



White Powder Response: Which Kit To Use?

Haztech Systems offers two tools for your “white powder” war chest. You can use the large, one-size fits all HazCat Kit or the threat-specific Anthrax Screening Test Kit. Both have advantages. Which one to use? That depends on you. Repairing something depends on the mechanic’s ability to analyze problems, utilize tools and adapt to changes. The same holds true in anthrax response.

Anthrax is a good choice for a terrorist. It’s very dangerous and instills fear. Fortunately, it’s very rare. There are plenty of other threats besides anthrax. All the other possibilities of the identity of that white powder still exist. Don’t preclude the HazCat Kit. The world is a complicated place and the HazCat Kit is the tool you need when its you against a world of possibilities.

When you need to rapidly eliminate the threat of anthrax, use the Anthrax Screening Test Kit. You may not quickly know what the substance is, but you’ll quickly have your answer. The Anthrax Screening Test Chart shows the results expected if weapons grade anthrax was analyzed with the HazCat Kit.

A third strategy is also available. Performing the Protein Test initially will allow you to know if amino acids are present. POSITIVE means anthrax is a possibility; NEGATIVE means definitely not.

Whether you have the HazCat Kit or the Anthrax Screening Test Kit or both, use the kit that fits the situation. But first you need to understand the enemy. We’ll help you decide.



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Infection And Grades Of Anthrax

Anthrax exists in nature. It is not a manufactured chemical. It is a bacterium that lives in a warm, wet host and converts to a “dormant” spore form when exposed to oxygen. It’s actually more complicated than that, but this works for use in emergency response.

The active form is the bacterium, a single celled organism that reproduces by cell division. It relies on a host for food. Bacteria (plural) will stay active as long as the host provides a sufficient environment.

The bacteria grow and reproduce in a person’s body. They secrete a toxin that kills. If the number of bacteria is low, the body’s immune system can fight it off. If the bacteria are present in higher numbers, the anthrax poisons the host.

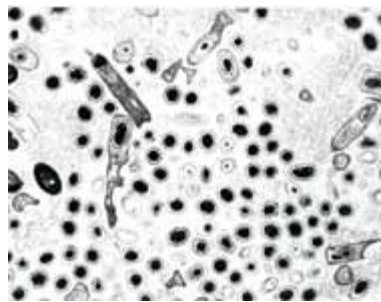
Spores do not kill. Spores drift through the air and are inhaled into the lungs. There they shed their protein spore case (positive Protein Test) and turn into a single bacterium. The single bacterium then attempts to reproduce many more bacteria while the person’s immune system attacks them at its best rate. The race is on.

Anthrax is a naturally occurring organism and has been around practically forever. It’s common

among sheep and their environment. Wool handlers routinely inhale about 70 anthrax spores per hour, but are not infected because their immune system can subdue the bacteria.

The key to using anthrax as a weapon of mass destruction is to distribute the spore in high concentration. If a terrorist makes a bucketful of anthrax and it lays on the ground like a lump, who would inhale enough of it to die? The spores must be airborne.

The spores are amazingly tiny – about 1 micron in diameter. The smallest individual particle most people can see is about 50 microns. Weapons grade spores will not dissolve in water, acid, xylene or alcohol (Water Solubility Test).



Bacillus anthracis spores
Photo: Dept. of Defense

Particles that small are greatly affected by static electricity. They get “static cling” and clump together in gobs too heavy

to be airborne long. Weapons grade anthrax spores are specially coated to reduce the cling and allow uncountable numbers of spores to become airborne and stay airborne. It is extremely difficult and expensive to do this. The USA and former USSR are the only two countries to have achieved this. Iraq gave it the mother of all good tries by using a bentonite coating (positive Aluminum Test) but it didn’t stay airborne very long.

You could see a lethal dose of coated weapons grade anthrax if it were all in one place. It would be about the size of the head of a pin. In bulk the spores are so finely separated they would have extreme individuality and the solid material would flow like water.

The third grade of anthrax after natural anthrax and weaonized anthrax is whatever else anyone can make.

