

Rocky Mountain Pyrotechnics Guild
(RMPG)

SAFETY GUIDELINES

As revised on September 10, 2005

ARTICLE I

General

1. The need for safe conduct before, during and after the discharge of fireworks cannot be over emphasized. In order to insure that the fundamental requirements for safe conduct during the handling, manufacturing and discharge of fireworks are being observed, a safety committee having complete authority over safety matters shall be appointed by the officers of the Guild to supervise the safety of each Guild sponsored activity or event. All Guild members shall cooperate with the safety committee and the AHJ.

There will always be special situations in which the rules and regulations may be difficult to adhere to, or perhaps confusing or conflicting. These guidelines are not a replacement for common sense and experience.

2. These guidelines shall be known as The Rocky Mountain Pyrotechnics Guild Safety Guidelines, and shall be cited as such. They will be referred to herein as the "Guidelines".

3. The Rocky Mountain Pyrotechnics Guild, is also known informally as RMPG. Those terms or the term "Guild", when used in these guidelines, refers to the Rocky Mountain Pyrotechnics Guild.

4. Authority: These guidelines were adopted by the Guild in January, 1999, and shall remain an official document of this Guild until amended or discontinued.

5. Scope: These guidelines apply to the manufacturing, transportation, handling, storage, discharge or other use of all kinds of fireworks and pyrotechnic devices during any official Guild activity. The Guidelines apply to all RMPG members regardless of voting status.

6. Each member of the Guild has received a copy of the Guidelines and has signed a statement that he/she has read, understands, and will strictly adhere to these Guidelines. Each member of the Guild has received a copy of the Membership Application and has signed a statement that he/she understands the risk of pyrotechnics and agrees to indemnify and hold harmless the RMPG and each of its members, directors, officers and successors.

7. The Safety Director or designee or the ranking Guild Officer shall have the authority to stop any activity or remove or cause the removal of any person or persons they deem necessary to maintain any and all safety regulations pertaining to any and all Guild events.

ARTICLE II

Safety Committee

1. The safety committee shall consist of a Safety Director, and may also include RMPG

members and officers.

2. The Safety Director or designee shall be present before, during and after the discharge or manufacture of any and all fireworks. A licensed shooter or the Safety Director or designee shall be present from the time any pyrotechnic product arrives on site until the site is clear of all product and declared safe.
3. The discharge of any fireworks at Guild sponsored events shall not begin until the Safety Director or designee has surveyed and has determined that the situation and location satisfies all guideline criteria and that it is safe to proceed. At the discretion of the safety committee, any shoot or event may be postponed or canceled due to any safety concern.
4. The safety committee shall investigate any instances of unsafe behavior or conditions whether observed directly or reported by others and take all necessary and appropriate actions.
5. Any member who fails to adhere to these guidelines or the direction of the safety committee, or Guild officer, may be suspended, or permanently barred from the Guild.
6. When deemed necessary, the Safety Director or designee shall not be an active worker or participant in manufacture and/or assembly, display or other activity in order to insure safety regulations and fire watch compliance.
7. Current regulations which may include the National Fire Protection Association (NFPA) publication numbers 1122, 1123, 1124, 1125, 1126; Uniform Fire Code (UFC) 77, 78; Department of Transportation (DOT) Title 49; Bureau of Alcohol and Firearms Federal Explosives Law (ATF "Orange Book"); Colorado Revised Statutes CRS 12-28-101 through 111; local regulations and requirements of the Authority Having Jurisdiction (AHJ) will apply.

ARTICLE III

Authority & responsibility

The Guild Board of Directors gives the Safety Director and the safety committee authority to preside over all safety issues at all Guild activities. The Safety Director and the safety committee are governed by these Safety Guidelines as well as all regulations as stated above in ARTICLE II, paragraph 7. Any safety situation or special effects fireworks that requires a variance from these regulations must be considered on a case-by-case basis prior to rendering a decision to override the regulation. The Safety Director has the authority to make these decisions with the approval of the AHJ.

