



# The Inner Perimeter

The Products, People and Training Inside  
Defense Technology/Federal Laboratories®

Spring - Summer 2004

Volume 1, Number 1

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## Pepper Spray and Flammability

### A Renewed Concern

During the early 1990s, while the popularity of pepper spray was soaring, an incident occurred raising concerns about the flammability of aerosol defense sprays. The incident involved the application of a handheld electrical discharge weapon on a suspect's clothing that was saturated in pepper spray. At that time, these handheld devices conducting electricity were also extremely popular, so the need for a non-flammable pepper spray was essential. This incident along with others required pepper spray manufacturers and police agencies to closely evaluate their products. It is among one of the many reasons why First Defense®, the first non-flammable, water based, food grade pepper spray, has been and remains the first choice for law enforcement and corrections.

In years past, Defense Technology/Federal Laboratories® tested the flammability of their aerosol formulations against low power electrical discharge weapons. The advent of higher electric devices, such as Taser® M26, Taser® X26, and various models of stun guns and control shields prompts us to revisit this issue.

It must be stated that when one speaks of flammability, anything can be flammable. Therefore, it is important to state the parameters of DT/FL's position and definitions on the flammability of their aerosol products. Flammability can be defined in multiple ways. Previously, the non-flammable guarantee of DT/FL aerosol sprays, like First Defense®, was based upon government standards set forth by the Consumer Product Safety Commission: 16 CFR 1500.45, a method for determining flammable contents of self-pressurized containers, commonly known as the flame extension test. With the increased interest in these electrical weapons, we have expanded the definition of flammability to include this definition: the ability of a low current electrical discharge weapon to ignite vapors or residue from an aerosol defense weapon manufactured by DT/FL.

The following information is a chart identifying the Defense Technology/Federal Laboratories® formulations we have tested and the results. Based upon the stated definitions of flammability and the foreseeable circumstances when these devices will be used, we have ruled out the possibility of flammability for the following formulations:

Formulation	Type	Delivery System	Flammability
First Defense®	OC	Nitrogen Propelled Stream	NO
Pepper 10™	OC	Nitrogen Propelled Stream	NO
5.5 Pepper Mace®	OC	HFC134a Propelled Stream	NO
Pepper Foam	OC	HFC134a Propelled Foam	NO
Guardian LE-10®	OC	HFC134a Propelled Stream	NO
Guardian LE-10®	OC	HFC134a Propelled Foam	NO
Guardian LE-10®	OC	HFC134a Propelled Fog	NO
BodyGuard®	OC	HFC134a Propelled Fog/Cone	NO

## The Training Report

It doesn't seem like it was that long ago when the new courseware was rolling off the press along with the supporting CD ROM. Time does fly, especially in the training business. The DT/FL Training team met in Austin, Texas in April to review the current training modules for Aerosols, Chemical Munitions, Specialty Impact Munitions, and Distraction Devices. The training team consisted of Thor Eells, Colorado Springs PD; Paul Dapra, Las Vegas Metro PD; Doug Ross and Jeff Satur, Longmont PD; and David Blasingame, Irving PD. Updated courseware is on track for 2005.

### NEW Corrections Course Incorporates Less Lethal

Finally, a course designed specifically for correctional officers! The first course covering tactical situations in a corrections environment was hosted in Virginia.

Twenty-four officers attended the program covering cell extraction, room clearing, large area clearing. The course



covered the use of force, officer safety, less-lethal munitions and exposed students to the latest safety equipment. Pictured above right, officers participate in a practical yard clearing exercise, left officers preparing for cell extraction.



### Training Up for the G-8 Summit and the Democratic National Convention

Agencies throughout Georgia and the Boston area are gearing up in anticipation of large crowds for both the G-8 Summit and the Democratic National Convention in Massachusetts. Training is the most critical aspect of the deployment of less lethal munitions during civil disturbances. Ultimately, training has the greatest impact to ensure the safe and effective deployment of munitions. Accordingly, the Georgian State Patrol and Boston Police Department hosted DT/FL instructors for an Instructor Certification Programs. Each course was comprehensive for the DT/FL munitions that will be available during these high profile events. DT/FL will also have product specialists on scene during both events to provide technical and product support.

For training in your area, check our calendar at:  
[www.armortrainingacademy.com](http://www.armortrainingacademy.com)

## 2004 Partners

This year DT/FL partnered with four companies and organizations who provide quality training. Through our partners, it is our intent to promote the safe and effective use of our products in a variety of tactical scenarios. We are excited about our partnership with each, and look forward to working with them throughout the year.

