

**Testimony to Subcommittee on National Security, Emerging Threats,
International Relations**

**Stamping out anthrax in USPS facilities:
technologies and protocols for bioagent detection**

James L. Hadler, MD, MPH

Director, Division of Infectious Diseases and State Epidemiologist
Connecticut Department of Public Health

May 19, 2003

The following is my testimony to the Congressional Committee on Government Reform, Subcommittee on National Security, Emerging Threats and International Relations, Chaired by Representative Christopher Shays of Connecticut. This testimony is in response to the invitation dated May 7, 2003 from Representative Shays.

Thank you for the opportunity to describe the investigation of the inhalation anthrax case in Connecticut, the subsequent identification of anthrax in the Wallingford postal facility and the response to it, and the lessons we learned in the process that may help focus our response in the future.

Introduction

I have been the Director of the Infectious Diseases Division and State Epidemiologist at the Connecticut Department of Public Health (DPH) for the past 19 years. As the director, I oversee the state's infectious disease surveillance and control programs. Among other responsibilities, this includes investigation of outbreaks of infectious disease and illness, both those that are naturally occurring and those that may be related to bioterrorism. As State Epidemiologist, I am the designated contact person for infectious disease issues in Connecticut with the national Centers for Disease Control and Prevention. I am a physician, trained in internal medicine, infectious diseases, public health and epidemiology. My job is an established civil service job, open to competitive examination. I am not appointed.

When the case of inhalation anthrax in an elderly woman was reported to my Division in November 2001, I relayed the information to Dr. Joxel Garcia, Commissioner of DPH. Within several hours, Dr. Garcia invited the Centers for Disease Control to assist in the investigation. I was assigned by Dr. Garcia to be the DPH Lead Investigator on the joint DPH-Centers for Disease Control (CDC) investigation unit that was rapidly formed and responsible for conducting the onsite epidemiological investigation and response. As co-lead investigator with the CDC team leader, I directed the twice-daily meetings of the investigation unit, provided support staff from DPH for the investigation, communicated important information to the Commissioner of Public Health and Governor and met with Connecticut-based USPS officials at their request to interpret findings from the investigation and explain the rationale for public health recommendations relating to them.

I have been asked to testify on the role of the Connecticut Department of Public Health with regard to sampling, testing and interpretation of test results at the Wallingford, Connecticut USPS postal facility; discussion with the Centers for Disease Control and Prevention with regard to sampling, testing and interpretation of test results; and lessons learned from the investigation, detection and remediation efforts at the facility.

My written testimony covers four areas: 1) the context of the postal component of the investigation - what we knew about the anthrax mail attacks and their health consequences when the investigation began; 2) the role of the Connecticut DPH in the investigation and remediation efforts at the postal facility where anthrax spores were found; 3) how sampling efforts evolved during the investigation and remediation and what advice was given to the USPS regarding sampling and interpretation of test results; and 4) lessons we learned in the process that may help focus our response in the future.

Importantly in the context of discussing postal facilities, the main focus of the investigation at all times was to determine how the Connecticut victim was exposed to anthrax and to assure that anyone who may have been co-exposed was quickly identified and given an opportunity to take antibiotic preventive treatment. The Wallingford postal distribution facility was only one of many sites where the investigation to determine if anyone else had developed anthrax and where environmental sampling for anthrax spores took place. Although the investigation identified anthrax on 4 mail sorting machines in the Wallingford postal facility, no postal worker in Connecticut developed anthrax. A description of the full investigation is being published in the June 2003 issue of the journal *Emerging Infectious Diseases*. It is currently available on line at the CDC website (1).

Context of the Postal Investigation

When the investigation of a case of inhalation anthrax in an elderly woman began in Connecticut on November 20, 2001, a considerable amount of relevant information from the investigation of the mailing of letters containing anthrax to selected news media and to Senators Daschle and Leahy was already known. Salient points included:

- **The last known introduction of anthrax-containing letters into postal facilities was between October 9-12** when the Daschle-Leahy letters entered and passed through the postal distribution system. The last dates from which potentially cross-contaminated mail could have come into Connecticut from the Trenton, New Jersey and Brentwood, D.C. postal distribution facilities through which these letters passed was approximately October 22. The Trenton facility was closed on October 18, the Brentwood facility on October 21.
- **All postal workers with inhalation anthrax were in postal facilities through which the letters passed**; those affected were in the direct vicinity of the letters when they passed through mail sorting machines, physically handled mail or were present after machines were blown out with compressed air. All had developed symptoms within a week of *initial* exposure. **No additional cases had occurred for more than 30 days in workers in those facilities, and no cases had occurred in any other**

postal facilities in the US despite evidence that anthrax spores were likely to be present in many facilities nationally.

