Bio Terror Bible

EXPOSING THE COMING BIO-TERROR PANDEMIC

BIOTERRORBIBLE.COM: Totally inexcusable lab "accidents" have been occurring at BSL Labs (biosafety level labs) within the United States and around the world. Should a bio-terror pandemic arise, it is possible that a lab "accident" may serve as the scapegoat and source of the deadly pathogen.

Title: Exposure Of Laboratory Workers To Francisella Tularensis Despite A Bioterrorism Procedure
Date: January 10, 2002
Source: JCM

Abstract: A rapidly fatal case of pulmonary tularemia in a 43-year-old man who was transferred to a tertiary care facility is presented. The microbiology laboratory and autopsy services were not notified of the clinical suspicion of tularemia by the service caring for the patient. Despite having a laboratory bioterrorism procedure in place and adhering to established laboratory protocol, 12 microbiology laboratory employees were exposed to *Francisella tularensis* and the identification of the organism was delayed due to lack of notification of the laboratory of the clinical suspicion of tularemia.

A total of 11 microbiology employees and two persons involved in performing the patient's autopsy received prophylactic doxycycline due to concerns of transmission. None of them developed signs or symptoms of tularemia. One microbiology laboratory employee was pregnant and declined prophylactic antibiotics. As a result of this event, the microbiology laboratory has incorporated flow charts directly into the bench procedures for several highly infectious agents that may be agents of bioterrorism. This should permit more rapid recognition of an isolate for referral to a Level B laboratory for definitive identification and should improve laboratory safety (JCM, 2002).

Title: Army Lost Track Of Anthrax Bacteria
Date: January 21, 2002
Source: Washington Post

Abstract: The Army's premier biowarfare research facility at Fort Detrick, Md., lost track of more than two dozen potentially dangerous biological specimens around 1991, including some containing the microbe that causes anthrax, according to scientists who worked there at the time and documents from a 1992 internal Army investigation that looked into the loss.

Moreover, Army investigators were told in 1992 that a Fort Detrick biological warfare research laboratory apparently had been the site of unauthorized anthrax research during weekends and evenings earlier that year, according to the documents, filed as part of a pending lawsuit.

And in contrast to recent assurances by Army officials that Detrick has not dealt with the dangerous, powdered form of anthrax spores in recent decades, such powders were, in fact, inadvertently produced in the lab during the 1990s, according to a scientist who worked there at the time and who has since filed a lawsuit, alleging discrimination, against the Army. The powders were produced while research on less dangerous, "wet" anthrax spores was being conducted, the scientist said.

The spore-laden letters that were sent to members of Congress and media outlets last fall contained a form of dry anthrax spores similar to the Fort Detrick byproduct. Five people were killed and 13 others are known to have been sickened in the attacks.

The unauthorized weekend work, which is not known to have involved the dry form of the bacteria, was accidentally uncovered when a worker noticed that someone had tampered with a device that would have revealed that the equipment had been used after hours, according to the Army investigation.

The apparent improprieties occurred at a difficult time in the Army lab's history -- when there were hard feelings over personnel issues and even a degree of internecine warfare among some workers -- a fact that makes it difficult today to weigh conflicting explanations for the inventory disparities and the apparent tampering with equipment.

It is possible that specimens may simply have been misplaced, according to one source who worked in the Fort Detrick lab and who spoke to The Washington Post yesterday on condition of anonymity.

On the other hand, that source and others said, the emerging details are consistent with the increasingly popular hypothesis that last fall's bioterrorist attacks were the work of a current or former Fort Detrick scientist.

At a minimum, according to several sources who worked there at the time, the personal rivalries and less than fully vigilant security practices offered adequate incentive and opportunity for an employee to make off with at least a few potentially deadly microbial samples.

Officials with the Army and the FBI declined to comment on the revelations yesterday.

Congress did not impose today's strict security measures for research on dangerous microbes until 1996. And at the time of the apparent breaches, several high-ranking people associated with the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID), which oversaw the work at Fort Detrick, were facing allegations ofracial discrimination.