### Community Research Associates

CRA is a professional consulting firm providing assessment services, planning, training, and technical support to enhance public safety initiatives and preparedness. CRA's programs and resources are focused on homeland security and domestic preparedness, criminal justice and law enforcement, and juvenile justice and delinquency prevention. They are a leading national provider of terrorism response planning, exercise support, technical assistance, and training.



[www.community-research.com](http://www.community-research.com)

### National Tactical Officers Association

The NTOA is the leading non-profit association dedicated to the advancement of the Special Weapons and Tactics throughout the world. By providing highly realistic training, and disseminating tactically significant knowledge and information to qualified law enforcement agencies and individuals, the NTOA is ushering in the next evolution of SWAT.



[www.ntoa.org](http://www.ntoa.org)

### HK International Training Division

The HK ITD Team is comprised of hand-selected full-time training professionals with years of real-world experience in elite military and law enforcement organizations. A large cadre of adjunct instructors, still active in their police, medical and military fields, keep HK training up to the minute in the latest tactics and emerging trends. They offer a range of courses in tactics and patrol training up to 3000 students per year.



[www.hk-usa.com](http://www.hk-usa.com)

### Tactical Explosive Entry School

TEES was founded in 1991 specializing in providing explosive breaching training. Since then the scope of their training has increased. TEES employs 9 full and part-time instructors. At their site in Memphis, TEES holds 40 courses a year in VIP Protection, High Risk Warrants, Explosives, and Firearms related courses. TEES also has a full-time training facility in Brazil.



[www.tees-training.com](http://www.tees-training.com)

**NEW!**

## Direct Impact Inert, Marking and OC

Direct Impact is a specially engineered projectile combined with a proven smokeless propulsion system. The result is munition that produces consistent performance over a wide operational range and unmatched accuracy. The benefit: enhanced effect with the addition of a powder payload and unparalleled safety from a Specialty Impact Munition.

The key design feature of the Direct Impact projectile is a rigid, crushable foam nose incorporated with an aerodynamic external contour and a hollow internal cavity to carry a 5-gram payload. The available payload options include an inert powder, an OC irritant powder, or a fluorescent green marking compound. The rigid foam nose, while strong, will deform and crush when it impacts the target. The deformation increases the surface area of impact, and the crushing action ejects the payload laterally, dispersing a two-foot diameter cloud of irritant or marking compound. The combination of the deformation and dispersion of the payload dissipates significant energy, which decreases the kinetic energy that is transferred to the target and reduces the potential for injury over the entire operational range.



# DEFENSE TECHNOLOGY<sup>®</sup> FEDERAL LABORATORIES

## Introducing Rubber Ball Blast

### A Distraction Device for Riot Control

The Rubber Ball Blast, developed in 2003, was conceived by an agency who faced this dilemma: In a riot situation, besides the fact that I don't want to chunk a gun-steel canister into a crowd, I need a force option in between the 15-gram load and the Stinger<sup>®</sup> Grenade.



1095 OC  
1096 CN  
1097 CS  
1098 INERT

Enter the Rubber Ball Blast Grenade. It is a Distraction Device with a smaller, 8-Gram explosive charge, coupled with a powder payload, which can be an irritant or inert. Intended as a crowd management tool, the Rubber Ball Blast can be used for ground or air bursts rendering excellent physiological and psychological effects. The Rubber Ball Blast requires ATF approval so allow 4 - 6 weeks for delivery.

**NEW!**

## NIOSH Certifies the MSA Millennium<sup>®</sup> Facepiece and Canister CBRN Compliant



The NIOSH approval of a CBRN compliant gas mask and filter are here. This is a very significant development for all public safety agencies for two reasons. Until now, there has not been a CBRN compliant gas mask and filter available. Not only will the NIOSH approved gas mask be approved with stringent health and safety standards, a CBRN compliant canister will be capable of filtering the broadest range of potential terrorist threats, even surpassing the standard military canister.

Second, a recent directive issued by the President of the United States states that if you are spending federal funds on personal protective equipment, you must purchase equipment that meets the most current standards. This long awaited NIOSH certification will provide your agency with as many solutions as I am sure it will generate questions. For more information visit the What's New page at [www.defense-technology.com](http://www.defense-technology.com) and look at the CBRN FAQs.