The safety committee is responsible to insure that:

1. Members may be provided distinctive badges which will allow access to the fireworks discharge areas at Guild sponsored events. Badges must be clearly visible at all times. No one else will be permitted in or near the discharge area(s). AHJ's and regulatory individuals may be permitted access when escorted or approved by the Safety Director.
2. No member shall be permitted in any "B" firing area unless he/she is at least 18 years of age. This includes personal areas if designated as a "B" area.

3. NO firearms, weapons or ammunition are allowed at any Guild sponsored event or activity. The exceptions are the use of blank pistols that propel pyrotechnic devices (whistles, report, or streamers), signal flares, flare guns, theatrical and special effects using approved devices, including approved firearms with use of blank, spark or dust. These articles will be strictly monitored and supervised at all times.
4. At each Guild sponsored "shoot" or public display the safety committee may designate as appropriate a class "C" firing area, a class "B" display firing area (to include the mortar line), a firing area for any 'personal' fireworks, a ground device area and a rocket range.
5. Use of alcohol or possession of illegal drugs shall not be allowed before or during any RMPG event at the site location of the event by any member participating in setup, loading or firing of any active material. Any person who is acting in an irresponsible manner (in the opinion of the safety committee or Guild officers) or appears to be under the influence of alcohol or other drugs will not be allowed to handle or discharge fireworks or other pyrotechnic devices. Such person/s will be asked to leave the firing areas and/or may be escorted off the event site.
6. Smoking or open flames, other than devices used to ignite fireworks, will not be permitted in the firing areas. No fusees, flames or smoking will be allowed near the ready boxes or any other fireworks storage area. Designated smoking areas will be at least 50' from all fireworks.
7. 'NO SMOKING' signs will be posted around shooting areas.
8. Only fusees, port fires, torches, electric match or similar devices will be used to ignite any class "B" fireworks as they are described in these Guidelines.
9. Only flashlights, electric lights, electric lanterns or luminescent (i.e. glow or light sticks) will be used in the firing areas with the exception of the shooter at the mortar line, who may use a fusee or similar device to ignite the mortar rounds.
10. A first aid kit is on the premises before discharging of fireworks begins.
11. A fire watch shall be established at any and all Guild sponsored functions or events. A supply of water will always be readily available for extinguishing fires or other safety needs.
12. Mortar cleaning tools shall be readily available and used as required to remove debris from mortars between firings.
13. Upon delivery to the firing site, fireworks shall not be left unattended. All fireworks shall be stored in sturdy fiberboard or wooden containers and shall have a wooden or fiberboard lid. The storage container lids, covers or doors should open pointed away from the firing areas and be at least 25 feet away and not directly down wind from said areas.
14. If automobile trunks or truck/van storage beds are used to store fireworks at a site, the trunk lids and doors should be kept closed unless being accessed to get fireworks. Any vehicle used as temporary storage shall have a 'NO SMOKING' sign posted by it. In addition, this vehicle shall have ignition keys immediately available in case the vehicle must be moved.