Details of the situation at Fort Detrick in the early 1990s, many of them first published yesterday by the Hartford Courant, are contained in papers filed as part of a 1998 discrimination lawsuit against the Army by an Egyptian American scientist, Ayaad Assaad, a veterinary physiologist who worked at Fort Detrick for nearly a decade before being let go in 1997, during a round of staff cuts.

The United States is a signatory to a 1972 international convention that prohibits research on offensive biological weapons, and the Fort Detrick lab has been officially devoted to defensive research since 1969. The 1992 Army investigation grew out of an internal audit conducted in February of that year that found 27 specimens missing from the lab -- including some containing the bacteria that cause anthrax. It is unclear whether any of the missing specimens belong to the Ames strain, the strain used in last fall's attacks. But Fort Detrick officials have acknowledged that the Ames strain was under study at the lab. The whereabouts of at least some of the 27 specimens remain a mystery.

It also remains unclear whether those specimens -- mostly tissues from animals that had been intentionally infected with the agents that cause anthrax, ebola and other diseases -- contained any viable microbes. The process of preparing them for study under a microscope typically requires subjecting them to toxic chemicals.

But even if those specimens pose no danger, their disappearance suggests that other, dangerous samples may have been subject to removal without authorization, former Fort Detrick workers said.

A woman who worked in the laboratory told Army investigators in February 1992 that she had seen evidence of unauthorized activities in the lab. An odometer-like device that records the use of a high-powered microscope had apparently been tampered with in a way that had concealed its use during evenings or weekends, according to court papers.

One Monday in early 1992, the worker found that the machine had apparently been used over the weekend and that the previous user had failed to close a computer file used to label microscope slides. The label name she saw on the computer screen was "Antrax [sic] 005," according to court papers.

Two former USAMRIID employees contacted by The Post yesterday described becoming aware of the missing bacteria either personally or through court records. Eric Oldenburg, a former Fort Detrick lab technician who now works as a detective in Phoenix, recalled being detailed to help track down the specimens.

"Some anthrax was missing, and there may have been other" types of microbes, Oldenburg said.

Assaad learned of the search through USAMRIID documents turned over to him as part of his lawsuit, which alleges that the Army discriminated against him because of his Arab heritage.

Assaad, who now works for the Environmental Protection Agency, described security at Fort Detrick in the early 1990s as "very lax," compromised by weak policies and what he described as improper relationships between some managers and their subordinates. He said it would have been relatively easy for someone working at USAMRIID's labs to walk out with deadly pathogens.

Assaad also asserted that a dry, powdered form of anthrax was present at Fort Detrick, contradicting repeated recent statements by Army officials that only a liquid form of anthrax was used at the Frederick, Md., facility. Assaad said that during the process of creating a wet aerosol of anthrax for lab experiments, small amounts of anthrax spores would precipitate and cling to the sides of lab equipment. "It dried to a powder as fine as any you could make," Assaad said. "You could collect some of it using a Kleenex or your finger."

The anthrax spores in the letters sent to Sens. Thomas A. Daschle (D-S.D.) and Patrick J. Leahy (D-Vt.) were in the form of a fine powder -- particularly dangerous because the powdered form spreads more easily and penetrates the lung's deepest passages. Fort Detrick workers were not at risk of infection because they were vaccinated.

Assaad was interviewed by FBI agents on Oct. 3, shortly before news of the first anthrax attacks broke, after an anonymous note accused him of being a bioterrorist. The FBI concluded the letter was a hoax, but the timing of the incident makes Assaad suspect that the writer had foreknowledge of the anthrax-laced letters sent to New York and Washington and the letter believed to have been sent to Florida.

"After the attacks, I called the FBI to offer my assistance, but I never heard back from them," Assaad said (Washington Post, 2002).

