

# Anthrax in Vintage Animal-Hair Shaving Brushes

*[Announcer] This program is presented by the Centers for Disease Control and Prevention.*

[Sarah Gregory] Today, I'm talking with Dr. Kate Hendricks, a CDC anthrax expert, about anthrax found in animal-hair shaving brushes in the early 1900s. Welcome, Dr. Hendricks.

[Kate Hendricks] Hi.

[Sarah Gregory] What is anthrax and are there different kinds?

[Kate Hendricks] Anthrax is a disease that can spread from animals to people. Cattle, sheep, goats, and deer become infected by swallowing contaminated vegetation, water, or soil. People can get anthrax when they come into contact with animals with anthrax or with products made from infected animals. People become infected by getting the germ through breaks in their skin, breathing it in, swallowing it in food or water, or accidentally injecting contaminated heroin. Although anthrax is uncommon in the United States, there are parts of the world where it is still quite common—what we call endemic.

Skin infections with anthrax are called cutaneous anthrax, and are the most common type of anthrax. Cutaneous anthrax is usually less deadly than other types of anthrax. However, when cutaneous anthrax occurs on the head or neck it can easily be fatal. One reason may be that swelling is common with these types of infections, and swelling in the neck can cut off your airway.

[Sarah Gregory] During World War I troops were becoming infected with anthrax. Tell us about that.

[Kate Hendricks] The First World War appears to have changed both demand for shaving brushes and the treatment, type, and source of hair used in shaving brushes.

After chlorine gas and mustard gas were used in 1915 and 1917, troops were provided with gas masks. American joined the war effort in 1917. During the war, American soldiers were issued three and a half million safety razors and 32 million blades, most likely in the belief that gas masks would fit better on clean-shaven soldiers.

Before the war, the animal hair that was used for making shaving brushes was cleaned and disinfected in France or Germany before it reached the United States. During the war, the fibers came directly to the United States without being cleaned or disinfected.

Before the war, brushes of badger hair, usually from Russia, were used to create soap lather that men applied to their face before shaving. During the war, commerce was disrupted and Russian badger hair was difficult to get. Fake badger hair brushes made from Russian, Chinese, or Japanese horsehair appeared in the United States. Unlike badgers, which don't get anthrax very easily, horses are susceptible to anthrax.

[Sarah Gregory] Why would shaving brushes harbor the bacterium *B. anthracis*?

[Kate Hendricks] It's very likely that some of the horsehair imported to make shaving brushes came from animals that had actually died of anthrax. The process of dying would have contaminated their hair with the germ that causes anthrax—*Bacillus anthracis*. People who used shaving brushes from this hair were simply depositing the anthrax germ, spores, into new nicks on their faces. The spores are really hardy and can survive for decades under very harsh conditions. They're hard to get rid of.

[Sarah Gregory] So why were some brushes riskier than others?

[Kate Hendricks] Back when this happened, health authorities did believe that brushes made from certain types of hair were riskier. This included brushes from Japanese horsehair and brushes made from light-colored hair. At the time, authorities thought that perhaps high-temperature disinfection was being avoided for the light-colored brushes because it made them look less like badger hair.

It was also interesting to us that new brushes appeared to be the riskiest. Ninety-five percent of the brushes associated with cases described in the literature had been used less than two months, and most were described as "new."

[Sarah Gregory] This problem continued after the war. When and how was it finally stopped?

[Kate Hendricks] You're correct, the problem did continue for a while after the war. However, health officials intervened and enacted a series of control measures that helped stop it. In 1918, the Surgeon General, the government's top public health official, publicized an industrial method for disinfecting brush hair.

In 1920, the New York City Board of Health did a number of things. They described a method for sterilization and required all brushes that were used for grooming to be sterilized using this method. So, in addition to shaving brushes, this rule applied to toothbrushes, hairbrushes, and nail brushes. They also mandated labeling with both the manufacturer's name and the word "sterilized" and restricted sales to "sterilized" brushes.

[Sarah Gregory] And why is this relevant in 2017?

[Kate Hendricks] Traditional shaving methods, including use of animal hair shaving brushes have been gaining popularity in some circles. So people may wonder if new or vintage shaving brushes are safe to use.

In a nutshell, they should be safe to use. Because of modern decontamination and import regulations, new animal hair brushes are unlikely to be a source of anthrax. Brushes manufactured in the U.S. after 1930 and well-used, or even vintage brushes, would appear to be extremely low risk. Some people might wonder whether they could disinfect vintage brushes at home. We don't think anyone should try this at home. The risks associated with varying combinations of steam, pressure, and formaldehyde would outweigh any possible benefits of trying to sterilize them.

[Sarah Gregory] Dr. Hendricks, what is your job at CDC and why did you want to do this study?

[Kate Hendricks] I'm one of the anthrax subject matter experts. I work exclusively on biopreparedness issues. For one of our biopreparedness projects, we created a database that included all the anthrax cases published in English back to 1880. When we were looking through the dataset, we noticed that the phrase "shaving brush" often appeared in our variable entitled "mode of transmission." We thought it would be a perfect project for a student intern to explore. We assigned the project to an epi elective student named Dr. Christina Szablewski, and the rest is history.

[Sarah Gregory] Thank you, Dr. Hendricks. I've been talking with Dr. Kate Hendricks about her May 2017 study, Anthrax Cases Associated with Animal-Hair Brushes. Listeners can read the entire article online at [cdc.gov/eid](http://cdc.gov/eid).

I'm Sarah Gregory for *Emerging Infectious Diseases*.

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