Anthrax can be grown in a blood medium (positive Iron Test) and then converted to spores. The problem comes in trying to separate the spores and keep them apart for efficient distribution. Without extremely sophisticated and expensive equipment it just won’t happen. It’s more likely the terrorist will infect himself.

The Protein Test

Understanding the enemy means understanding anthrax...

...understanding the Protein Test will help you integrate your "anti-anthrax" tools with your strategy and tactics.

The Protein Test is specific to a nitrogen group in amino acids. Amino acids form proteins. Everything living contains protein.

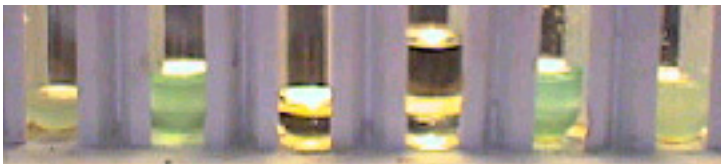
A positive result from the Protein Test means the unknown substance contains a live or recently living thing.

When mixed according to direction, a small amount of protein mixed with Protein Test 1 and 2 will yield a blue color in the liquid. Remember that if there is a background color present the blue will tint toward the background color. For example, a yellow background will shade the blue toward green.

We have found the Protein Test to be reliably positive on weapons grade spores. It is also positive on "white powder" foods, such as cake mix, soy protein, enriched flour (enriched with protein) and others. It has been reliably negative on non-protein containing "white powders," such as talc, chalk, lime, synthetic pesticide, sugar, coffee creamer and more.

If the Protein Test is done immediately and a negative result is observed the substance is NOT anthrax. A positive result simply means the substance contains protein. The unknown could possibly be anthrax, but is more likely a foodstuff. Further testing by a lab is needed to positively prove anthrax. But we can disprove anthrax by more HazCat testing, namely the Water Solubility Test as well as others.

Protein Test Results On Weapons Grade Spores



1. 2. 3. 4. 5. 6.
Sample Number

Samples 3 and 4 are blanks. They have no protein and show a negative result with only the background color visible.

Samples 1, 2, 5 and 6 are positive results on varying concentrations of weapon grade spores. Note the blue shading of the background yellow in samples 1 and 6.

We found the Protein Test results to be accentuated by the addition of Alcohol Solubility Test in the case of weapons grade spores.

Anthrax Incidents

Basement Science Project

An anthrax incident occurred in the 90s in my response district. A lab worker who was trained to handle anthrax cultures brought some home to grow in his basement. His motivation appears to have been more curiosity than terrorism, but we didn't know that at the time and we didn't trust what he told the police.

We had an advantage in that we strongly suspected anthrax to be present in the house. Level A entry allowed the recon team to discover the anthrax in a growth media in covered dishes.

Since it was not in spore form inhalation hazard was reduced but skin contact was still a hazard. The cultures were removed to a lab, anthrax confirmed and then destroyed. The home was decontaminated.

The incident concluded without injury.

Had the HazCat Protein Test been available at the time, protein would have been confirmed, but not in spore form.

Want Gravy With That?

A large commercial passenger aircraft was isolated at an airport after a passenger reported the possibility of anthrax on the seatback ahead of her. She had declared an emergency. Since the crew could not disprove anthrax the emergency persisted.

Once on the ground the plane was evacuated and isolated. A HazCat operator was flown to the site and analyzed the white substance on the seatback.

The substance was determined not to be anthrax. It was classified as food. A check of the previous flight's menu pointed to mashed potatoes.

A positive Protein Test result does not necessarily mean anthrax. Used in conjunction with other HazCat tests anthrax is often disproved

Summary

It should be clear that once you understand your enemy you can determine your strategy and tactics, then go to the tool box and select the tools you need to safely manage the emergency.

If the emergency strongly suggests anthrax by the appearance and situation, by all means use the Protein Test to get your first answer. If positive, anthrax is still a possibility. Further HazCat testing is necessary to eliminate it. In this case use the Anthrax Screening Test Kit and Chart.

If the emergency does not necessarily appear to be anthrax related, use the HazCat Kit so some other hazard doesn't appear while everyone is focused on anthrax. HazCat covers everything, but understandably takes a little longer.

Above all, be safe!

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