Title: Suspected Cutaneous Anthrax In A Laboratory Worker --- Texas, 2002
Date: March 6, 2002
Source: CDC

Abstract: On March 6, 2002, CDC's National Institute for Occupational Safety and Health (NIOSH) received a request for a health hazard evaluation from the director of Laboratory A to assist in the evaluation of a worker who had been diagnosed with cutaneous anthrax. Laboratory A, a provisionally approved Laboratory Response Network level B laboratory, had been processing environmental samples for *Bacillus anthracis* in support of CDC investigations of the bioterrorist attacks in the United States

during fall 2001. Since March 7, CDC has interviewed the ill laboratory worker and other workers at the laboratory and conducted environmental assessments of the workplace. This report summarizes the epidemiologic and environmental investigation of this case, which indicates that the likely source of exposure was the surface of vials containing *B. anthracis* isolates that the worker placed in a freezer on March 1. Laboratory workers handling specimens of *B. anthracis* should follow recommended procedures to minimize the risk of *B. anthracis* transmission and anthrax.

The laboratory worker was one of three employees of Laboratory A who had primary responsibility for processing environmental *B. anthracis* specimens. Neither this worker nor any of the other approximately 40 employees of Laboratory A had received anthrax vaccine. The laboratory worker did not handle *B. anthracis*-containing samples or cultures during February 19--28. On February 28, he cut a small bump on his right jaw while shaving, which bled briefly and then became itchy and irritated. On March 1, he assisted a co-worker moving vials containing aliquots of confirmed *B. anthracis* isolates from the biological safety cabinet (BSC) in the main laboratory to the freezer in an adjacent room. The co-worker had transferred the isolates from blood agar plates to the vials by collecting the growth with a swab. The co-worker removed the vials from the BSC and handed them to the patient. Without gloves, the patient took the vials from the co-worker, placed the vials in the freezer, and then washed his hands with soap and water. During the next 2--3 days, the worker's facial wound increased in size and developed a scab. He also reported right cervical adenopathy, a low-grade fever, and swelling and erythema on his right cheek and neck. The patient's health-care provider obtained a swab of the area underneath the scab and of the area under a vesicle, without cleansing the skin first. The health-care provider made a presumptive diagnosis of cutaneous anthrax and the patient was administered a 2-week course of ciprofloxacin.

The culture of this specimen was positive for *B. anthracis* on testing at Laboratory A and CDC. Because of culture results, the patient was admitted to the hospital on March 5 and treated with intravenous ciprofloxacin and doxycycline pending antimicrobial susceptibility testing. The lesion developed the characteristic eschar of cutaneous anthrax. A chest radiograph performed on admission demonstrated possible fullness of the mediastinum, but computed tomography of the chest was normal. The isolate was susceptible to ciprofloxacin and doxycycline, and the patient continued receiving ciprofloxacin. The patient's symptoms improved during hospitalization, and he was discharged on March 9. Serologic studies for antibodies to *B. anthracis* are planned.

On March 5, Laboratory A's certified industrial hygienist (CIH) performed environmental sampling of both Laboratory A and the patient's residence. Seven wipe samples were taken at the laboratory (i.e., the top of the vials the patient had handled, the key to the freezer where the vials were placed, the doorknob of the freezer room, the centrifuge where specimens are prepared, the two BSCs where specimens are handled, and surfaces in the patient's office in Laboratory A), seven were taken at the patient's residence. The CIH then cleaned surfaces and equipment throughout the laboratory and the patient's residence by using a disinfectant containing a phenolic and a quaternary ammonium compound, which are not sporicidal. The environmental samples were analyzed in Laboratory A. All samples were negative except the wipe sample collected from tops of the vials that the patient had handled, which was positive for *B. anthracis*. Confirmation of the vial top specimen at CDC is planned.

