

## CBRNE-TERRORISM NEWSLETTER – August 2013

would be a representative test criterion for determining the performance of SCBA facepiece lenses. It is representative of the flux experienced by firefighters approaching the onset of the deadly phenomenon known as flashover, a state of total surface involvement in a fire of combustible material within an enclosure. Also, the researchers found that measuring internal facepiece pressure was indicative of when holes formed and the effect of holes on firefighter air-supply duration and breathing protection.

The new test and test conditions are important advances in improving the performance of what has been, perhaps, the most vulnerable component of a firefighter's protective gear in high-heat conditions.

Failure of a lens can expose a firefighter to toxic gases and can result in burns to the respiratory tract as well as asphyxiation. Documented problems include holes and extensive crazing as well as bubbling and deforming of lenses.

In several SCBA-related deaths, degraded masks were found affixed to the faces of victims who suffered thermal burns to their airways.

The release notes that in the United States, SCBA makers submit their products for certification testing before they are sold. Until 31 August 2013, compliance to NFPA standards only requires passing a less severe "heat and flame test," specified in the 2007 version of NFPA 1981 and retained, with the new NIST test, in the recent update.

NIST experiments conducted during development of the new facepiece-lens test were supported, in part, by the Department of Homeland Security Science and Technology Directorate (S&T) and the United States Fire Administration. The National Institute for Occupational Safety and Health (NIOSH) Fire Fighter Fatality and Injury Prevention Program played a critical role in identifying the lens degradation issue.

— *Read more in NFPA 1981: Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services; NIST Study of Hazard to Firefighters Leads to Safety Alert; and Thermal Performance of Self-Contained Breathing Apparatus Facepiece Lenses Exposed to Radiant Heat Flux (NIST Technical Note 1785, February 2013)*

## Moulage Concepts: "Bridging the Gap" in Simulated Training Exercises

By Bobbie Merica

**How good are you at pretending, at engaging and play acting?** If you were instructed to care for a simulated victim with a patient profile card that read "hemorrhaging gunshot wound" or "open pneumothorax" could you see in your mind? Would your pulse instinctively quicken at the thought of congealed blood pooling around the victim or bloody froth at the chest wound entry



point, bubbling with each exhalation? Working instinctively, would you begin putting pressure on imaginary wounds and shouting out orders,



## **CBRNE-TERRORISM NEWSLETTER – August 2013**

adrenaline building, propelling you into what you have been trained to do—save a life. If you had never experienced these two medical emergencies and I asked you to pretend in your scenario that your victim had them, could you do it?

**Moulage-What is it?** French for casting or molding, moulage is the art of applying life-like injuries to assist in providing realism, training techniques and shock desensitization to first responders, military, medical staff, veterinarians and youth education groups alike. Moulage may be as simple as applying pre-made rubber or latex molds or as complex as using advanced three-dimensional interactive wounds, makeup and theatre techniques to provide elements of authenticity to the training scenario—incorporating wounds such as impaled objects, crush injuries, 4th degree burns and blisters that rupture when improperly handled. The addition of moulage supports the sensory perception in a training exercise; assisting the responder in confirming the physical signs that support the diagnosis, enabling discovery of data pertinent to assess patient status, and teaches responders how to gather information relevant to the correct treatment—all of which increases knowledge and performance in response time, evaluation clues, critical thinking, realism and sensory engagement.

### **Medical Moulage -How to Make Your Simulations Come Alive, 2011**

The addition of Moulage creates realistic field training exercises that mimic responder and victim situational responses that are specialized to training outcomes including:

- Pediatric specific field triage
- Elderly & immune-compromised
- Pathologic patient conditions
- Veterinarians
- Wound identification and closure



Moulage, when integrated into the simulated exercise creates a powerful training modality that enhances live actor and human patient simulator events. The use of interactive, odorous, three-dimensional wounds such as hemorrhages, wound debridement, suturing capabilities, decontamination and realistic triage heightens the field experience by providing enhanced assessment, injury recognition, supportive decision making, realism, retention and stress inoculation.

***Success does not consist in never making mistakes but in never making the same one a second time.***

**George Bernard Shaw**

Another reason to add moulage the training scenario: Current research estimates anywhere from 50-90% of all communication is non-verbal, thus proper assessment, triage, acuity and training is often dependant on accurate use of 4 of the 5 senses; that which can be seen, felt, heard and even smelled. The addition of moulage highlights areas for growth by assisting the team in identifying shortfalls in current patient coding, acuity levels and wound staging based on individual and team assessment. Additionally, skilled use of primary and accessory moulage can illuminate areas for risk reduction through quality advancement identifiers such as highlighting strengths and weaknesses involving wound recognition, stabilization, standardization and triage management on both an individual and team building events. The use of moulage to the training paradigm can provide life-saving exposure of system vulnerabilities creating a segue between multiple responders, systems and triage points.



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*An expert is a man who has made all the mistakes which can be made, in a narrow field.*

**Niels Bohr**

The use of interactive moulage will provide training opportunities that highlight field hazards to both patient and responder including prevention and management of secondary and transport related injuries such as:

- eviscerations, dislodged impaled objects and compromised burn care from ruptured blisters during transport
- scene safety including primary and collateral injuries related to chemical, hazard and biological events
- initial, cross-contamination and exposure related injuries
- primary and tributary environmental related injuries including smoke/gas inhalation, equipment failure and system breakdowns
- enhances injury recognition and accurate categorization of wound severity, staging, associated risks and complications due to progression and patient deterioration while in the field



*To Moulage or not to Moulage, there is no question.*

**Lance Bailey- HealthySimulation**

***Moulage-Are you ready to take your training to the next level?***

I hope after reading this article you agree that the use of moulage techniques has the power to authenticate the field experience, taking your simulated training exercise to the next level. While you can read about injury processes in books and study symptoms in theory, you cannot fully understand that which you do not already know or experience..... It is the interpretation of what is seen, felt, heard, and smelled that allows the responder to pull together critical data and integrate this knowledge into their assessment, response and care plan, but more importantly, the interactive experience sears this knowledge into the brain enabling responders, teams and systems to recall and utilize this data to expand on future training experiences.

So let's work together to "Bridge the Gap" and create powerful training modalities that engage all the senses and provide realistic scenario storylines.

**Moulage Concepts** – Creating training scenarios that look, feel, sound and smell like the real thing.

**Bobbie Merica**, Author/Business Owner  
Simulation Coordinator/Consultant  
[www.moulageconcepts.com](http://www.moulageconcepts.com)

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