

# JNLWD Quantico, VA

JNLWD has not defined "nonlethal" in terms of human casualties. The quantitative definition used by JNLWD advisers includes:

- "Incapacitates 98% of the population"
- "Permanent damage to 1% of the population of which .5% will die"
- "Permanent damage is uncorrectable. It alters living capabilities and activities."

In 1999 and 2000, the JNLWD technology investment program focused on micro-encapsulation of chemical payloads (see Advanced Polymer Lab, bottom center).

In 2001-2002, JNLWD launched another technology investment project titled "Front End Analysis of RCAs" (riot control agents, see below). The Directorate is refusing to release documents related to this program, citing "classified weapons development". In early 2002, in cooperation with the Applied Research Lab (see right), JNLWD gave Marine Corps officers briefings described as "NL Chemical Technologies: This session will examine current/future non-lethal chemical technologies for anti-personnel and anti-equipment uses... Classified: SECRET".

## An Imaginative Interpretation of the CWC

Paving the legal way forward for JNLWD's chemical weapons is the US Navy Judge Advocate General (JAG). In a 2001 bid to convince the US National Academy of Sciences (NAS) to endorse its chemical program, JNLWD sent JAG lawyers to brief a NAS science panel. JAG's scary interpretation of the CWC holds that US forces may use a wide variety of toxic chemicals provided that the chemical weapons (even if toxic) do not "depend on toxicity" as a "wounding mechanism". The view implies

### WEAPONS REVIEW Treaty Considerations

#### Chemical Weapons Summary:

- No toxic chemicals – OK
- Toxic chemicals –
- Anti-material – OK
- Anti-personnel, but not for toxic effect – OK
- Anti-personnel, but for law enforcement – OK
- Anti-personnel for toxic effect – No

JAG endorsement of a variety of "non-lethal" chemicals, such as sedatives, anesthetics, and psychoactives, if formulated so as not to exploit toxicity to "wound". The implications of this view are very disturbing, and open the US legal door to development and use of a wide variety of dangerous chemical weapons.

US law requires JNLWD to obtain a JAG legal review of new weapons. JAG has made a review, for JNLWD, of "nonlethal" chemical weapons. JAG is refusing to release this review because JNLWD has classified it.

## System Description

**Program Name:** 81mm Non-Lethal Mortar

### System Description:

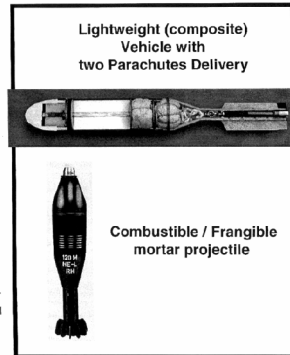
- Joint NLWD TIP programs (USA, USMC)
- Composite Mortar, Electronic Fuze, Parachute(s) for NL impact, or combustible case
- Payload TBD
- Develop the most promising material technology
- Develop delivery technology

### Applications:

Deployable from Existing Mortar Platforms  
Potential Variable Payloads  
Long Range NL Capability

### Concept of Operation:

Produce a *NL Mortar Munition* using non-traditional materials, to limit collateral damage from residual fragmentation of the projectile. A major challenge will be to come up with a cartridge that can meet all applicable weapon Requirements without exceeding non-lethal Kinetic Energy Criteria. All approaches, weight reduction, combustible cartridge, velocity mitigation, etc will be explored.



## Institute for Emerging Defense Technologies, Applied Research Laboratory, Pennsylvania State Univ. (Part of the US Marine Corps Research University)

October 2000:

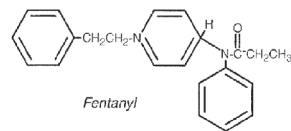
PENNSTATE



College of Medicine  
Applied Research Laboratory  
The Pennsylvania State University

Based on "extensive review conducted on the medical literature and new developments in the pharmaceutical industry", "the development and use of calmatives is achievable and desirable."

"Often, an unwanted side-effect... will terminate the development of a promising new pharmaceutical compound. However, in the variety of situations in which non-lethal techniques are used, there may be less need to be concerned with unattractive side-effects... Perhaps, the ideal calmative has already been synthesized and is awaiting renewed interest from its manufacturer."



"We identified several drug classes (e.g. benzodiazepines, alpha-2-adrenoreceptor agonists) and individual drugs (diazepam, dexmedetomidine) as appropriate for immediate consideration."

"Our review has confirmed the relevance and high potential impact of calmatives... Whether used alone or as an adjuvant... pharmacological agents can effectively act on central nervous system tissues and produce a less anxious, less aggressive, more tranquil-like behavior..."

The authors of this study coordinate and serve on JNLWD's "Human Effects Advisory Panel". In 2001, the US Department of Justice asked Penn State to assess a mixture of OC (pepper spray) and "calmatives". JNLWD asked the lab to assess the 81mm mortar's "feasibility to satisfy the broad counter-personnel requirements presented..."

