

POSITION PAPER

ODASA(ESOH)
28 March 2013

Subject: Small Arms Ammunition (SAA) – Explosives Safety or Human Health Risk

1. **Purpose:** To formalize a Department of Defense (DoD) position on whether small arms ammunition (SAA)¹ should be addressed during a munitions response² as munitions and explosives of concern (MEC)³ (i.e., from an explosives safety perspective) or as munitions constituents (i.e., as a munitions constituent), with any unfired SAA encountered removed and properly dispositioned.

2. **Background:**

The SAA procured and used by DoD Components are military munitions⁴ by definition. There is continuing discussion about whether SAA discarded inadvertently either during training or intentionally, as a means of disposal, pose the same explosives safety risk (i.e., the “unique explosives safety risk inherent within the definition of MEC as other munitions (e.g., 40 mm, 105 mm) encountered during a munitions response.

3. **Discussion:**

a. Occasionally, SAA are unintentionally discarded during training for a variety of reasons (e.g., clearing misfires or a jammed weapon) or by other inadvertent actions (e.g., dropped during handling). Similarly, SAA associated with other military munitions-related activities (e.g., shipping, demilitarization) may become discarded without being expended or completely demilitarized.

b. SAA do not pose a same explosives safety risk as other military munitions for the reasons provided below.

(1) SAA contains a small amount of propellant (i.e., single- or double-base). Propellants do not explode (detonate), but burn (deflagrate) using the resulting gases to propel (fire) the projectile (bullet).

(2) The consequences of a SAA initiating outside a weapon are localized. The propellant may rupture the cartridge case or eject the bullet in this scenario with the potential for minor injury low and limited to within a few feet of the event. An injury resulting from such an event would likely be minor in nature and result from fragments of the cartridge or bullet. An individual may be burned if holding the SAA when it ruptured.

(3) The likelihood of an event involving the functioning of a SAA outside a weapon is very small. The most probable cause would be that the SAA was placed or

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thrown in a fire. In this scenario the SAA does not “explode” rather the propellant heats up, building gases that either expels the bullet from the cartridge case or ruptures the cartridge case.

c. The Department of Transportation (DOT) considers SAA (proper shipping name: cartridges, small arms) a consumer commodity and allows packages of up to 30 kilograms (66.1386 pounds) of SAA to be shipped by air with no special documentation other than marking the parcels as ORM-D (i.e., other regulated material) (49 CFR 171.8 and Table 172.101). DOT does not require that packages be labeled or trucks be placarded as “explosive.”

d. The Bureau of Alcohol, Tobacco and Firearms places no special storage requirements on SAA.

e. The Department of Defense Explosives Safety Board (DDESB) has recognized that SAA do not pose the same explosives hazards as other military munitions in several ways within DoD Manual 6055.9-M, DoD Ammunition and Explosives Safety Standards. Among these, the DDESB:

(1) Designates SAA as a Hazard Classification 1.4. If only 1.4 munitions are involved in an incident, the incident produces no blast, no fragments with an appreciable energy and only moderate thermal effects none of which would affect fire fighting or emergency operations.

(2) Has determined that SAA only present a fire hazard (Fire Division 4 - moderate fire, no blast, no fragments), may be stored in a general supply warehouse area rather than an ammunition and explosives area.

(3) Permits limited (limited can be any amount justified by the appropriate military authority) quantities, based on operational reasons, to be stored in arms rooms, hangers, barracks and operating buildings without regard to quantity distance (QD). These SAA-only storage areas are exempt from the normal requirements for submission and approval of a QD explosives safety site plan.

(4) Does not require the Net Explosive Weight (NEW) of SAA in mixed storage be added to the total NEW of the other munitions in storage.

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(5) Indicates that ranges known to have been exclusively used for training with only SAA are an exception to the rule that "DoD Components should, unless there is evidence to the contrary, assume that impact areas on operational ranges (applies also to former ranges) present explosive hazards."

(6) Does not require an explosives safety submission for munitions responses on those munitions response site (MRS) used exclusively for training with SAA.

f. Given the DOT, ATF and DDESB criteria applied to SAA and the fact that SAA are commercially available and easily obtained by the general public:

(1) SAA are not unique to the military.

(2) The potential hazards associated with SAA:

(a) Are generally recognized and understood by the public.