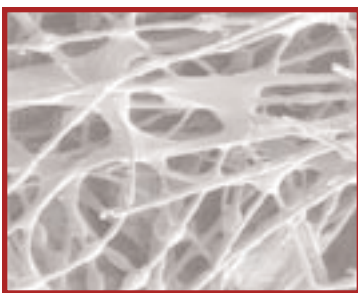
## One Day Your Gas Mask Filter Could Have IntraMicron Inside

Conventional filtering technologies merely add more sorbent/catalyst volume, thereby increasing the size of the gas mask canister or chemical filter to achieve "greater" protection from toxic chemicals or chemical agents. That's why you end up with an approved CBRN canister that's the size of a Folgers coffee can. But it doesn't have to be that way.

First responders face significant restrictions in the ability to perform their jobs as a result of the added volume and weight of the equipment. IntraMicron has some great news to offer - a way out of the frustrating tradeoff between protection and breathing resistance. With IntraMicron technology that means a smaller canister affording greater protection and less breathing resistance.

IntraMicron's microfibrinous media can be loaded with a variety of sorbents and/or catalysts to address a whole range of harmful gases, such as ammonia. The technology is highly flexible and scalable. Huge investments in re-design and tooling in the canister manufacturing process are not required to achieve these benefits. Thin layers of IntraMicron's microfibrinous media can easily be "dropped in" into current canister designs. We have demonstrated longer gas life in far less volume and at a fraction of the pressure drop in numerous tests conducted by independent testing laboratories.

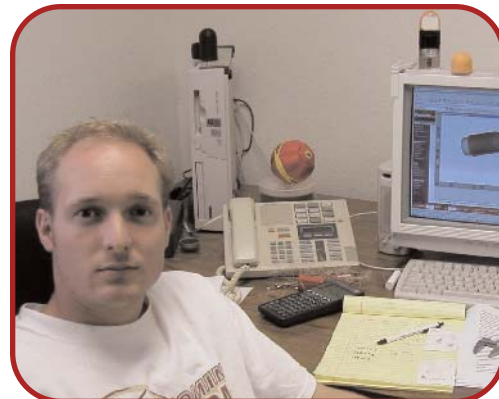
As a means to demonstrate the efficacy of its technology, IntraMicron took a standard 54 cm<sup>2</sup> RCA-CBA gas mask canister and tested two versions of this can at an independent laboratory using a challenge concentration of 3000 mg / m<sup>3</sup> of DMMP flowing at 50 liters per minutes(lpm): (1) one canister as it is today with no modifications as a control, (2) the same canister but replaced the exit particle filter with a single layer of IntraMicron's microfibrinous media, which is about 2 mm in thickness. Breakthrough of DMMP on the control can measured about 15 minutes on average. The can with the IntraMicron media measured breakthrough on average for about 60 minutes, a 4x increase - simply by adding a layer that would not require any manufacturing change to the production process for the manufacturer.



*Microfibrinous materials that entrap particles within a fibrous matrix*

The pressure drop(measurement of breathing resistance) increased just slightly, with the control canister measuring 42 mm H<sub>2</sub>O and the modified can measuring 45 mm H<sub>2</sub>O.

Defense Technology/Federal Laboratories believes in IntraMicron's patented filter technology. So much so, that we have partnered with IntraMicron to help make this a reality. To the end-user, IntraMicron means a ray of hope at the end of the gas mask tunnel. The real possibility that one day soon, all gas mask canisters can be made smaller and at the same time be more efficient. To learn more about IntraMicron visit the What's New section at [www.defense-technology.com](http://www.defense-technology.com) and download Personal Protection Technology.pdf.



## DT/FL People

A close up look at the people behind the products at Defense Technology/Federal Laboratories®

### Joe Kolnik, Research Engineer

Joe Kolnik is a Research Engineer at Defense Technology/Federal Laboratories®, a position he has held since graduation in 2001, receiving both B.S. and M.S. degrees in Chemical Engineering from the University of Wyoming. In his position at DT/FL, he has project responsibility for development of advanced non-lethal 12 gauge rounds and Direct-Impact 40mm rounds for delivering irritants. He also has responsibilities in technology areas such as advanced structural foams, densification additives, formulation of explosive and delay charges, and process improvements to the tear gas manufacturing plant. His skills include computer-aided design and projectile performance analysis using specialized computer simulations, flight, stability, and performance analysis, as well as assessment of test data and project documentation.

While working towards his advanced degree, Joe performed graduate research in collaboration with the High Energy Explosives Unit at Los Alamos National Laboratories.

Joe grew up in Wyoming but spent a year studying in Norway and traveling through Europe. He is an active outdoor enthusiast who enjoys rock climbing, biking, snowboarding, fishing, and kayaking in his spare time.