- **The actual risk of contracting inhalation anthrax in the Trenton and Brentwood facilities peaked quickly and was low overall:** in Trenton, only 2 of 170 (1.2%) mail sorting workers who were exposed and 2 of 750 (0.25%) workers present at or after the time the letters went through developed illness; in Brentwood, the attack rates were 2 of 190 (1%) workers who were present in the two "high risk" areas of the facility where and when the letters went through, and 4 of 610 (0.7%) overall who worked in these two areas then and until the facility closed. There had been time before antibiotics were offered for many others to become ill. **Exposure appeared to result from plumes of spores generated directly in the vicinity of the contaminated letters when they passed through or generated within 24 hours by cleaning contaminated machines with compressed air (2,3).**
- **Anthrax was readily found using dry swabs throughout the Trenton and Brentwood facilities.** More than 40% of initial samples taken were positive.
- **Many postal facilities in the greater D.C. area and throughout New Jersey had tested positive for anthrax.** These facilities had not been closed for cleaning, and no cases of inhalation anthrax had occurred in them.
- **By approximately October 23, 2003, new guidelines for cleaning postal facilities nationwide were issued.** These guidelines outlined cleaning methods that would minimize the potential to aerosolize anthrax spores that might have entered the postal environment through cross-contaminated mail. No cases of inhalation anthrax occurred after those recommendations were made.
- **Wallingford and 3 other CT facilities had been sampled for gross contamination with anthrax spores in the 2 weeks before the Connecticut case investigation began.** A USPS protocol was used for sampling, a contractor obtained specimens using dry swabs, and the specimens were tested in the DPH laboratory. No positives were found in any of the facilities.
- Several weeks earlier, an older New York woman had died of inhalation anthrax of unknown source; no cases of inhalation anthrax occurred in the New York postal workers.

Thus, at the time the investigation began, there was no reason to think that Wallingford postal workers had been or were at ongoing risk for anthrax, unless a new letter containing spores had been mailed and passed through that facility in the 3 days between the earlier environmental sampling and the onset of symptoms in the patient. In addition, **it had already been established that anthrax spores could be in postal facilities without posing a particular risk for inhalation anthrax.** Spores that had been present in the environment for some time were not felt to pose a risk unless they were aerosolized. Measures had been recommended for all postal facilities to eliminate

cleaning procedures (e.g., use of compressed air to blow dust out of mail sorting machines) that could aerosolize spores.

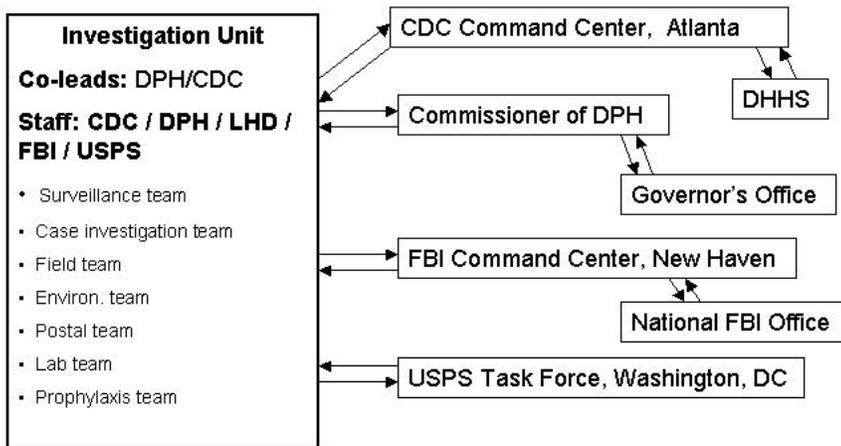
Role of the Connecticut DPH

Investigation and Response.

No single person oversaw the investigation and response to the Connecticut inhalation anthrax case. The DPH teamed with CDC to investigate and respond to situation.