Workers reported that specimen processing of environmental samples suspected of containing *B. anthracis* is done under Biosafety Level 3 (BSL-3) conditions (*1*). These samples, including swab, wipe, dust (collected onto filter media by a vacuum), and air samples, are opened in a Class II, Type A BSC in a room designated for acid-fast bacillus specimens (AFB room). Personal protective equipment (PPE) for procedures performed in this room includes disposable, fluid-resistant laboratory coats, gloves, and either a NIOSH-certified N95 or P100 disposable, filtering-facepiece respirator, which are disposed of into a biohazard container before exiting the room. Work with purified *B. anthracis* cultures is performed in a separate BSC located in the main laboratory room. PPE at this workstation consists of gloves and a laboratory coat. Aliquots of confirmed isolates of *B. anthracis* are placed in vials and stored in a locked freezer in a room located off the main laboratory. A 10% bleach solution is routinely used to decontaminate surfaces after processing specimens potentially containing *B. anthracis.* However, because bleach caused labels to become dislodged, storage vials had been sprayed with 70% isopropyl

alcohol instead of being wiped with bleach. By the time of the CDC site visit, Laboratory A personnel had obtained labels for storage vials that would not dislodge with bleach.

On March 7 and 8, CDC interviewed Laboratory A workers; none reported illness among other employees or their family members. CDC also conducted environmental sampling at Laboratory A on March 7, consisting of 40 surface wipe and 36 air samples. Wipe samples obtained with sterile polyester/rayon pads, moistened with sterile water, were collected from various surfaces in the laboratory and in the adjacent office area, including desks, flooring, door knobs, BSCs, heating, ventilation, air-conditioning return air grills, and laboratory equipment (including the centrifuge and shaker used for processing environmental samples). Air samples were collected in three locations in the laboratory: the AFB room, the area adjacent to the BSC used for anthrax work, and the general microbiology area; two locations in the adjacent office area; and outdoors. All environmental samples were negative for *B. anthracis* at CDC.

On March 8, CDC performed a building assessment, including a ventilation survey, airflow distribution mapping, and BSC characterization. The AFB room was not under negative pressure in relation to adjacent areas of the main laboratory; however, the laboratory was under negative pressure relative to the outside and to the adjacent office areas. The BSCs were functioning adequately (CDC, 2002).

Title: Fort Detrick Worker Exposed To Anthrax
Date: April 19, 2002
Source: CNN

Abstract: An employee at the U.S. Army biological lab at Fort Detrick, Maryland, has tested positive for exposure to anthrax, a spokesman said Friday.

The employee, who had been previously immunized, is not sick but was put on precautionary antibiotics, base spokesman Chuck Dasey said.

Low levels of anthrax spores were found in an administrative room and a service hallway outside a laboratory in one building, Dasey said.

Medical assessments of employees were started after a scientist noticed a deposit on a flask in a laboratory where general anthrax research is conducted, he said.

It appears any release of anthrax was accidental and was not related to terrorism, officials said.

The deposit was not found in the area where tests are being done on the anthrax-laced letter that was sent to Sen. Patrick Leahy last year, Fort Detrick officials said in a written statement.

"The presence of anthrax spores appears to be highly localized based on negative results from samplings of surrounding areas. There are no cases of anthrax exposure at the laboratory and appropriate measures are being taken to ensure the safety" of the Army Medical Research Institute, the statement said.

Dasey added that a second employee who works in the area also has been put on precautionary antibiotics. That employee also had been vaccinated.

It appears any release of anthrax was accidental and was not related to terrorism, officials said (CNN, 2002).

Title: 2nd Leak Of Anthrax Found At Army Lab
Date: April 24, 2002
Source: UCLA

Abstract: For the second time this month Army officials have found evidence of an accidental release of anthrax spores in an Army biodefense research building in Frederick, this one involving a different and relatively benign strain of the microbe.

The Army emphasized yesterday that no military researchers had fallen ill from the apparent lapses, and it offered reassurance that the public was not at risk. But an Army official also acknowledged that the discovery, which a university anthrax researcher yesterday called "highly embarrassing," indicated a failure to follow safety protocols at the high-security lab.

The Army's handling of the problem also drew criticisms from political leaders and the director of a company that does laundry for the lab, who said the Army did a poor job of communicating with the firm after it appeared that the biowarfare bacteria might have spread to the off-base laundry.

