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## Invisible Itches: Insect and Non-Insect Causes<sup>1</sup>

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Once in a while, nearly everyone experiences the irritation of an unexpected itch or the sensation of something crawling over the skin. Other times, the irritation may feel more like an insect bite. These reactions can become so annoying for some people that they are forced to seek professional help. Even though actual pests may not have been observed, the irritation is often attributed to "bugs," and an insecticide is applied in the hope that the problem will be resolved. Unfortunately, pesticides seldom work in these situations, and they may even cause irritation and additional health problems.

It is important to recognize that there are many potential causes of itching and irritation other than pests. Allergies, cosmetics, medications, and environmental contaminants all can produce reactions similar to insect bites. While this makes the experience no less real or unpleasant for the affected individual, it underscores the importance of keeping an open mind to the possibility of non-insect causes of such reactions. Much like a detective, one should attempt to rule out all potential sources of irritation through the process of elimination. This publication will help you to determine if the irritation a person is experiencing is due to pests or to other (non-insect) causes.

### Sources of Irritation

Itches and real or perceived bites of unknown origin can usually be attributed to one of four general sources:

1. obscure biting arthropods (e.g., insects or mites)
2. personal use products
3. environmental factors
4. health-related conditions.

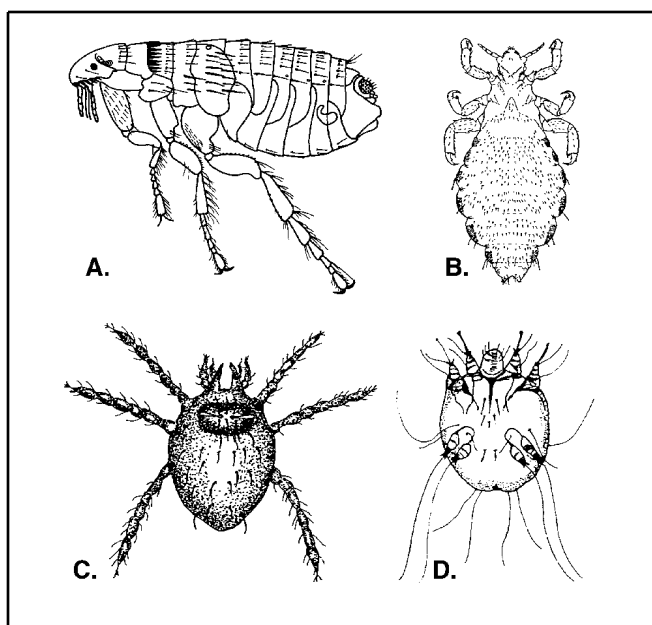
Specific agents most often implicated as irritants are summarized in Table 1 and discussed in detail below.

### Obscure Biting Arthropods

In some cases, insects or minute, biting mites prove to be the source of irritation. Although these pests are quite small, most are visible upon close examination (Figure 1). The location and appearance of bites or welts on the body is another key consideration in determining if pests are causing the irritation as well as which species is involved.

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1. This document is ENY-269, one of a series of the Entomology and Nematology Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Publication date: March 1995. Revised: February 2000. Please visit the EDIS Website at <http://edis.ifas.ufl.edu>. Additional information on these organisms, including many color photographs, is available at the Entomology and Nematology Department WWW site located at <http://www.ifas.ufl.edu/~entweb/entomolo.htm>.
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**Figure 1.** (A) flea, (B) louse, (C) chigger, and (D) scabies mite. (Not actual size.)

Fleas are the most common source of insect bites within homes. Fleas are fast-moving, reddish-brown insects that jump when disturbed, but, at about 1/8" long, they are large enough to be seen. They usually bite people around the ankles, producing a small, red, hardened, and slightly raised welt. Fleas are most often associated with pets, although the presence of mice, rats, squirrels, skunks, or raccoons can also result in fleas infesting a home. In some cases when pests are absent, fleas can jump onto a person outside while walking from the car to the house. Consult ENY-205, *Fleas*, if you suspect fleas are the source of irritation.

Lice may also cause intense itching and irritation. Infestations occur on the head and other hairy areas of the body. Lice are tiny, grayish-white insects, but are visible under close inspection. Because lice cannot survive away from a human host, treatment of premises is not normally required. Consult ENY-208, *Body Lice and Pubic Lice*, for specific recommendations on controlling lice.

Mites are very tiny arthropods which occasionally infest structures and bite people. In most cases, the infestation can be traced to birds nesting in an attic or on a window ledge, etc., or to an infestation of mice or rats. When a bird or rodent dies or the young leave the nest, thousands of parasitic mites may migrate indoors and bite humans.

Bird and rodent mites are smaller than fleas and lice, but if you look closely they will appear as tiny, dark specks that move.

There are two notable exceptions where mites may be the source of irritation but are too small to be seen with the naked eye. The human itch (scabies) mite burrows into the skin, causing intense itching and irritation. Skin between the fingers, the bend of the elbow or knee, and the shoulder blades are areas most often affected. The intense itching is accompanied by a rash. Scabies should be handled as a medical problem and is readily diagnosed and treated by most physicians. Additional information of scabies is contained in ENY-218, *Mites That Attack Humans*.