## General Dynamics (Primex) Chemical Aerosol Cannister

(Photos from 2000, further funded by JNLWD in 2001)

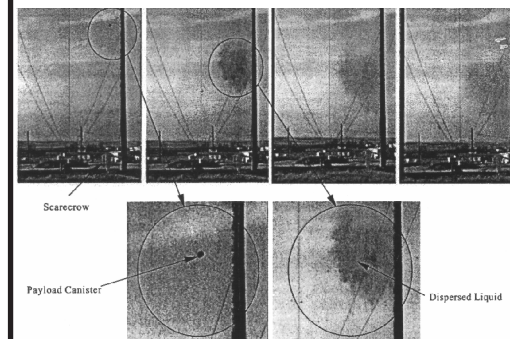
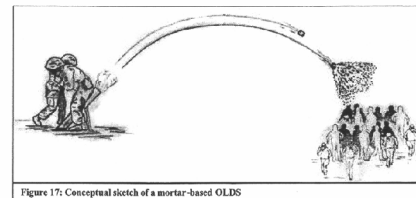


Figure 13: Photo sequence of dispersion system functioning in test 4B (350 ft downrange, 30 ft dispersion elevation). Orange payload canister can be seen in flight in left photo and close-up. Remaining photos show dispersion of liquid payload (green-eyed water). Note: The large poles in the photos are not part of this test.



During this contract, PAC performed eleven launch system development tests in support of a mortar-based launcher concept. The intent of this effort was to develop a launch system gas generator that could be integrated into the payload canister, making the OLDS a single, self-contained unit. The launch system gas generator used a housing fabricated from PVC tubing to reduce the size and mass of fragments (the gas generator was designed to fragment following function). This side-effort was stopped once launch velocities reached 100 ft/s and it was demonstrated that a single, self-contained device for use in a mortar-based OLDS is feasible.

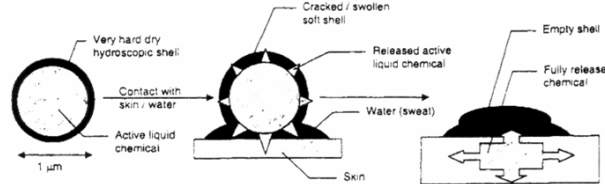
### OVERVIEW OF LEGAL ISSUES AFFECTING NON-LETHAL WEAPONS

Naval Studies Board  
Assessment on NLW Science and Technology  
3-4 April 2001

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## Advanced Polymers Laboratory University of New Hampshire

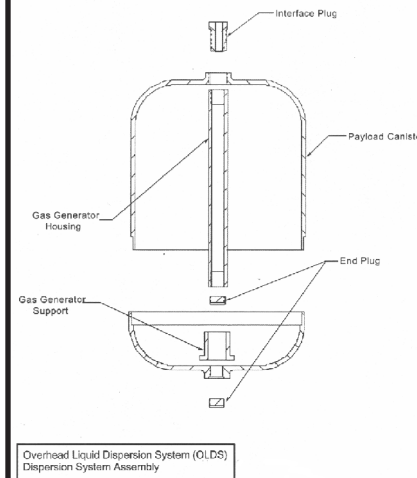
(Extract from a "white paper" proposal funded by JNLWD)



**Chemicals:** Standard drugs used in medicine for anesthesia are desirable candidates, since their acceptance in the general public would not be an issue. As a mild deterrent force simple colorants could also be used to tag the aggressor. At the other end of the force spectrum a combination of corrosive / anesthetic chemicals, embedded in separated capsules can be used to offer penetration through protective gears without blunt-trauma.

**Delivery vehicle:** Several existing delivery systems are good candidates for this payload. Each of them achieve the goal of bringing the payload within a few meters of the target.

- A *shotgun*. The microcapsules are loaded in the cartridge. Upon firing the powdery load of microcapsules impact weakly with the target. This is convenient only at close range, because of the lack of accuracy of a shotgun and significant air drag of microcapsules.
- A *mortar explosive shell*. A ballistic shot of a mortar shell is executed above the target area, the shell explodes in mid-air, the payload is sprayed over the targets.
- An *Unmanned Aerial Vehicle (UAV)* can release the payload over the target area.



## US Army Aberdeen Proving Ground (Maryland) Biological Chemical Command (SBCCOM) / Army Research Lab



United Defense



### Wind Tunnel Tests



SBCCOM Vertical Wind Tunnel



Wind Tunnel Models

Aberdeen Proving Ground, a major center of chemical and biological weapons research, is JNLWD's contractor for the "Front End Analysis of RCAs" project and a development and test site for JNLWD's 81mm mortar round. SBCCOM's work on the chemical agents project is described by JNLWD as "Workshops, analysis and database of all potential Riot Control Agents, calmatives, etc," and "to identify feasible non-lethal chemical materials for further testing... for immobilizing adversaries".

The photo at left is from a 2000 presentation by UDLP, SBCCOM, and Army Research Lab staff. It shows wind tunnel tests conducted at Aberdeen Proving Grounds on an UDLP's mortar design.