a result of static electricity may be perceived as "bites" or "stings." This is particularly true of materials with sharp projections such as paper, metal, and fiberglass fragments. Carpet fibers also may be attracted to lower portions of the body because of static electricity, and these too can feel like pinpricks. Electronic equipment generates an electrostatic charge, so office equipment and computer components can produce sufficient attraction to various materials to be irritating to susceptible individuals. Most persons experiencing itching will rub or scratch briefly and absentmindedly without consciously noticing the sensation. Others, however, focus on the itch until it occupies all of their attention. Thus, delusory parasitosis sufferers become fixated on the perceived irritation. Some contactants producing paresthesia are discussed by Fisher (1995) and include solvents, fabrics, and fabric finishes. Two particularly unusual situations are when exposure to either water (aquagenic pruritus) or air (atmokinesis) produces pruritus or paresthesia in susceptible individuals (Bernhard 1989, Bircher 1990).

Demonstration of scarification is indicative only of scratching; it proves nothing about the stimulus causing the scratching. Self-excoriation is a common feature of delusory parasitosis, despite the individuals' protestations that they do not scratch (Marschall et al. 1991).

Scratching may produce papular eruptions. Any repeated skin irritation produces a friction blister. Repeated rubbing of an area often produces a bleb (small blister) which, when ruptured, yields an open sore that may become infected. Once the sore begins oozing plasma and a scab forms, hairs and cloth fibers become entrapped in the sticky fluid. These flecks are dislodged and called mites or insects because they look like they have "antennae" and "legs". Hair follicles often are pulled out; the follicle accompanied by the associated sebaceous gland looks like a worm.

Some people claim they see the "creatures" jump (Waldron 1962). This is probably caused by static electricity or magnetic charges of tiny particles (Ebeling 1978). Some people see dust and other motes floating in a shaft of sunlight and claim they are tiny flying creatures. Even the random motion of particles floating on water is perceived as deliberate movement.

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Physiological Causes

Delusory parasitosis may result from physiological causes such as allergies, nutritional deficiencies, drug reactions, and other medical conditions. Allergies can include inhalant allergies, ingestant reactions, and contact dermatitis. Nutritional deficiencies or overdoses may produce both systemic and dermal reactions (Eliason et al. 1997). Drug reactions include responses to single drugs as well as multiple drug interactions.

Medical Conditions. Medical literature from the past 5 years shows more than 100 different causes of itching including infection with bacteria, fungi, viruses, nematodes, and various other pathogens and parasites (Phillips 1992). Pruritus, paresthesia, and urticaria are common side effects of many infectious and noninfectious diseases, as well as numerous other medical conditions (Blum and Katz 1990). Those listed in Table 3 are not to be taken as explanations for all delusory parasitosis cases, merely as an indication of the range of medical conditions with manifestations that reflect typical delusory parasitosis symptoms.

Age-related neurological degenerative changes can produce phantom limb-like sensations, including pruritus and urticaria, in some elderly patients (Bernhard 1992). This phenomenon may explain the disproportionate number of delusory parasitosis cases among the elderly (Trabert 1995).

Allergies are one common cause of pruritus, erythema, and urticaria. Food and skin allergies may produce these symptoms. Some common food allergies include those to milk, egg white, soybean, peanut, chocolate, wheat, food additives, mangoes, oranges, nuts, and pineapple (Kabir et al. 1993, McGowan and Gibney 1993, Levy et al. 1994). Atopic dermatitis can be caused by skin allergies to such materials as latex, textiles, soap, detergent, fabric softeners, shampoos, lotions, insect repellents, deodorants, and any other substance that contacts the skin (Simion et al. 1995). Most contain fragrances, colorants, stabilizers, emulsifiers, preservatives, and other components that may sensitize susceptible individuals (Phillips 1992).

Numerous medical conditions have itching or other skin irritations as symptoms emphasizing the importance of not dismissing such symptoms as "just delusory parasitosis." Prodromal sensations should be investigated medically as indicators of potentially life-threatening conditions (Pariser and Pariser 1987). Nutritional deficiencies can produce itching as can high doses of many minerals and fat-soluble vitamins (Phillips 1992, Zanol et al. 1998).