The two new contamination spots were found in Fort Detrick's Building 1425 during testing conducted last weekend, officials said. That testing, involving more than 800 swabs, had been initiated Friday after potentially deadly anthrax spores were found to have escaped from a sealed lab and spread to other areas inside the building.

The newly discovered spores, whose precise location in the building was not revealed, belong to a strain that is used in vaccine research and is not capable of causing anthrax, said Charles F. Dasey, spokesman for the U.S. Army Medical Research Institute of Infectious Diseases, which operates the complex at Detrick.

The previous accidental release, first suspected April 8 after researchers found an apparent spill and confirmed by the Army on Friday, involved a strain that has not been identified but definitely is not the harmless vaccine strain, Dasey said. The spores were found in a locker room and adjacent hallway.

Martin E. Hugh-Jones, an anthrax researcher at Louisiana State University who used to work at Detrick, said the twin breachings of biological security were "highly embarrassing" and evidence of a lack of leadership there. "It looks like somebody made a mess, they tried to clean it up, they didn't tell anyone and they left."

But Tara O'Toole, director of Johns Hopkins University's Center for Civilian Biodefense Studies, said that assessment was too harsh. Only four tests out of nearly 1,000 have come up positive, she noted. "That actually speaks to the excellence of their efforts."

The Army is investigating how the releases occurred but had no explanation yesterday. But Dasey acknowledged "a break in established laboratory procedure."

Scientists working in the biosafety level-3 lab, which is designed for experiments on deadly microbes, must leave lab clothing and booties behind in special refuse containers before leaving the lab. They exit directly into a shower area, where they are required to wash before entering less secure areas of the building.

The two discoveries of spores suggest that someone did not follow those procedures and tracked the microbes into unprotected areas, Dasey said. The first discovery in the locker room and adjacent hallway opened the possibility that contaminated towels may have been shipped to the laundry, where the spores could have hitched rides to other locations.

Frederick Mayor Jennifer P. Dougherty criticized Detrick officials yesterday for not telling the city that spores might have spread off the Detrick compound.

"The concern here goes beyond the gates of Fort Detrick," Dougherty said.

Army officials informed the mayor of the building's problems about noon Friday, a few hours before telling the news media, Dasey said. But they did not alert city officials of the possibility that spores might have spread to Jeanne Bussard Center Inc., a nonprofit company that employs disabled people and subcontracts with Fort Detrick for laundry services.

Moreover, though the Army told the firm's executive director Friday that it would test laundry employees for exposure, it did not make clear that it would test the physical plant as well. When the executive director was unable to reach the Army on Saturday to confirm those intentions, she grew frustrated and scared and hired a private company to test the facility immediately.

Detrick officials, who say they had been trying unsuccessfully to reach the director, had the facility tested later that day and found no traces of anthrax. But by then, the town was abuzz with talk that the Jeanne Bussard Center might have been hit by anthrax.

Del. Sue Hecht (D-Frederick) said she heard rumors about contamination at the facility while walking in downtown Frederick on Saturday afternoon. She called Dougherty, who called city and county officials. None of the local officials knew that off-site workers had been tested, Hecht said.

"We realized that nobody knew about this," Hecht said. "... The good news is that everything was fine. The bad news is that there was a serious lack of communication and lack of process."

As of yesterday, approximately 35 people, including seven off-base laundry workers, had their noses swabbed for evidence of exposure, Dasey said. Only one of those people -- one of the two scientists who discovered the first spill -- has tested positive for exposure. That scientist had previously been vaccinated against anthrax but is now on antibiotics as a precaution.

The building is undergoing its second decontamination effort in four days in an effort to wipe out the newly discovered spores and also to make a second stab at killing all the spores from the first spill (UCLA, 2002).

