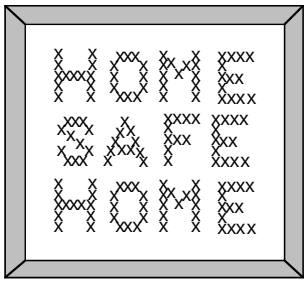
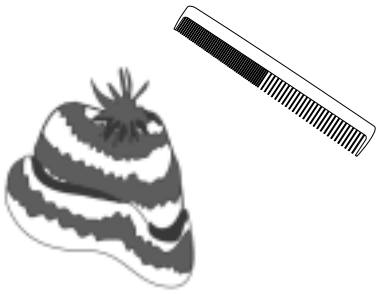
# Alternatives
**A Washington Toxics Coalition Fact Sheet**




# Getting Ahead of Lice

**by Shamra Harrison**

*An adult louse shown actual size in circle at left, and enlarged at right.*



*Lice can be transmitted from one person to another when objects such as hats, combs, and hair brushes are shared.*

Each year in the United States, as many as 6 million children will be treated for pediculosis, or head lice. Many parents, sometimes on the advice of their child's school or even their pediatrician, turn to pesticidal products as a solution. Before using a pesticidal shampoo as a first-line treatment, parents should be aware that alternatives do exist. Parents should also know that careful combing is necessary to effectively treat head lice, regardless of whether a pesticidal product is used. Careful combing can be effective alone, eliminating the need to use a pesticidal shampoo.

The U.S. Environmental Protection Agency (EPA) recognizes the potential health risk of pesticidal shampoos and does not recommend their use, except as a last resort in extreme cases. Nearly all pediculosis experts will tell you that careful combing is the only way to effectively treat a lice infestation. Even the pesticide industry recognizes that combing is the best defense against head lice. A spokesperson for Warner-Lambert, manufacturer of one of the leading pesticidal shampoos, was quoted as saying, "Frankly, you don't need any product if you can get the nits without it."

## Should You Use a Pesticide?

Parents who decide to use a pesticidal shampoo should educate themselves about the potential health effects of available products. According to the EPA, the active ingredients lindane and permethrin (see "The Chemicals" on page 43 for brand names of products containing these pesticides) have been shown to cause cancer in laboratory animals. Pesticidal shampoos have caused minor to severe eye and skin irritation. Cases of seizures and even death associated with the misuse of lindane have been reported. Lindane and permethrin have both been shown to have neurological effects and are suspected of disrupting hormone systems. The state of California has banned the use of lindane for lice and scabies.

Lindane is particularly dangerous because it is readily absorbed through the skin, and like other organochlorine insecticides is highly persistent in human fat tissue. Absorption can be especially great during a shampoo treatment because of the many blood vessels on the scalp that are close to the skin. When the skin is warm and blood vessels are dilated, as is often the case when shampooing one's hair, absorption increases further.

Parents should also be aware that Ovine, which contains the neurotoxin malathion, has been reintroduced as a head lice treatment. According to an article in the February 2000 edition of *Consumer Reports*, the amount of malathion contained in one treatment can be up to 30 times the recognized safe one-time dose for a small child. Ovine's safety for children less than six years old has not yet been established.

In addition to containing ingredients that pose health risks, these pesticidal shampoos may not work as effectively as they claim. The National Pediculosis Association, a nonprofit organization dedicated to providing information on proper head lice control, has catalogued thousands of anecdotal reports of treatment failures. Studies have shown that resistance is developing to most of the chemical treatments.

Although we do not enjoy dealing with these creepy crawlies, cases of pediculosis are on the rise. Due to over-use and preventative treatments with these products, many shampoos are beginning to lose their effectiveness. Before applying one of these potentially dangerous pesticidal shampoos to your child's growing body, remember that mechanical removal of lice and their eggs continues to be the best treatment available. Also remember that combing is necessary to remove all lice and their eggs, even if a pesticidal shampoo is used.

## Identification and Transmission

Head lice are brown or grayish colored insects, slightly smaller than a flea (about 1/16 to 1/8 inch long) and oval in shape. An adult female can lay 6-8 eggs per day, which translates to as many as 100 in one female life cycle. An egg takes 7-11 days to hatch and another 8-9 days to reach sexual maturity. An adult can live for up to 30 days.

Their eggs, called nits, are attached to the hair shaft close to the scalp and can be distinguished from hair debris because they are much harder to remove. Lice are most commonly found near the crown of the head, the nape of the neck, and behind the ears. An active infestation of lice means that live adults or viable nits are present. Viable nits are yellowish with a pearly luster, whereas hatched nits are greyish and more transparent. Magnification may be required to properly identify viable nits.

