CEW Workshop 2009: Themes

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Theme: **Complex / Multifactorial**

- Arrests
- Arrests using force
- Drugs
- Stress
- Taser
- Interaction
- Luck
Theme: Trust

• Population / Police
• Police / Weapons
• Police / Training
Theme: *Risk*

- "Safe" is wrong word
- Taser's have a *relative risk*
- Taser's are best choice is many situations
Theme: Research

- Expectations of scientific justifications
- "Evidence Based" policing
- Police initiated research questions
  - Lack of funding, except for crisis
- Need to improve academic / police collaboration
Theme: *Lessons*

Reality: invested public $$ in Tasers

• Manage current "crisis"

• Learn lessons for next police technology
Theme: Testing

• Performance measurement
  *Is this* weapon reliable?

• Risk measurement
  *how should we use these* weapons?

  • Are there subject groups that are especially vulnerable?
  • Does risk increase after multiple shots?
  • What should officers be looking for?
Theme: **Reliability**

- What are the failure modes?
  - Gas discharge tube aging?
- What is weapon life span?
- Can we identify problem serial numbers?
- How often should we test?
Theme: *Standard*

We need a standard for testing. It doesn't need to be complicated. It does need to be done now.

Consensus on:
• Load
• Parameters
• Measure all pulses, take maximum
Theme: Research Plan

• Theme #1: models

• Theme #2: retrospective analysis

• Issues
  ○ Working relationship police/government/academics

  ○ Research can't just focus on Taser. Goal has to be broad use of force.
Quick summary of presentations

• Cindy Bir, Wayne State U., Detroit
• Joel Johnston (S/Sgt., Justice, BC) & Chris Butler (Inspector, Calgary PS)
• Mike Joy, U. Toronto
• Peter Layden, Solicitor General, Alberta
• Pierre Savard, École Polytechnique, Montréal
• Ian Sinclair, MPB Technologies, Montréal
• Rick Wyant, CRT Less Lethal, Seattle
Talk: *Cindy Bir*, Wayne State U.

Pigs with stress (via hemorrhage) + Taser
Increased Taser shots increased acidosis
Talk: Joel Johnson, Justice, BC

The law enforcement community supports relevant Quality Assurance Testing that is:

- Affordable
- Accessible
- Logistically feasible

Quoted listserv member:

"... on the one hand, I am fed up with the media-driven frenzy ... on the other hand, [we must] ensure that our equipment is well-maintained and operating ... there must be a logical, defensible protocol and process for regular testing of CEWs."
Talk: Mike Joy, U. Toronto

Current Density MRI can visualize flow of current in body
Two controversies:

• Abuse of the device
  - Because no standard / transparent system to report on and monitor the use of force

• Electrocution
  - remains issue because the science is not clear.
    Tied to a sub-issue: approval of force option

Themes:

• Science Informing Policy
• Learn from CEWs to prevent future problems
Spark Discharge tube: Taser failure mode?

2. High charge and slow rate: Cause: higher threshold of spark gaps?
Talk: Pierre Savard, Polytech. Mtl

Proposal for a
“safety centered”
Test
approach

4. Design of test protocols:
A proposed “safety centered” approach

- “Realistic worst case approach”:
  - Maximum CEW values (current, charge, voltage, rate) instead of average values
  - Minimum realistic load
  - No spark tests (“fool proof approach”)
  - Inclusion of a “safety factor” in IEC60479-2 to account for spontaneous extrasystoles and increased pathological susceptibility to arrhythmias

- Example:
  - The net charge of a single impulse should never exceed $X \mu C$ when connected to a $Y \Omega$ load
Talk: Ian Sinclair, MPB Technologies

- How a Taser works
- Results
- Waveforms
- History of specs from Taser International
- Test Results
- Unusual weapons functions
Talk: Rick Wyant, CRT Less Lethal

Forensic analysis of Tasers

• context of operational use as important in the analysis of device performance as laboratory testing

• Devices in the field must be maintained

• Less-Lethal manufacturer’s claims MUST be independently evaluated / verified for scientifically accurate post event analysis
Taser X26: Internals
CEW Workshop 2010

• Partnership Government / Academic
• Open exchange of data, results, ideas
• Clarify
  – What is known / unknown
  – What we agree on
  – Where the priorities are
• Testing goal:
  – consensus on test principles and methodologies