More specifically, the investigation was carried out on site in Connecticut by a multi-agency investigation unit through collaborative matrix management (see organizational chart on the next page). The investigation unit was based in the Connecticut DPH emergency operations center. It consisted of approximately 25 staff from the CDC, 3 staff from DPH, 2 staff from local health departments, 1 liaison person from the New Haven FBI office, and 3 liaison staff from the Connecticut USPS office in Hartford. These assets were divided into teams, each lead by one of the CDC assignees to Connecticut (see chart), which met every morning and evening either in person or by conference call. **The unit was co-lead by three persons: the DPH leader (me), a CDC site leader (Dr. Eric Mast) and a CDC Command Center leader in Atlanta (Dr. David Swerdlow).** Between the morning and evening meetings, we each reported to our respective leaders daily (see chart), and they helped make or endorse all major investigative and response decisions. Dr. Swerdlow and other staff in Atlanta were present on all the daily working meetings. The FBI and USPS liaison staff were present for all daily workgroup meetings and shared information with their respective command centers. Several times, conference calls with the CDC directors, DHHS director and/or the Governor's office were held to discuss key findings and the response to them.

MATRIX OF AGENCIES INVOLVED IN INVESTIGATION OF CASE OF ANTHRAX CONNECTICUT, Nov-Dec 2001



Abbreviations: CDC – Centers for Disease Control; DPH – Connecticut Department of Public Health; LHD – local health departments; FBI – Federal Bureau of Investigation; USPS – US Postal Service, Connecticut

Although all decisions and recommendations regarding finding anthrax spores were group decisions, it was a DPH role to communicate and discuss the recommendations with USPS leaders. Although this was done in part during the working meetings each morning and evening, I was invited at least 3 times during the investigation by the USPS liaison representatives to explain the recommendations to medical and managerial staff from the Wallingford facility. These were: 1) when it was decided at the beginning of the investigation before anthrax spores had been found to offer antibiotics to all Wallingford postal facility workers; 2) in early December when anthrax contamination was initially identified; and 3) a week later when additional results showed that one of the mail sorting machines was heavily contaminated.

Remediation

Remediation of spores once they were identified was generally a separate activity from the investigative ones that focused on determining how the elderly woman with anthrax was infected. Different groups with expertise in remediation took over, and the DPH role in planning and carrying out remediation was more peripheral.

Remediation efforts were necessary in two distinct time periods: first, in response to finding contaminated mail sorting machines during the investigation (December 2001), and second, in response to finding contamination in several "high bay" areas over those machines three months later in safety testing done prior to scheduled cleaning (March-April 2002).

The main remediation team consisted of USPS, the USPS Task Force in Washington, D.C. (including representation from EPA), CDC-NIOSH, and, in April 2002, the USPS contractor for cleaning and remediation In both instances, the DPH laboratory performed testing of samples taken to determine the limits of contamination. I was a nominal member of the remediation team in each case, but, as neither I nor anyone else at DPH had any experience with remediation, DPH did not participate directly in planning remediation. However, as the state public health agency, **DPH helped the remediation team develop recommendations for what precautions needed to be taken to protect USPS workers while the remediation was occurring, in interpreting results and making recommendations for responding to them.** When contamination of the "high bay" area was identified in samples taken by the contractor prior to cleaning, I was asked to explain the public health recommendations developed by the remediation team (including CDC) to workers at the Wallingford facility. In this latter instance, I met with all individuals at the facility, not just managers and supervisors.

Sampling to Detect Anthrax

Changing purpose and methods

The purpose of sampling the Wallingford postal facility and the persons designing the sampling scheme and doing the sampling constantly changed. Sampling was generated by the postal service, by the investigation of a case of anthrax outside the postal service and in anticipation of remediation or cleaning efforts.

During the investigation of the case of anthrax outside the postal facility, the goal of sampling was to find objective evidence in the form of spores to determine where and how the elderly woman with anthrax was exposed. Testing of the postal facility was only one focus of the investigation to see if there was a residual spore trail there to support the hypothesis that she was exposed via the mail. However, the house of the anthrax case was focused on just as intensively, as was her local mail route and every place she had visited during the potential incubation period after exposure.