Chiggers also bite people and generally are too small to be seen without magnification. Chiggers (the larval stage of the harvest mite) live outdoors in tall weeds and grass. They crawl onto people and move upward until they encounter a point of constriction between skin and clothing, such as around the ankles, behind the knee, or at the waistline. Chigger bites produce a hardened, red welt which begins to itch intensely within 24-48 hours after exposure to the mite. Consequently, people may not associate the irritation with the fact that they were bitten while walking outdoors a day or two before. Delayed irritation following a "bug" bite is also common with such pests as mosquitoes and ticks, as well as with the contact dermatitis which results from exposure to poison ivy/poison oak.

Chiggers are easily removed from the skin by taking a hot bath or shower and lathering with soap several times. The bath will kill attached chiggers and others which are not attached. Since symptoms of contact may not appear for several hours, it is not always possible to completely prevent welts caused by chigger bites. Antiseptic should be applied to all welts which do appear. Temporary relief of itching may be achieved with nonprescription local anesthetics available at most drug stores. Studies have shown that meat tenderizer, rubbed into the welt, will alleviate itching.

If you are going into areas suspected of being infested with chiggers, wear protective clothing and use repellents. Effective repellents are: diethyl

toluamide (DEET), dimethyl phthalate, and ethyl hexanediol. Dusting sulfur is often used as a repellent. Repellents should be applied to legs, ankles, cuffs, waist, and sleeves by clothing application or directly to the body as directed by the label.

Chigger infestations may be eliminated by insecticide applications or by clearing brush from the area. To locate infested areas, place a piece of black cardboard edgewise on the ground. If chiggers are present, they will climb to the top and congregate there. They will appear as tiny yellow or pink dots moving across cardboard. Before starting your survey for chiggers, use protective clothing and repellents.

Area control of chiggers is difficult to achieve. The best method is to mow grass close to the ground. Mowing removes the protective cover that chiggers need to survive. Apply chemicals as directed on the label, and avoid getting insecticides into ponds and streams.

Mosquitoes, ticks, and a limited number of other arthropods may also bite people, but these pests are usually large enough to be seen at the time the irritation is felt. The vast majority of insects and related pests encountered in homes and buildings **cannot** bite people; yet, they are often blamed for itching or irritation caused by other factors. Pests in question can be identified by placing the specimen in a vial and bringing it to your county agent.

If a person believes that insects too small to be seen are crawling over their skin, strips of clear cellophane tape may be patted over the affected area as the "crawling" sensation is occurring. Most small biting arthropods move slowly and will be picked up by the tape if present. Tape samples should be attached to a white index card and labeled to indicate where they were collected.

## Household Products

There are literally hundreds of non-insect agents capable of causing itching and irritation. Household products are involved far more often than are pests and may cause skin reactions similar to insect bites. Products most often implicated include phosphate

detergents, soaps, cosmetics, ammonia-based cleaning agents, hair products, medications, printing inks (especially from multi-form carbonless carbon paper), and certain types of clothing, particularly those which contain fire retardants. If a connection can be made between irritation and exposure to one of these potential irritants, avoiding further exposure may correct the problem. A dermatologist can usually confirm that a product, rather than a pest, is causing the irritation.

## Environmental Factors

When two or more individuals experience irritation in the absence of pests, the cause is likely to be environmental conditions or contaminants dispersed in the air. The irritant(s) may be either physical or chemical in nature.

### Physical Irritants

The most common physical irritants are tiny fragments of paper, fabric, or insulation. When these fibers contact the skin, they can produce symptoms ranging from a "crawling sensation" to intense itching accompanied by a rash, welts, or open sores. If fibers or fragments are involved, the irritation usually occurs over exposed areas of the body such as arms, legs, neck, and head.

Irritation produced by paper fragments is especially common in offices where large quantities of paper are processed daily. Continuous-feed paper from computers and multi-page forms generate large amounts of fragments, resulting in accumulations on desktops and other surfaces. Newly installed or badly worn synthetic carpet, drapes or upholstery also shed fibers which can irritate skin.

Other potential sources of irritation are insulation fibers released into the air by heating/cooling systems in need of repair and sound-deadening fibers embedded into drop-ceiling tiles. These latter sources are especially suspect if there have been problems with the air-handling system or recent repair work on the ceiling.

Irritation is aggravated by static electricity which increases the attraction of the tiny charged fibers to exposed skin. Low humidity, electronic equipment, and nylon (e.g., from carpeting, upholstery, or

women's stockings) all increase levels of static electricity and the potential for problems from fragments or fibers. Static electricity may also cause body hair to move, giving the impression of insects crawling over the skin.

If fibers or fragments are suspected of causing the reactions, floors, rugs, work surfaces, and furniture should be thoroughly and routinely vacuumed, and desktops and tables wiped down with a damp cloth. Static-reducing measures should also be considered such as raising the humidity level of the air and installing static-resistant mats and pads under chairs and electronic equipment in offices. Anti-static sprays can be used to treat seat cushions and nylon stockings.

