

DNA Identification After an Explosion at Sierra Chemical

Renee Romero, M.S., Jeffrey Riolo, B.S.

Washoe County Sheriff's Office, Forensic Science Division, 911 Parr Boulevard, Reno, NV 89512



On January 7, 1998 two explosions took place at the Sierra Chemical Plant, and explosives manufacturing plant located a few miles east of Reno, Nevada. These two explosions registered 2.0 and 2.3 on the Richter scale. At least twelve employees were reported to be on site at the time of the explosion. Eight were accounted for within hours. The four missing died in the explosion. Through DNA typing, the remains of three were identified. This poster demonstrates the successes and failures of DNA typing.

There were numerous agencies from local to national levels that were called upon to help in securing the area, and CARDA, (California Rescue Dog Association) were dispatched into the blast area and were able to find human tissue samples. The Washoe County Sheriff's Office- Forensic Division assisted in the documentation and collection of the tissue samples found by the dog teams. There were approximately 49 tissue samples found throughout the scene. One full body was found and later identified through personal effects and a tattoo (the face was not identifiable). The remaining tissue ranged from an upper torso to samples two centimeters in diameter. The conditions of these samples also varied. Some were intact to the point of being identifiable by a pathologist some were charred beyond recognition. DNA from 82% of the tissue samples was isolated and typed by PCR analysis.

When analysis of the samples started it was thought that the major problem would be the amount and quality of DNA from these tissues. Problems actually arose with the samples collected as reference standards. The first was obtaining the samples from the relatives of the victims and the second was testing these samples. A direct reference standard was developed for two of the victims through their clothing. The third victim was identified through genetic relationship testing using RFLP technology and blood samples from the victims mother and sister.