In this context, **sampling of the Wallingford postal facility for anthrax was conducted a number of times and for changing reasons, based on the results of previous testing both within and outside of the postal facility. The following is an outline of the dates sampling was conducted, the reasons for sampling, the agencies involved in designing the sampling scheme, the results and the conclusions from each round of sampling.** The experience with environmental sampling for anthrax spores is discussed in more detail in an article written by some of the investigators and published in the October 2002 issue of *Emerging Infectious Diseases* (Reference 4, appended at the end of this testimony).

- **November 11, 2001** - prior to any anthrax case in Connecticut; conducted by a USPS contractor using their own protocol and dry swabs to identify whether there was gross contamination of the facility. Although the DPH laboratory was contracted for testing, the sampling protocol was confidential and no input on it was requested from DPH. **Results: All samples were negative.** Conclusion: no evidence of gross, widespread contamination such as might have been found if a letter intentionally packed with anthrax spores had passed through the facility. **Of note, only 1 sample was taken from a mail sorting machine - not the one that was found later to be heavily contaminated.**
- **November 21, 2001** - within 24 hours of confirmation of an anthrax case in Connecticut; conducted by a different USPS contractor using their own protocol and dry swabs to identify whether there was any evidence that contaminated mail had passed through the facility. In particular, sampling focused on surfaces where mail was handled or in the air handling units. DPH was not consulted for sampling design. **Results: All samples were negative.** Conclusion: from this and negative sampling of the patient's house, no evidence that a letter intentionally packed with anthrax spores had passed through Wallingford or been opened in the patient's home. The sampling was felt to be sensitive enough to have detected a letter similar to the ones sent to Washington. However, sampling was not felt to be sensitive enough to rule out the possibility that a letter with fewer spores, such as a cross-contaminated letter had passed through. **Of note, only 6 samples were taken from mail sorting machines - none from the one that later proved to be heavily contaminated.**
- **November 25, 2001** - conducted by CDC using a more focused protocol developed by the investigative team (including DPH) and potentially more sensitive wet swabs to determine whether there was evidence that a contaminated letter or package had

passed through the postal facility - focused on sampling a wide variety of mail processing machines that may have handled mail destined for Oxford, CT.

Results: None were positive. Of note, only 8 samples from mail sorting machines, none from the heavily contaminated one. **Conclusion:** did not look hard enough for contamination to rule it out. Need intensive, systematic sampling of all mail sorting machines before give up on trying to see if mail might have been a source of exposure to anthrax.

- **November 28, 2001** - conducted by CDC using a much more focused and intensive protocol developed by CDC Atlanta and investigative team and wet wipes and vacuum samples from each of 13 mail sorting machines. **Purpose was to definitively determine whether there was any residual evidence that a contaminated letter had passed through the Wallingford postal distribution facility.** **Results:** A total of 130 samples collected, all from mail sorting machines, between 8-13 samples from each. By December 2, preliminary reading of culture plates by the contract laboratory in Texas showed a total of 7 specimens from 4 different mail sorting machines appeared to be positive for anthrax (4 of 8 samples from the heavily contaminated machine). **Conclusions:** 1) if you look hard enough, you can find spores; 2) evidence suggests that one machine, one handling mostly "bulk" mail, may be more heavily contaminated, may be clue to how anthrax case was exposed; 3) spores most likely entered Connecticut in mid-October and had not caused any inhalational disease during the high risk time period in the few days afterwards when spores could have been airborne before settling; 4) contamination found has not posed a continuing risk to workers, as cleaning procedures have been used that do not aerosolize spores and none of nasal swabs from more than 450 workers tested positive; 5) presence of contamination justifies keeping postal workers on antibiotics for full 60 days - may have been exposed in mid-October; 6) contaminated machines should be taken off line and decontaminated; 7) one more round of intensive sampling of contaminated machines should be done before decontamination to see if one machine is truly more contaminated than the others.
- **December 2, 2001** - conducted by CDC using focused and intensive protocol to sample four positive machines - 48-52 wet wipe samples from mail sorting boxes taken from each machine. **Results:** Only 1-3 positive samples from each of 3 of the machines; 30 (>50%) positive from the heavily contaminated machine. In addition, one of the earlier vacuum samples from underneath the vibrator section of that same machine came back with an estimate that it had approximately 3 million spores. **Conclusions:** 1) one machine much more contaminated than the others - the machine on which contaminated mail likely entered Connecticut; 2) most likely, source of spores was cross-contaminated bulk mail that entered Connecticut in mid-October and had been there since then; 3) the previous conclusions about risk to workers are unchanged by these findings - the real risk was when the spores were introduced and possibly airborne in the vicinity immediately around the machine, not now; 4) the positive findings from the one heavily contaminated machine further justifies continuing workers on prophylaxis for