Title: Laboratory-Acquired West Nile Virus Infections --- United States, 2002
Date: December 20, 2002
Source: CDC

Abstract: West Nile virus (WNV), a mosquito-borne flavivirus introduced recently to North America, is a human, equine, and avian neuropathogen (*1*). The majority of human infections with WNV are mosquito-borne; however, laboratory-acquired infections with WNV and other arboviruses also occur (*2--4*). This report summarizes two recent cases of WNV infection in laboratory workers without other known risk factors who acquired infection through percutaneous inoculation. Laboratory workers handling fluids or tissues known or suspected to be WNV-infected should minimize their risk for exposure and should report injuries and illnesses of suspected occupational origin to their supervisor.

Case Reports

Case 1. In August 2002, a microbiologist working in a U.S. laboratory was performing a necropsy on a blue jay submitted as part of a state's WNV surveillance program. The microbiologist worked in a Class II laminar flow biosafety cabinet under biosafety level 2 (BSL-2) conditions (*5*) and lacerated a thumb while using a scalpel to remove the bird's brain. The wound, a superficial cut over the dorsal surface of the interphalangeal joint, was cleansed and bandaged. Four days after injury, the microbiologist had acute symptoms of headache, myalgias, and malaise followed by chills, sweats, dysesthesias, recurring hot flashes, swelling of the post-auricular lymph nodes, and anorexia. Two days later, the microbiologist noted a maculopapular rash that began on the face; extended to the trunk, arms, and legs during the next 3 days; and then disappeared gradually. The microbiologist continued to work during illness and had intermittent chills, sweats, dysesthesias, and hot flashes for approximately 1 week before recovering fully. On the third day of illness (7 days post-injury), the microbiologist sought medical care from a physician and reported no history of recent mosquito bites, prolonged outdoor activities, or recent blood transfusion. On physical examination, the patient was afebrile with erythema on the cheeks, but the examination was otherwise normal. Serial serum samples taken from the patient and submitted to CDC for WNV serologic testing revealed evidence of an acute WNV infection. The initial specimen (collected 3 days after illness onset) was negative for WNV-specific IgM or neutralizing antibodies. Specimens collected 13 and 21 days after illness onset both were positive for WNV-specific IgM antibody; the latter specimen was

positive for WNV-specific neutralizing antibody, with a titer of 160; the specimen collected 13 days after illness onset was not tested by neutralization. The brain of the blue jay tested positive at CDC for WNV RNA by real-time polymerase chain reaction (TaqMan®) using two primer/probe sets.

Case 2. In October 2002, a microbiologist working in a U.S. laboratory who was harvesting WNV-infected mouse brains in a Class II laminar flow biosafety cabinet under BSL-3 conditions (*5*) punctured a finger with a contaminated needle. The wound was cleansed and bandaged. The microbiologist's body temperature was measured several times each day, and 3 days after injury, the microbiologist had upper respiratory infection (URI) symptoms without fever or chills. The next day, URI symptoms continued with malaise, fatigue, chills, and a low-grade fever (100.9° F [38.3° C]). That evening, the patient took an over-the-counter cold medication. The next morning, the patient awoke without fever or chills but with continued URI symptoms and a dry cough and hoarseness that persisted for >1 week, although the patient missed only 1 day of work. At no time did the patient notice a skin rash, an increase in the usual degree of joint pain, or a stiff neck. The patient reported no history of recent mosquito bites, prolonged outdoor activities, or recent blood transfusion. The patient had a history of exposure to multiple flaviviruses or flavivirus antigens (i.e., had had dengue fever and had received yellow fever and Japanese encephalitis vaccines). Serial serum samples taken and submitted to CDC for WNV serologic testing revealed evidence of an acute WNV infection. WNV-specific IgM antibody was absent from both the initial specimens (1 day after injury and 3 days before fever onset) and a specimen collected 2 days after fever onset. Anti-flaviviral IgG antibody was detected in both of these specimens by enzyme-linked immunosorbent assay (ELISA), but no change in the intensity of IgG activity was observed. A serum specimen collected 10 days after illness onset was positive for WNV-specific IgM antibody and showed a sharp increase in the intensity of anti-flaviviral IgG antibody by ELISA. Neutralizing antibody test results are pending (CDC, 2002).