Medications. Paresthesia, erythema, urticaria, pruritus, and hives are listed as potential side effects of most prescription and over-the-counter medications (Table 4). Incidence of these symptoms may be increased by interac-

tion of two or more of these drugs, is particularly common in the elderly (Doucet et al. 1996). Drug-induced delusory parasitosis has been demonstrated definitively in only a few cases (Aizenberg et al. 1991). Recreational drugs such as cocaine and methamphetamine particularly are prone to produce the sensation of insects crawling on or burrowing in the skin (Siegel 1978, Elpern 1988).

The 50 most commonly prescribed drugs in the United States list at least one symptom commonly attributed to delusory parasitosis (Table 4). These include erythema (56%), paresthesia (56%), pruritus (64%), urticaria (66%), and rash (92%). Although these side effects may be rare, the fact that these data are based on more than 2 billion prescriptions indicates that these drugs are being used extensively and that an increasing proportion of patients will experience these ancillary reactions and possibly attribute them to unseen "bugs".

Drugs disproportionately prescribed for the elderly such as those for heart conditions, glaucoma, osteoporosis, impotence, and arthritis particularly may be predisposed to cause these side effects (May and Terpenning 1991). These drugs include insulin, estrogen, arthritis medications, hypertension drugs, beta blockers, MAO inhibitors, and antidepressants.

Several factors contribute to the predisposition of elderly people to experience adverse drug effects: the elderly take multiple medications simultaneously (prescription and over-the-counter), frequently receive prescriptions from more than one doctor, more frequently are confused by instructions or forget how often they have medicated themselves and drug pharmacokinetics vary by patient age. Persons over 65 years old represent only 12% of the population but receive more than 30% of all prescription drugs (Jones 1997). Older adults average three prescription medications per day, 15 different prescriptions per year, and consume 70% of all over-the-counter drugs. Approximately 25% of their hospital admissions are a result of incorrect prescription drug usage. One in five Americans over the age of 60 regularly takes pain medication and one in four who does so experiences side effects caused by the medication; one in ten is hospitalized as a result (Chrischilles et al. 1992).

Herbal remedies and nutritional supplements may produce untoward side effects including pruritus and urticaria (Huxtable 1990, Cetaruk and Aaron 1994). Additionally, they may interfere with or potentiate prescription and over-the-counter medications, resulting in unanticipated effects.

Although this is by no means an exhaustive review of medication side effects, it does show that symptoms experienced by delusory parasitosis sufferers may have valid physiological causes, either in medical conditions or in the

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drugs prescribed for their treatment. Psychologists and dermatologists have noted that organic causes must be excluded before a diagnosis of psychogenic pruritus can be made (Freyne and Wrigley 1994, Gupta 1995).

Because of the numerous potential physiological causes of pruritus, urticaria, and paresthesia, it is understandable that physicians often do not attempt to treat underlying causes but, instead, prescribe palliatives or advise the patient to pursue entomological possibilities (which fits with the patient's inclinations, anyway). In these days of managed care, physicians have neither the time nor incentive to do a thorough medical workup or attempt to determine causation of obscure and non-life-threatening symptoms.

In teenagers and young adults, recreational drug use may be a more likely explanation for delusory parasitosis symptoms (Zanol et al. 1998). Drugs such as cocaine and methamphetamine particularly are noted for producing "formication," or the sensation of ants crawling in or on the skin (Ellinwood 1969, Siegel 1978, Elpern 1988, Marschall et al. 1991). Cocaine use is admitted by 19% of all 18-25 year olds and 26% of 26-34 year olds; hallucinogens such as methamphetamines have been used by 12% of 18-25 year olds and 16% of 26-34 year olds (SAMHSA 1996). Ekblom's (1938) syndrome caused by drug use was featured in an episode of "The X Files" (Hinkle 1998), thus assuming its place in popular culture.