(b) Should be evaluated and managed based on the circumstances.

g. The joint agency (e.g., the Environmental Protection Agency, the Department of Defense, the Association of State and Territorial Solid Waste Management Officials, the Department of Interior) prepared Interim MEC Hazard Assessment (MEC HA) Methodology is used for assessing potential explosive hazards to human receptors at MRS. It is also used to evaluate relative hazard reductions associated with munitions response alternatives. Because SAA is not included in the MEC HA, it is clear that the interagency technical work group that prepared it did not believe based on both technical data and their professional experience that SAA presented explosives safety risks.

h. Army policy for the Munitions Response Site Prioritization Protocol (MRSP) (20 Feb 09) states that "if it is confirmed, based on physical or historical evidence, that the only munitions-related activities that occurred at a munitions response site (MRS) were ones that involved SAA, and if the Chemical Hazard Evaluation (CHE) module receives an alternative module rating of "no known or suspected chemical warfare material (CWM) hazard" or "no longer required," the MRS should not be considered to present an explosive hazard. In these cases, the:

(1) Explosive Hazard Evaluation (EHE) Module should be scored using normal procedures, but an alternative rating of "no known or suspected explosive hazard" may be assigned.

(2) Human Health Evaluation (HHE) module will be completed, and the MRS should be sequenced for action based on the HHE rating."

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i. During any environmental response (e.g., Installation Restoration Program or Hazardous Toxic Radioactive Waste response, munitions response to munitions constituents⁵, munitions response to MEC), all SAA encountered during response activities will be removed from the MRS.

4. **Conclusion.**

a. A munitions response should evaluate and when merited be conducted on ranges used exclusively for training with SAA from an environmental (i.e., address residue MC) not explosives safety (i.e., address MEC) perspective. Regardless of the limited explosive hazard posed, SAA encountered during response activities should be removed from an MRS or other locations for proper disposal.

b. SAA, whether in storage, transport or found either individually or in clusters on an MRS, do not pose the same explosives hazards as other military munitions to the public.

5. **Recommendation.**

The DDESB support addition of language to the DoD Manual 6055.9-M along the lines of, "The design of military munitions response or other environmental responses for former and operational ranges for which physical or historical evidence indicates that the range was used exclusively for training involving small arms ammunition (SAA) should be from an environmental, rather than explosives safety, perspective focusing on the removal or remediation, if required, of munitions constituents (e.g., lead). Any SAA encountered during a response should, however, be recovered and processed as MPPEH per DoD 6055.9-M, Volume 7, Ammunition and Explosives Safety Standards: Criteria for Unexploded Ordnance, Munitions Response, Waste Military Munitions, and Material Potentially Presenting an Explosive Hazard.

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¹ **Small Arms Ammunition.** Ammunition, without projectiles that contain explosives (other than tracers), that is .50 caliber or smaller, or for shotguns. (DoD 6055.09-M).

² **Munitions Response.** Response actions, including investigation, removal actions, and remedial actions to address the explosives safety, human health, or environmental risks presented by UXO, DMM, or MC, or to support a determination that no removal or remedial action is required. (DoD 6055.09-M).

³ **Munitions and Explosives of Concerns.** This term, which distinguishes specific categories of military munitions that may pose unique explosives safety risks means: (a) unexploded ordnance (UXO) as defined in 10 U.S.C. 101(e)(5); (b) discarded military munitions (DMM) as defined in 10 U.S.C. 2710(e)(2); or (c) munitions constituents (MC) (e.g., TNT, RDX), as defined in 10 U.S.C. 2710(e)(3) present in high enough concentrations to pose an explosive hazard. (DoD 6055.09-M).

⁴ **Military Munitions.** Military munitions means all ammunition products and components produced for or used by the armed forces for national defense and security, including ammunition products or components under the control of the Department of Defense, the U.S. Coast Guard, the U.S. Department of Energy, and the National Guard. The term includes confined gaseous, liquid, and solid propellants, explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries, including bulk explosives, and chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges, and devices and components of the above.

The term does not include wholly inert items, improvised explosive devices, and nuclear weapons, nuclear devices, and nuclear components, other than non-nuclear components of nuclear devices that are managed under the nuclear weapons program of the Department of Energy after all required sanitization operations under the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.) have been completed. (10 U.S.C. 101(e)(4)(A) through (C))

⁵ **Munitions Constituents (MC).** Generally, any materials originating from UXO, DMM, or other military munitions, including explosive and non-explosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions. (10 U.S.C. 2710(e)(3)).