Lice are transferred through head-to-head contact via hats, headphones, brushes, helmets, barrettes, or headrests. Pets do not transmit head lice. Lice cannot jump or fly and can live away from the human body for only 24 hours. They do not carry diseases but can cause head irritation and secondary infections, such as impetigo, due to scratching. Children between the ages of three and ten are most susceptible but people of all ages can be infected.

## Combing: Your Best Defense

Unfortunately, there is no instant fix when it comes to head lice. No pesticidal shampoo will kill all nits. The safest, most effective treatment is careful combing to remove lice and their eggs. A fine-toothed, metal comb such as the LiceMeister or Lice Out works best. Either of these products can be purchased from your local drugstore and the LiceMeister can be ordered from the National Pediculosis Association for around $15. Combing should be repeated every night for at least 12 days, as nits will continue to hatch for 8-11 days. Examine all children and adults in the household and treat all infected individuals.

Manual removal of lice and their eggs can be a long and tedious process but serves as your best protection against reinfestation. Seat your child so their head is directly below eye level and place a clean towel over his or her shoulders. Fasten back your own hair to prevent contact with your child's hair. Have a good book or video ready to distract your child. A half-and-half mixture of vinegar and warm water can be applied to your child's hair and left on for 15 minutes to loosen nits. Another useful preparation is salad oil combed into the hair to make brushing easier. Bright natural light or a lamp will make nits easier to spot.

Separate the hair into 1/2 to 3/4-inch sections. Comb through each section starting at the scalp, dunking the comb in soapy, 130° F water each time you comb out nits or live lice. A tissue can be used to frequently clean debris from the comb and should be discarded into another container of soapy water. Flush the contents of both bowls down the toilet when full. When combing is finished, shampoo twice to remove oil from the hair.

Once the hair is dry, check the entire head for stray nits, which can be cut out with a pair of small scissors. Soak the comb and scissors in hot, soapy water for 15 minutes and flush the contents of the bowl down the toilet. Wash all towels used in hot water and place in the dryer for at least 30 minutes on the high heat setting.

*The safest, most effective lice treatment is careful combing to remove lice and their eggs.*

*Starting at the scalp, slowly comb through each section of hair several times with a metal lice comb.*

## The Chemicals

**Lindane**
- The World Health Organization recommends that it not be used as a scabies or lice treatment
- May cause cancer in humans, according to the EPA
- The Kwell label states, “contact may cause skin irritation, may be absorbed through the skin to cause central nervous system excitation”

**Permethrin**
- May cause cancer in humans, according to the EPA
- Suspected of disrupting hormone systems

**Pyrethrin**
- Products containing pyrethrin may also contain a compound called piperonyl butoxide, which may cause cancer in humans, according to the EPA

**Malathion**
- Acts primarily via the central nervous system
- Single doses have been reported to affect immune system response

## Proper Lice Combing Procedure

**Preparation**
- Find bright natural light or a strong lamp with a flexible arm that allows you to direct the light
- Find something entertaining for your child, such as reading a book, drawing, or watching a video
- Apply any kind of salad oil to your child's hair

**Combing**
- Sit with your child's head just below your eye level
- Brush hair with a large-toothed regular comb and separate into 1/2 to 3/4-inch sections
- Starting at the scalp, slowly comb through each section of hair several times with a metal lice comb
- Each time you comb out lice or nits, dunk the comb into a bowl of soapy water (frequently remove hair and other debris from the comb with a tissue, discarding into another bowl of soapy water)
- Shampoo twice to remove the oil
- Let hair dry, and recheck for stray nits
- Cut out any nits with small scissors

**Cleaning**
- Flush the contents of both bowls of soapy water down the toilet
- Soak the comb and scissors for 15 minutes in hot soapy water, or boil in plain water for 15 minutes
- Wash towels in hot water and dry on high heat

*Combing steps taken from the EPA's "IPM for schools: A how-to manual." Document #909-B-97-001. March 1997.*

### Natural and Alternative Remedies

In addition to combing, or as a supplement to combing, some parents turn to natural or home remedies. Mayonnaise, margarine, olive oil, and tea-tree oil are all said to smother lice when left on the hair for several hours. Several natural products are currently available, including Hair Clear 1-2-3, Not Nice to Lice, and Lice Out, which claim to either kill lice or loosen nit glue. None of these treatments has been proven effective at killing lice but all will, at the least, make it easier to comb nits out of your child’s hair.

Plant-based soaps can also be helpful as an addition to a diligent combing strategy. Coconut- and olive oil-based shampoos contain fatty acids that are harmful to lice. These shampoos dry the hair, so make sure to follow with a conditioner.

Some physicians are beginning to prescribe antibiotics such as Septra and Bactrim (both containing a combination of trimethotrim and sulfamethoxazole) as a treatment for head lice. They are intended to eliminate a bacterium within the guts of lice which is necessary for their survival. Harvard School of Public Health does not endorse this practice for two reasons. First, use of antibiotics has not been proven effective as a means of treatment for head lice infestations. Second, unnecessary use of these drugs may accelerate bacteria resistance and diminish the effectiveness of antibiotics that may be needed to fight life-threatening infections.