See Tables on Page 20

Psychological Causes

Scratching is a common primate displacement activity in response to tension, anxiety, and stress (Schino et al. 1996). There are strong socio-psychological implications of self-grooming, reflecting group status, individual self-image, and psychological well-being. Touching, scratching, and rubbing are viewed as forms of self-assurance, consolation, and validation of the psyche (Schino et al. 1991, Troisi et al. 1991). This dynamic is displayed in meetings, in one-on-one confrontations between individuals, and in other human interactions.

Symptoms of anxiety, stress, tension, depression, and tiredness can manifest themselves as itching and tingling (Gieler and Knoll 1990, Gupta et al. 1994, Gupta 1995, Woodruff et al. 1997). Although it is generally recognized that stress can induce headaches, high blood pressure, acne, heart attacks, and ulcers, delusory parasitosis sufferers are reluctant to acknowledge that their dermatologic symptoms could be related to stress or depression.

Social isolation is one predisposing feature of delusory parasitosis. Some delusory parasitosis cases involve lonely people who need interactions with other humans (May and Terpenning 1991). Elderly people who live alone, seldom get out, seldom have visitors, or feel they have no purpose in life are prone to fixating on themselves and their health (Bernhard 1992, Freyne and Wrigley 1994). For many of these people, the illness itself is an important security factor (Laihininen 1991), allowing them to seek attention and evoke sympathy.

Bell's Syndrome (the Power of Suggestion). Often, the fact that several people are experiencing the same sensation is used to demonstrate that it is not psychological. Scratching behavior is an atavistic primate response with high psychological contagiousness (de Leon et al. 1992). Thus situations in which more than one person is complaining of the symptoms are not necessarily evidence that there is a common cause behind the symptoms.

Entomologists who deal with delusory parasitosis cases will attest to this. Despite finding no arthropod in any samples provided, there is a strong urge to take a shower following these examinations. Consciously, one realizes that there is no infestation, but subconsciously one often feels the "creepy-crawlies" after looking through the victim's scurf. In fact, the author, while reading through the delusory parasitosis literature in preparing this article, found herself absent-mindedly scratching; before the manuscript was completed, her arms and legs bore distinct scarification.

Because of the length of the article, *Delusory Parasitosis*, will be continued in the September 2012 IPMA Newsletter.

**Written by Dr. Nancy Hinkle,
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Table 3. Some Medical Conditions Producing Delusatory Parasitosis Symptoms

Condition	Symptoms				
	urticaria	erythema	paresthesia	pruritus	rash
AIDS ^a	X	X	X	X	-
Anemia ^a	X	X	X	-	X
Autoimmune disease ^a	X	-	-	X	-
Carbon monoxide ^b	X	-	-	X	-
Carcinoma ^a	X	X	X	-	X
Cholestasis ^a	X	-	X	X	-
Cirrhosis ^a	X	-	X	-	-
Depression ^a	-	X	X	-	X
Diabetes mellitus ^a	X	X	X	-	X
Fluoride poisoning ^c	-	X	-	X	X
Heavy metal toxicity ^d	-	X	X	-	X
Hemochromatosis ^a	X	-	X	-	-
Hepatic disease ^a	X	-	X	-	X
Hyperthyroidism ^a	X	X	X	X	X
Hypoglycemia ^c	X	X	-	X	X
Hypothyroidism ^a	X	-	X	-	X
Lupus ^f	X	-	-	X	-
Lymphoma ^g	-	-	X	X	X
Menopause ^h	-	X	X	-	-
Multiple sclerosis ⁱ	-	X	X	-	X
Neoplasia ^a	X	-	-	X	X
Niacin overdose ^j	X	-	X	X	-
Rheumatoid arthritis ^k	X	X	-	X	X
Stress ^a	-	X	X	X	X
Uremia ^a	-	X	X	-	-

^aPhillips 1992.

^bLevit 1995.

^cArrow et. al. 1994.

^dKazantzis 1978.