the full 60 days, particularly workers who worked around mail sorting machines; **5) prior to remediation, need to do sampling above the machines to see if evidence that spores had been aerosolized when introduced in October to determine whether additional decontamination is needed; 6) given that the finding of the heavily contaminated machine and the one sample with as many as 3 million spores was a *chance finding* resulting from a determination to be sure there was not a spore trail to explain the inhalational anthrax case, no one can be sure that similarly contaminated machines are not present in many postal facilities nationwide. While spores on the ground do not pose a threat if they remain there, it is important to continue using cleaning methods that will not aerosolize spores.**

- **December 7 (?), 2001** - conducted by CDC/NIOSH using protocol they developed and vacuum and wet wipe sampling around air vents and up to 6 feet directly over the machines to be decontaminated (not "high bay") - for remediation purposes. Results: **No samples were positive, although fewer than 10 were taken, none from the high bay area.** Conclusion: no evidence of aerosolized spores; can just decontaminate the machines.
- **Mid-March 2002** - conducted by a USPS contractor using a protocol they developed in conjunction with CDC/NIOSH and vacuum methods. Purpose was to assess whether evidence of anthrax contamination of "high bay" area prior to cleaning that area. Testing done at DPH laboratory. Results: **3 of more than 100 samples positive. All three positives were just above the machines that were found to be contaminated in December 2001.** Conclusion: **1) contamination was not unexpected - is likely old - present since mid-October 2001; 2) no new prophylaxis needed - have been no cases of anthrax, no aerosol-generating procedures; 3) areas of known contamination should be safely decontaminated prior to cleaning of the high bay area.**

Selection of sampling strategy and methods

Neither the DPH nor CDC were involved in selecting the initial sampling strategy for USPS when they were doing routine testing of many postal distribution facilities nationwide.

The sampling strategy and methods used during the investigation of the case of inhalation anthrax and which ultimately detected anthrax were determined by CDC staff based in Atlanta in consultation with the environmental sampling team from NIOSH/ATSDR that they sent to Connecticut. These persons already had substantial experience from working in Washington, DC, Florida or New Jersey, and used this experience to determine how to approach environmental sampling in Connecticut.

The sampling strategies used by the contractor who tested the high bay area were worked out in conjunction with CDC. By March 2002, there had been substantial experience with different sampling methods. It was realized that vacuum samples were the most sensitive and they were used.

The laboratory testing methods were those worked out and recommended by CDC. **Most of the samples for testing were handled by the DPH laboratory.** Staff at DPH had taken CDC training courses and had passed proficiency testing. **The one exception to the DPH laboratory handling specimens from the postal facility was the November 28 sampling, consisting of vacuum and wet wipe specimens.** Vacuum and wipe specimens take much more time to work with (involve extraction and concentration steps). Because a large number of specimens were collected and because the DPH laboratory was also working with a large number of specimens from repeated sampling of the patient's home, places she visited and the local post office, it would not be able to work with those specimens immediately. Thus, it was decided to send those specimens to a laboratory in Texas with which CDC-NIOSH had a contract. **Unbeknownst to the members of the investigation unit, results from vacuum specimens could be quantitated.** Vacuums pick up a measurable amount of material. Although only about 5-10% of the vacuum sample is tested, the results can be extrapolated to the full sample to obtain an estimate of how many spores were in the sample. Thus, when results from a vacuum specimen were reported as having nearly 6 million spores per gram of material, we were surprised. We had expected only "positive" or "negative". The laboratory was called and testing methods discussed. Given that approximately 0.5 grams of material had been in the sample, we estimated that the sample contained 3 million spores. Our concern then was that, if effectively aerosolized (something not easy to do), this could pose a health risk to the people in the immediate area where aerosolized.