Dry air alone can cause irritation, producing a condition known as "winter itch." As skin loses moisture, itching results. A similar reaction can occur from changes in temperature; these tend to make skin more sensitive. A skin moisturizer is often helpful in these situations.

### **Airborne Chemical Irritants**

Indoor air pollution can be a serious problem in modern office buildings and other energy-efficient structures where air is recirculated over and over. Indoor air pollution can also be a problem in homes. As the concentration of chemical contaminants in the air increases, people may experience dizziness, headaches, and eye, nose, or throat irritation. Certain air-borne contaminants can also produce rashes and skin irritation similar to insect bites. Chemical contaminants most often responsible for these reactions include ammonia-based cleaning agents, formaldehyde emitted from wall and floor coverings, tobacco smoke, and solvents and resins contained in paints, glues, adhesives, and pesticides repeatedly applied for control of suspected pest infestations.

Reactions to airborne chemicals most often occur in buildings with inadequate ventilation, especially those that are new or have been refurbished with new paint or wall or floor coverings. If indoor air pollutants rather than insects are suspected, you may wish to consult an industrial hygienist who is equipped to monitor ventilation levels and the presence of allergy-producing

contaminants. Companies specializing in environmental health monitoring have listings in the telephone directories of most metropolitan areas.

### **Health-Related Conditions**

Health-related conditions may be responsible for irritation mistakenly attributed to insects. Itching and skin irritation are common during pregnancy (especially during the last trimester) and may also occur in conjunction with diabetes, liver, kidney, and thyroid disease, and shingles. Food allergies are another common cause of itching and irritation.

A person's emotional state can also induce skin reactions that can be mistaken for insect bites. Stress and conflict at work or home can produce itching and irritation. The itching response can be induced in other individuals simply by the "power of suggestion;" i.e., when one person in a group feels an itch or bite and begins to talk about it, others also feel the urge to scratch as well (a condition known as Bell's syndrome).

Delusory parasitosis is a more serious emotional disorder characterized by an irrational fear that living organisms are infesting a person's body. Cases of delusory parasitosis often have similar symptoms and patterns of behavior. Patients typically report "bugs" invading their ears, nose, eyes, and other areas of their body. The "creatures" frequently disappear and reappear and change colors while being observed. Specimens brought in for identification usually consist of bits of dead skin, hair, lint, and miscellaneous debris. The skin of the individual is often severely irritated from desperate scratching, excessive bathing, and application of ointments, bleaches, gasoline and other solvents. While these occurrences may seem bizarre to persons who are not affected, they are frighteningly real to the patient. Delusory parasitosis as well as other suspected emotional or medical conditions should be brought to the attention of a dermatologist or other physician.

### **Finding A Solution**

There is no easy way to pinpoint the cause of so-called "invisible" itches. The most important consideration in determining if pests are involved is whether anyone has actually seen or captured any

"bugs" as the itching or irritation is occurring. Most insects and mites which bite humans can be seen without magnification if you look carefully. Pesticides should not be applied unless there is actual evidence that pests are the cause of irritation.

In most cases, pests will not be involved and relief from irritation will be outside the realm of pest control. Approaching these problems in a rational and methodical manner will increase the chances of finding the sources of irritation. Refer to the list of likely irritants in Table 1 and follow suggestions mentioned in this publication for alleviating the condition. If the problem persists, you may need to employ the services of a pest control professional, dermatologist, and/or environmental consultant.

**Table 1.** Principal Causes of Itches and Bites of Unknown Origin

<p><b>Obscure Biting Arthropods*</b></p> <ul style="list-style-type: none"> <li>mites</li> <li>lice</li> <li>fleas</li> <li>chiggers</li> <li>biting midges/mosquitoes</li> <li>ticks</li> <li>bed bugs</li> </ul>
<p><b>Household Products</b></p> <ul style="list-style-type: none"> <li>detergents (especially phosphate-based)</li> <li>soaps</li> <li>cosmetics/hair products</li> <li>ammonia-based cleansers</li> <li>medications</li> <li>printing inks (e.g., carbonless)</li> <li>clothing (especially fire retardant)</li> </ul>
<p><b>Environmental Factors</b></p> <p>A. <i>Physical irritants</i></p> <ul style="list-style-type: none"> <li>paper, fabric, or insulation fibers</li> <li>low humidity</li> <li>seasonal changes in temperature</li> <li>static electricity</li> </ul> <p>B. <i>Chemical irritants</i></p> <ul style="list-style-type: none"> <li>formaldehyde (e.g., from particle board, wall and floor coverings)</li> <li>ammonia</li> <li>solvents/resins associated with paints and adhesives</li> <li>tobacco smoke</li> <li>volatiles from asphalt and tar installation</li> </ul>
<p><b>Health-Related Conditions</b></p> <ul style="list-style-type: none"> <li>pregnancy</li> <li>communicable diseases (e.g., chicken pox, measles)</li> <li>stress</li> <li>diabetes, liver, or kidney disorders</li> <li>food allergies</li> <li>insect phobias</li> </ul>
<p><i>* Many of these pests are large enough to be seen without magnification. One should also consider the possibility of delayed irritation such as from bites obtained while outdoors.</i></p>