### Pesticidal Shampoo Safety

If you decide to use a traditional pesticidal shampoo, follow the label instructions carefully. Never apply a pesticidal product to a child who has open cuts or head

inflammation. Do not apply to eyelashes or brows and cover your child's face with a washcloth during treatment to further protect the eye area. Do not treat children less than two years old, pregnant or nursing women, or anyone with allergies, asthma, or epilepsy. Always wear gloves when applying. Do not use in a shower or bath, which increases exposure to the pesticide. Instead, shampoo over a sink or basin. Remember that pediculicide shampoos are pesticides and should be stored out of reach of children.

Applying a pesticidal shampoo too often or leaving it on too long unnecessarily raises your child's exposure to dangerous pesticides. Use these shampoos only when you find lice and their viable eggs, never as a preventative measure. Because of reports of resistance to permethrin, the National Pediculosis Association (NPA) advises that parents discontinue use of a shampoo at the earliest sign of treatment failure. (Report any product failures or adverse reactions to the NPA registry at 800-446-4NPA.) Also, remember that a second application of a permethrin or pyrethrin shampoo is necessary 7-10 days later. Incorrect use of pesticidal shampoos can expose lice to low levels of chemicals that can help them build up a resistance.

If using a pesticidal product sounds like the easiest approach, you should know that using a pesticidal shampoo does not mean you can avoid manual removal of lice. No lice shampoo will remove nits. Combing out lice and nits should be the core of any treatment you decide on. And diligent, careful combing alone can be effective, eliminating any need for a pesticidal product.

## Removing Lice From Your Home

After treating the individual, take some steps to remove lice and eggs from your home. Wash clothing and bedding in hot water and tumble-dry on high heat for 30 minutes. Soak brushes and combs in water above 130° F for 15 minutes. Vacuum floors and furniture your child may have had contact with. After vacuuming, remove the bag, seal the openings and dispose of it properly. Items that cannot be laundered or vacuumed can be sealed in plastic bags for 11 days, enough time for nits to hatch and die.

Never use commercial sprays or home fumigants. According to the Centers for Disease Control and Prevention, NPA, EPA, and Harvard School of Medicine, they are unnecessary and not worth the health risk. The Director of the National Pest Control Association states, "There is no scientific justification to spray for head lice at home or in the school environment. It is our job as pest control professionals to distinguish between the risks and benefits of certain insects versus certain pesticide applications. Head lice do not qualify for pesticide extermination measures."

## Preventing Reinfestation

Once your child and home are free of lice, there are several things you can do to prevent further outbreaks. Continue to check for adults and eggs once a week, especially when cases of pediculosis are being reported in your school or day care. Educate your children on ways they can protect themselves. Instruct them not to share combs, barrettes, hats, or other headgear. Talk with your child's teacher or day-care provider and suggest that coats and hats be stored separately from each other, either in lockers, cubbyholes, or on assigned hangers. Ask your school or day-care not to use indoor sprays to prevent lice outbreaks. Share information with your pediatrician and school nurse. An excellent source is the National Pediculosis Association at 800-446-4NPA or www.headlice.org.

Check with your child's school to see if they have an official policy addressing lice. A strong school policy should include clearly identified procedures for conducting routine screenings, training volunteers, notifying parents, managing outbreaks, preventing lice transmission, and educating the community. The EPA also recommends that one member of the school staff receive training from the school nurse or other public health official in the detection of lice and nits. Like all pest management policies instituted in schools, parents and other concerned community members should be involved in the decision-making process.

Pediculosis is a manageable condition that often leaps out of control as embarrassment and incorrect associations with poor hygiene cause many of us to ignore it. Frank discussions between parents, children, child care providers, teachers, and health care providers are the best tools we have to fight off future outbreaks. Careful combing out of lice and their eggs are critical in treating current infestations, regardless of whether a pesticide is used. Monitoring your children weekly for lice will allow you to confront the problem while it is still manageable. So remember to add all of that to your to-do list. ■

## Resources

National Pediculosis Association
http://www.headlice.org/
1-800-446-4NPA

Lice Aren't Nice Community Coalition
"Lice Aren't Nice! A Head Lice Prevention and Treatment Booklet"
http://www.doh.wa.gov/Publicat/PaperPubs/lice.htm
Snohomish Health District
425-339-5230

Washington State Department of Ecology
Integrated Pest Management in Schools Project: Head Lice, January 1997
http://www.wa.gov:80/ecology/biblio/97423.html

Harvard School of Public Health
Head Lice Information, statement from Richard J. Pollack, Ph.D.
http://www.hsph.harvard.edu/headlice.html