Interpretation of quantitative test results

There are two aspects of quantitation of results from testing of the Wallingford postal facility. First, there is the percentage of samples that were positive. This peaked at 58% for the heavily contaminated mail sorting machine, followed by only a 2-6% range among the other 3 contaminated machines. In addition, the same machine had a single vacuum specimen with approximately 3 million spores. The only other positive quantitative vacuum sample was approximately 270 spores, from a machine with only one specimen (2%) of all specimens from that machine during the intensive retesting effort testing positive.

Quantitative results were interpreted by the investigative team and the persons they reported to (CDC leadership, Connecticut Commissioner) in light of the findings from other investigations and other findings in this one. They indicated that one mail sorting machine was still fairly heavily and consistently contaminated with anthrax, approximately 6 weeks after it was likely contaminated. Given that: 1) the risk of inhalation anthrax would have been greatest when the spores entered the postal facility; 2) no one was begun on prophylaxis for at least a month after the spores likely arrived, yet no one developed anthrax; 3) there was no evidence that there had been widespread contamination based on multiple efforts to sample the facility; 4) many other postal facilities likely had a similar level of contamination that was unrecognized and no one working in these other postal facilities had developed inhalation anthrax; 5) no matter how many spores were found, as long as they were not airborne, they did not pose an immediate risk; 6) the Wallingford facility had not used cleaning

procedures that might aerosolize settled spores for more than a month; there was no added risk to workers from finding high quantitative levels of spores compared to finding any spores. Thus, **the advice given to the USPS was that the only public health actions necessary to protect worker physical health were to: 1) continue antibiotics on all workers, emphasis on those who worked around the contaminated mail sorting machines, for a full 60 days; 2) immediately stop using the machines that tested positive for anthrax and disinfect them; 3) continue with cleaning methods that would not aerosolize spores that might still be present but had not been picked up by sampling.** In addition, it was pointed out that due to the investigation that led to finding spores in the postal distribution center, workers knew there was contamination in their facility and had a chance to discuss their concerns. **In most other postal facilities, workers did not know that contamination was likely present and might pose a threat if their facility became careless with cleaning methods and reverted to those that could potentially re-aerosolize spores.**

Lessons learned

There are a number of lessons learned from the Wallingford experience that may be helpful to the concept of "stamping out anthrax in USPS facilities".

1. **It is possible to have substantial localized contamination of a postal facility with no human cases of anthrax.** The Wallingford postal facility was probably the most thoroughly studied postal distribution center that had no human cases of anthrax. Based on observations from what happened both before and after contamination was discovered, there appeared to be no real human risk from a mail sorting machine with more than 50% of specimens positive and one quantitative specimen of approximately 3 million spores more than a month after it was likely contaminated. Given this and the overall US experience of no cases of inhalation anthrax in postal workers outside of the direct path of known intentionally contaminated letters, it suggests that **widespread testing of the postal system to identify contamination to clean up may not be necessary.** In the future if something like this were to happen again, we need to ask ourselves: if there are no human cases occurring in the first 1-2 weeks after an attack, it is necessary to be concerned about additional cases occurring without additional mailings? We can never fully guarantee that there are no anthrax spores present in a postal facility. One does not want to create panic if there is no need to - it only plays into the objectives of terrorists.
2. **In any sampling initiative, the objectives of sampling need to be clear and the methods tied to them. If the objective of sampling is to find *any* spores if they are there, it is critical to use sensitive methods** (vacuum and/or wet wipe), to sample where the spores are most likely to be, to take enough samples (at least some from every machine), and to go back and sample again if necessary. **Contamination may be localized.** In Wallingford, the objective of the epidemiological investigation was to find any spores if they were there. Positives were not found until vacuum and wet wipe sampling methods were used and every machine was sampled. This lesson was applied successfully to the high bay sampling, in which many specimens were taken using the vacuum method. Few were positive (<3%), but enough were taken

from the right place to find spores. By contrast, **the initial methods used in postal distribution centers around the country were very insensitive:** general sampling (few mail sorting machines), insensitive sampling method (dry swabs) and few specimens (only 53 total, widely scattered, only one sample from one mail sorting machine). It is not clear what the objectives were of this sampling. However, it would only have picked up very widespread and heavy contamination - not localized and variable levels of contamination. **If the objective of sampling is to find levels of contamination that would pose a threat to postal workers, then we need to decide if any sampling is necessary if no human cases have occurred by the time we decide to sample.** On the other hand, maybe the crude level of sampling done on November 11 was adequate to detect contamination that would have been risky at the time it occurred.

