



Pathology & Biology Section – 2004

G46 Investigation, Identification, and Repatriation of Contaminated Fatalities

*Craig T. Mallak, MD JD**, Office of the Armed Forces Medical Examiner, Armed Forces Institute of Pathology, 1413 Research Boulevard, Rockville, MD 20850; *Elsbeth C. Ritchie, MD**, USUHS, Department of Psychiatry, Room B3068, 4301 Jones Bridge Road, Bethesda, MD 20814

After attending this presentation, attendees will understand the complications involved in the investigation and identification of infectious remains and have a raised level of awareness of the potential complications involved with the transportation of contaminated remains from overseas into theater.

The presentation should alert and inform medical examiners, policymakers, investigators and others as to the complexities involved in investigation, identification and repatriation of contaminated fatalities.

The recent war in Iraq raised the specter that chemical, biological or radioactive agents would kill soldiers. Although most remains contaminated with most chemical or nuclear agents could be decontaminated, remains contaminated with smallpox, anthrax or other agents such as Ebola virus would remain hazardous and present a potential threat to if returned to the United States.

Current DoD policy and commitment is to return remains the remains of all fallen service members to the United States as expeditiously as possible. Cremation prior to return renders biological and chemically contaminated remains safe, but is contraindicated for radioactive remains. Unfortunately, involuntary cremation is specifically prohibited by U.S. military regulations. To date, the United States military did not have a good strategy to return of radioactive or potentially infectious remains to the United States.

For the occasional civilian case of contaminated remains being returned to the United States, the Centers for Disease Control (CDC) issues a permit allowing importation. To obtain this permit, the remains must be a hermetically sealed and remain sealed until buried. Such a hermetic seal would be adequate for transportation of biological, chemical and radioactive remains except for gamma emitters.

As this issue was addressed, there were two guiding principles. Paramount of these was protecting the health of mortuary affairs teams, medical personnel, other service members, and the American public. Protection of the living must take precedence over rapid repatriation of remains. There was also a commitment to fully and scientifically account for those who died in service to this country, even if the remains could not be returned.

A system was designed consisting of a commercially available "Zeigler casket" enclosing a "Ziegler case" that the manufacturer claimed to produce a hermetic seal. Inside the case the remains were to be contained within a "Bioseal" pouch. This triple seal containment system failed several tests conducted in early March 2003 in an altitude chamber. The Zeigler case leaked, even at sea level. The Batesville casket and Zeigler case warped and lost integrity under a drop of only four feet. The Bioseal system was hard to seal properly, even while testers were wearing normal clothes and in clean controlled conditions. It did maintain a seal to 67,000 feet when sealed properly. Small amounts of sand in the seam ruined the seal. Thus, we currently do not have a system that maintains a hermetic seal under testing.

Temporary interment was chosen as the next best option at that time (March, 2003), but was not deemed as a desirable. It would be done only when decontamination attempts were not successful. A tissue sample would be obtained prior to interment and shipped to Armed Forces DNA Identification Laboratory (AFDIL) for identification of the decedent and for possible identification of the pathogen.

Three other options are currently under study: a better containment system; irradiation in place; and voluntary cremation in theater. A better containment system is being developed. Irradiation in place requires that a mobile irradiator be developed. Mandatory cremation would also require a crematorium in theater. Although the end of the war meant that those options were not needed immediately, it is anticipated that future conflicts will produce the same issues.

Contamination, Identification, Repatriation