^eSacerdote 1987.

^fKapadia and Haroon 1996.

^gBlum and Katz 1990.

^hPansini et al. 1994.

ⁱOstermann and Westerberg 1975.

^jLyell 1983.

^kScherbenske et al. 1989.

Footnote for Table 4:

- A=Erythema
- B=Paresthesia
- C=Pruritus
- D=Rash
- E=Urticaria

Table 4. Fifty Most Commonly Prescribed U.S. Drugs and Some Side Effects^a

Brand Name	Generic Name	Drug Type	Side Effects
Trimox, Augmentin	Amoxicillin	antibiotic	A,C,D,E
Premarin, Prempro	Estrogens	estrogen	A,D
Synthroid, Levoxyol	Levothyroxine	thyroid	D,E
Bancap, Lorcet	Hydrocodone/APAP	analgesic	C,D
Prozac	Fluoxetine	antidepressant	A,B,C,D,E
Lanoxin	Digoxin	cardiovascular	D
Prilosec	Omeprazole	ulcer	A,B,C,D,E
Vasotec	Enalapril	hypertension	A,B,C,D,E
Zithromax	Azithromycin	antibiotic	D
Norvasc	Amlodipine	angina	A,B,C,D,E
Zoloft	Sertraline	antidepressant	A,B,C,D,E
Claritin	Loratadine	antihistamine	A,B,C,D,E
Coumadin	Warfarin	thrombolytic	B,D,E
Zocor	Simvastatin	cardiovascular	A,B,C,E
Furosemide, Lasix	Furosemide	hypertension	A,B,C,D,E
Paxil	Paroxetine	antidepressant	A,B,C,D,E
Albuterol, Ventolin	Albuterol	bronchodilator	A,D,E
Zantac	Ranitidine	ulcer	A,D
Zestril, Prinivil	Lisinopril	hypertension	A,B,C,D,E
Procardia, Adalat	Nifedipine	hypertension	B,C,D,E
Cardizem	Diltiazem	hypertension	A,B,C,D,E
Biaxin	Clarithromycin	antibiotic	D,E
Bactrim	Trimeth/Sulameth	antibiotic	A,C,D,E
Keflex	Cephalexin	antibiotic	A,C,D,E
Tylenol with Codeine	Acetaminophen/Codeine	analgesic	C
Glucophage	Metformin	diabetes	D
Cipro	Ciprofloxacin	antibiotic	A,B,C,D,E
Darvocet, Darvon	Propoxyphene N/APAP	analgesic	D
Veetids	Penicillin VK	antibiotic	E
Pravachol	Pravastatin	cardiovascular	A,B,C,D,E
Dyazide	Triamterene/HCTZ	cardiovascular	D
Ultram	Tramadol	analgesic	B,C,D,E
Motrin, Advil	Ibuprofen	analgesic	A,B,C,D,E
Hytrin	Terazosin	cardiovascular	B,C,D
Ambien	Zolpidem	sedative	B,D,E
Accupril	Quinapril	hypertension	C,D
Relafen	Nabumetone	analgesic	A,B,C,D,E
Elavil	Amitriptyline	antidepressant	B,D,E
Claritin	Loratidine	antihistamine	A,B,C,D,E
Humulin	Insulin-NPH	diabetes	D
Dilantin	Phenytoin	anticonvulsant	A,D
Pepcid	Famotidine	ulcer	B,C,D,E
Glucotrol	Glipizide	diabetes	A,B,C,D,E
Lotensin	Benazepril	hypertension	B,C,D
Cardura	Doxazosin	hypertension	B,C,D
Mevacor	Lovastatin	cardiovascular	A,B,C,D,E
Cefzil	Cefprozil	antibiotic	A,C,D,E
Xanax	Alprazolam	sedative	B,C,D
Prednisone, Panasol	Prednisone	antiarthritic	A,E
Tenormin, Atenolol	Atenolol	hypertension	A,D

^aSandow 1998, based on more than two billion 1997 U.S. prescriptions.