



# The Safety Corner

From the Marine Corps Center for Lessons Learned  
December 21, 2006



## Ammunition and Explosive Safety

This issue of the Safety Corner highlights lessons and observations about Ammunition and Explosive Safety during operations in the War on Terror.

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### From the Director:

In a continuing effort to publish lessons and observations about hazards in Iraq and new safety programs, this issue of the Safety Corner contains input from the Program Manager for Ammunition with Marine Corps Systems Command Environmental and Explosive Safety Team, to help raise awareness of Ammunition and Explosive Storage and Safety. I encourage everyone to read the information they have provided and check your unit area. As I reviewed the mishap report from Mar-Jun 03 it is really sad to see deaths due to misfired RPGs, death due to striking a 40mm grenade with an unknown object, accidental discharges, and injuries from ASP explosions/fires. I hope this report brings to light the risk in storing and handling of not only our ammo but ammo found on the battlefield. I look forward to hearing your observations and concerns.

Semper Fidelis,

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### Explosive Safety in Combat.

In the early phases of the war (March – June of 2003), the Marine Corps experienced an alarming number of fatalities (10) and serious injuries (20) occurring from explosives operations and accident discharges in the tactical environment. This has led the Marine Corps to place the same emphasis on tactical explosives safety as it does on garrison explosives safety issues. Success in a garrison environment does not necessarily relate to success in a tactical environment due to advantages in garrison real estate, security, storage magazines, etc. The static explosives environment enjoyed in garrison and the multitude of explosives safety standards available has created a false sense of security that is not enjoyed in the tactical arena. Tactical environments create many hazards not depicted in the current array of explosives safety manuals. Because of this limited documentation, interpretations of explosives safety standards for tactical explosives operations are made. These interpretations have been a major cause of incidents in the tactical environment. The Tactical Explosive Safety Program is fighting the misconception that explosives safety rules don't apply during tactical operations. The Marine Corps Tactical Explosives Safety Program is centered on the theory that the degree of risk is increased when explosives operations are moved into the tactical environment. In the tactical environment, commanders are required to make risk assessments on explosives safety issues, while simultaneously molding the battlefield to ensure mission accomplishment by the safest possible means. The Tactical Explosives Safety Program provides commanders with explosives safety expertise in a tactical environment, which was previously not available.

CMC Safety Division has implemented a Tactical Explosives Safety program to provide explosives safety expertise during training and contingency operations which is not generally available to Combatant Commanders. The primary goal of the Tactical Explosive Safety program is to support the commander in protecting forces and assets from potential explosives incidents, the loss of which could adversely affect their mission.

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Log into the Marine Corps Center for Lessons Learned website ([www.MCCLL.USMC.MIL](http://www.MCCLL.USMC.MIL)) and check out the Explosive Safety Community of Interest for checklists, inspection trends, and lessons learned. There is also a discussion forum to read the latest news on the Tactical Explosive Safety Program. Discuss your ideas on explosive safety or have your question answered by other Explosive Safety Officers and the Program developers.



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## Leaders guide to quick storage checklist.

The checklist for proper Ammunition and Explosive storage is long and very detailed. Below is a quick "First Glance" checklist applicable to most field ASPs.

- ASP has adequate drainage (Dig trenches around storage sites to prevent puddles)
- 50 foot firebreak maintained around magazines and open storage sites
- Do not have open storage sites close to power lines and radio frequency radiation
- Protect Ammunition stored in the open from exposure to inclement weather
- Compatibility is maintained within each storage pad
- Combustible material is stored a minimum of 100 feet from explosives storage pads
- Arrange and stack ammunition in a logical manner with markings plainly visible
- Explosives Weight limits are maintained within each pad/cell/building
- Containers of ammunition are not placed directly on the ground
- Ensure unserviceable assets are separated from service ammunition
- Keep ammunition in original packaging as long as possible
- Rockets and missiles need to be stored with noses pointing into barricades
- Maintain at least 18 inches of clearance between top stack and cover. If in a building minimum clearance is two feet
- Post fire plan for evacuation of personnel and combat loaded vehicles. Rehearse and update the plan on a regular basis

The Tactical Explosives Safety Specialist resides within Marine Corps Systems Command, Program Manager for Ammunition, Environmental and Explosives Safety Team. The Tactical Explosives Safety Specialist is available to provide explosives safety support during all combat and training evolutions. Requests for tactical explosives safety support should be submitted to CG MARCORSSYSCOM PM AMMO EES Code 204 at least 30 days prior to a CONUS operation and 60 days for an OCONUS operation.

### Recent Inspection Trends

*Noted by a Tactical Explosive Safety Program Specialist with MARCORPSYSCOM*

The most common 'hit' seems to be improper storage of ammunition in unit areas. Storage in ammunition supply points (ASP) looked good and by most accounts met the storage requirements of a installation storage point. However, storage in unit areas was, at times, an accident waiting to happen. Units were storing ammunition in areas too close to living areas, lacked accountability, and lacked personnel trained in the storing and handling, security, and inspections of ammunition. Even though storage is improving, these still remain the most common violations. Below are a few examples of improper storage from our most recent trip. The picture on the Left shows incompatible ammunition storage (Pyrotechnics with Fragmentation Grenades) and the picture on the right is improper storage of loose Fragmentation Grenades.





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Below is a summary of an Ammunition Information Notice (AIN) that was released by Naval Operational Logistics Support Center (NOLSC) on the use of solar shades. This AIN (004-07) is in response to an explosives incident during OIF where the solar shade may have contributed to an incident.

Date: 19 Oct 2006

Solar shade systems such as the ammunition solar cover (ASC) and the solar shade system (SSS) have a potential to produce a static discharge. The use of the ASC, SSS, or other improvised covers (from natural or manmade materials, such as canvas or polyethylene) in connection with ammunition storage, handling, minor maintenance, unpackaging, and demilitarization must incorporate appropriate precautions that would apply to the performance of any operation where a possible hazard from static discharge exists, including the following:

(A) In accordance with warning labels on the ASC and the SSS, and by direction of this AIN, these solar shades are **NOT** authorized for use when dealing with unpackaged, loose, or damaged ammunition; ammunition that is missing standard safety devices (such as shunting clips or interrupters); or ammunition of unknown characteristics (such as captured ammunition), that could be initiated by electrostatic discharge.

These shades are also not appropriate for use during ammunition operations that require conductive floors/matting and the use of conductive footwear by operators. No such limitations on the use of these shades would apply when storing munitions in undamaged standard packaging, such packaging shall not be opened under these shades.

(B) Do not use these shades near flammable liquids, fuels, or other substances that can be ignited by static electricity.

(C) When installing and using these shade systems, ensure that the shade material and supporting structure do not come within 18 inches of any ammunition or packaging.

(D) When working in and around these shade systems and during ammunition storage operations ensure that personnel do not come in contact with the shade material or support structure.

The only operation authorized under these shade systems is the storage of palletized or undamaged and standard packaged munitions of known characteristics. All receipt, segregation, and issue operations must not be conducted under these shade systems.

Amplified further guidance for ESD control, personnel working in ammunitions and explosives operations shall not use rags or wear outer garments made of materials which have high static generating characteristics. Materials of 100 percent polyester, nylon, rayon, silk, or wool are highly static-producing. Wool socks, glove inserts, and caps, as well as undergarments of synthetic fabrics or silk are less of a hazard. Any undergarment made of nylon/synthetic shall not be worn as an outer garment, cotton or cotton-synthetic blend materials are preferred.

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*Photo provided by Michael James.  
Photo is of an Ammunition  
Solar Cover in used in Iraq.*