# Anthrax

Before it became front page news, anthrax was best known to Americans as a plot device in movies. We know it's a biological weapon, capable of wreaking mass destruction, but we're unsure of what exactly it is, and how (or even if) we can protect ourselves.

When photo editor Robert Stevens died last week from a case of inhaled anthrax, the U.S. public got nervous. When Stevens' co-worker Ernesto Blanco was discovered to have anthrax spores in his nasal passages, nervousness turned to panic. Health officials in Florida, where the men lived, report that Stevens, who died last week, and Blanco, who has not shown any symptoms, contracted the same strain of the rare disease, and called in more than 700 of their colleagues for testing.

Although no new cases of the disease have been detected as of Wednesday, officials stress the swab test results may not be available for days, and sent Stevens' co-workers home with a 15-day supply of Cipro, the antibiotic that's the current standard in preventative measures against anthrax

Stevens' death and Blanco's diagnosis only served to fan the flames of anxiety raging in a suddenly wary American public. Doctors and public health help lines have been bombarded with questions: What is anthrax? Do I have it now? Could I tell if I had it? Is it always fatal?

In hopes of addressing these and other questions about anthrax, TIME.com spoke with Jonathan B. Tucker, a chemical and biological weapons expert in the Washington office of the Monterey Institute. Tucker is the author of "Scourge: The Once and Future Threat of Smallpox."

TIME.com: What form does Anthrax take?

Tucker:Anthrax is a bacterium, but when it's exposed to air, it forms a spore resembling a seed. The spore is very rugged, and very persistent. If it's introduced into the soil in that spore form, it can live for years, even decades. That's the form it would probably be take if it were used as a biological weapon — spores introduced into the air via some delivery method.

Is anthrax visible?

No, it's a microorganism so it's invisible to the naked eye. Even the infectious dose, which is between 8,000 and 10,000 spores, is smaller than a speck of dust. It's totally odorless and tasteless as well. There are other ways to get anthrax, via the skin, for example, but the inhaled version is the most lethal.

Would I know if I'd inhaled it?

No, not until the symptoms manifested themselves. And this is the challenge, of course, for health professionals, because you need to treat the disease in a very early stage, when the symptoms are still non-specific, flu-like symptoms. It's difficult to diagnose — in order to even test for it you have to have a high index of suspicion, you have to suspect this as a possibility or you'll probably overlook it. Doctors need to be trained to differentiate this from the flu at an early stage.

How lethal is anthrax?

The disease progresses like this: Once introduced into the body, the particles of anthrax travel into the tiny air sacs in the lungs. They lodge there and begin to disseminate themselves. At this point the bacterium produce toxins, which is what creates the illness in the host: First you see non-specific flu-like symptoms. Then, in hours or in a few days, some patients will have a brief period of recovery. Others progress directly to the second stage of the disease, which generally leads to shock, massive swelling of lymph nodes and hemorrhagic meningitis (bleeding in the brain).

Once the toxins reach a critical mass, death is inevitable.

Can antibiotics help at some stage in the disease?

Yes — if it's given early enough during the first stage of the infection, it can treat or cure the illness.

There is a vaccine for anthrax, but it's only available in very limited quantities to the military. Will a vaccine be more widely available soon?

The existing vaccine is not really effective for civilians in any case. It requires six doses over sixteen months in order for it to work, and that kind of schedule isn't really workable for the general public — unless you had an extreme risk of exposure, and you knew about it long enough in advance.

What we really need is a new vaccine that requires fewer doses, and works more quickly. Nothing's in the works right now, but it's certainly something the government should think about.

Where does anthrax exist today? Are there traceable strains of it?

It exists in laboratories and also in nature, among livestock. It's a naturally occurring disease.

Who has access to anthrax?

Well, anyone with access to research facilities could probably track some down. At this point, most universities don't have very high security for their anthrax cultures; the disease is just kept in regular freezers. That may have to be changed. They are often poorly catalogued and sometimes researchers aren't even sure what they've got in their collections. So that's a definite security problem.

How much anthrax would it take (and what delivery method would be required) to affect an entire city?

The anthrax would have to be grown in very large quantities, but it would start in a very small seed culture that could be grown in a controlled environment.

Then the bacterium would have to become spores in order to travel through the air. Then they'd be disseminated — most likely as a slurry, which is a liquid, or possibly as a powder. Either way the spores would be imperceptible, because in order to be used as a weapon, the particles have to be microscopic in size. Over a period of hours, sunlight would kill the bacteria, so the danger of infection starts to fade over time.

How can we protect ourselves?

Well, we should certainly be vigilant; any strange occurrences of spraying a fine mist, for example, should be viewed with suspicion.

But we really need to deal with this threat by strengthening our public health system, not as individuals. Buying a gas mask, for example, is probably not going to help, because masks need to be custom-fitted and the filters have to be new. Our country needs to make sure our public health services are prepared for emergencies.

People also shouldn't start self-medicating as a preventative measure. If there were an outbreak, the federal government has huge stockpiles of antibiotics they would distribute.