3. **If we were to get another mailing like the one in 2001, we need to understand that the risk to postal workers will be highest initially and rapidly diminish, even without preventive treatment with antibiotics.** We also need to assume that all postal facilities can become contaminated from cross-contaminated mail following mailing of such letters. **It appears that the main threat in any facility once spores settle will be from re-aerosolization.** Although it was shown in studies of the Hart Senate Office building that spores fine enough to be inhaled could be re-aerosolized by routine activities such as walking in the office, observational data from postal facilities demonstrated that no one was infected with anthrax anywhere after the first few days spores were in postal facilities. On the other hand, data from Brentwood suggested that two workers may have been exposed as a result of using compressed air to clean out sorting machines in the 24 hours after initial contamination. Using compressed air is much more likely to aerosolize dust than routine physical activities. Ideally, to minimize the potential for re-aerosolization, we should not go back to the old methods of cleaning machinery with compressed air and vacuums that are not equipped with hepa-filters. One contributing reason to the observation **that there were no cases of inhalation anthrax in Wallingford workers or elsewhere in the country due to cross-contaminated mail may be that guidelines to minimize the potential for aerosolization of settled dust and spores were quickly implemented nationwide.**
4. Given what we learned in Wallingford, **it will be difficult to monitor postal facilities proactively for the introduction of a contaminated letter using surface sampling testing methods.** Testing would need to be conducted in each facility in each town where there is sufficient concern to have prospective monitoring. Given the short incubation period of anthrax, it would need to be done daily. And, if it used the surface sampling methods that were successful in Wallingford, it would require use of sample collection from each mail sorting machine by wipe or vacuum. Culturing these samples is cumbersome and time-consuming. We would be lucky to get results back before the first anthrax cases were diagnosed. However, Wallingford confirmed what most of us in public health originally believed, that static anthrax spore deposits introduced through the mail generally do not result in meaningful respiratory exposure to anthrax. **The experience the**

Trenton, NJ and Brentwood, D.C. facilities showed that airborne exposure occurring immediately with introduction of spores in mail is what we really need to be concerned about. In these cases, it took large numbers of airborne spores that contaminated the whole environment to infect only a small percentage of workers. **From an early detection perspective, this type of contamination might be able to be picked up on 1-2 well-placed settle plates.** These are relatively easy to manage in the laboratory and could result in the identification of anthrax in several days.

This concludes my testimony. Thank you again for the opportunity to describe the investigation of the inhalation anthrax case in Connecticut, the subsequent identification of anthrax in the Wallingford postal facility, and the lessons we learned in the process that may help focus our response in the future. I hope my testimony has been helpful.

References

1. Griffith KS, Mead P, Armstrong GL, Painter J, Kelley KA, Hoffmaster AR, et al. Bioterrorism-related inhalational anthrax in an elderly woman, Connecticut, 2001. *Emerg Infect Dis* [serial online] 2003 Jun [date cited]. Available from: URL: <http://www.cdc.gov/ncidod/EID/vol9no6/02-0728.htm>
2. Greene CM, Reehuis J, Tan C, Fiore AE, Goldstein S, Beach MJ, et al. Epidemiologic investigations of bioterrorism-related anthrax, New Jersey, 2001. *Emerg Infect Dis* [serial online] 2002 Oct [date cited];8. Available from: URL: <http://www.cdc.gov/ncidod/EID/vol8no10/02-0329.htm>
3. Dewan PK, Fry AM, Laserson K, Tierney BC, Quinn CP, Hayslett JA, et al. Inhalational anthrax outbreak among postal workers, Washington, D.C., 2001. *Emerg Infect Dis* [serial online] 2002 Oct [date cited];8. Available from: URL: <http://www.cdc.gov/ncidod/EID/vol8no10/02-0330.htm>
4. Teshale EH, Painter J, Burr GA, Mead P, Wright SV, Cseh LF, et al. Environmental sampling for spores of *Bacillus anthracis*. *Emerg Infect Dis* [serial online] 2002 Oct [date cited];8. Available from: URL: <http://www.cdc.gov/ncidod/EID/vol8no10/02-0398.htm>