15. Shell and mortar diameter (not circumference) measurements shall be used when describing shells or mortars.
16. All aerial salutes shall be fired only from paper or HDPE mortars.
17. HDPE, fiberglass and paper mortars may be used for finale strings as long as the racks have been stabilized using stakes, sandbags or other insuring that they will not topple over during firing.
18. Racks that will be reloaded and/or hand fired shall be sand bagged or barricaded on the side approached by shooters and/or loaders.
19. Aerial salutes larger than 3½ inches in diameter and 7½ inches in length (for shooting in a 4 inch mortar) will not be permitted in the class "B" firing area. Such salutes must be fired in the personal area at sufficient distance to afford safety to spectators, members and all other firing areas.
20. All poles and bracing used for ground displays will be firmly planted, guyed or otherwise secured to prevent accidental movement or displacement.
21. All steel mortars and all mortars 8 inches or more in diameter will be buried, in the ground, at least ¾ of their length in earth or sand.
22. All persons discharging fireworks are required to wear protective cotton clothing, safety glasses and head protection.
23. During fireworks shooting, all persons should notify the safety committee of any detected "duds" or defective fireworks observed. All members should assist the safety committee for sweeping of all firing and fallout areas to locate and retrieve any hazardous material before leaving the site.
24. After a shoot, there will be a mandatory time out of 30 minutes before inspecting mortars for misfires. Exception – any racks or class 'B' cakes that are burning should be extinguished when safe to do so.
25. Disposal of duds and other hazardous materials will be done only in an approved manner and under the direction of the safety committee.
26. After securing the site for the night, a member or members of the safety committee and guild members shall return in the morning to inspect all firing and fallout areas for any remaining hazardous material that may have been missed the previous night.
27. All rocket sticks, missile fins, helicopter wings or other attaching devices used on fireworks, shall be firmly attached per current applicable NFPA Guidelines.
28. Meet with all participants on the field and explain the field layout and review safety procedures.

29. Establish a communications protocol to notify the lead shooter or safety committee if there is an emergency. Two way radios, cell phones, flashlights, etc. can be used as signaling devices.

ARTICLE IV

Class 'C' area

1. At each Guild sponsored event that will include the discharging of class "C" fireworks, a class "C" firing area will be designated by the safety committee and will be appropriately marked to show its physical boundaries.

2. The class "C" area shall be at least 300 feet away from the personal firing area and a safe distance (in the determination of the safety committee) from other fireworks discharge areas and spectators.

3. Class "C" fireworks are closely inspected by the Consumer Product Safety Commission (CPSC) and all must have instructions printed on each piece. In addition to those printed instructions, the following guidelines are recommended and may be required by the safety committee:

- a) Any class "C" item other than sparklers, shall never be held in the hand when ignited.
- b) Firecrackers should be lit as a whole unit or pack as intended by the manufacturer in the designated areas only.
- c) Multi-shot devices (cakes) must be secured/braced or contained to prevent tipping.
- d) Bottle or sky rockets should be launched from pipes (stiff electrical conduit is excellent) or board racks with at least 2 screw eyelets per rocket. Tubes and eyelets should be slightly larger than the rocket stick but not so large that they would fail to guide the rockets in the direction aimed.
- e) Roman candles shall not be held in the hand. If several roman candles are fused together for a barrage effect, the bundle should be secured to prevent separation and to maintain a safe aim during entire firing of candle/s.
- f) All fountain and tube items should be firmly secured/braced or contained to maintain a safe aim during entire function of device/s.
- g) Members under the age of 18 firing class "C" fireworks must be supervised by a qualified adult.
- h) All missiles, rockets, roman candles and other aerial devices shall be aimed away from the spectator area and toward the area designated as safe by the Safety Director.

ARTICLE V

Class 'B' area

1. Mortars will preferably be made of thick-walled cardboard, HDPE or fiberglass. These mortars may be used for electrically fired rounds, volleys or finale strings if they are in sturdy racks and firmly braced to the ground with stakes, sandbags or other means as approved by the safety committee.

2. All steel mortars and/or any mortar to be used for repeated firings must be buried at least 3/4 of their length in earth or sand. Upon approval of the safety committee, mortars may be placed

in sand-filled barrels, drums or troughs. All steel mortars used to fire shells must be made from quality steel tubing and be plugged on one end by a continuously welded metal plate.

3. All mortars shall be inspected for dents, cracks, adequate welding, bent ends, broken or loose end plugs and internal residue such as shell casings or mud, before being buried or used.

4. Holes or trenches used to bury mortars must be large enough to allow adjustment of the mortars' firing angles to prevent fall out in other than the established landing area, and to allow for the proper spacing of the mortars.

5. In soft ground or sand, heavy timbers, rock slabs or other similar objects shall be placed under the mortars to prevent them from being driven into the ground during firing.

6. In damp soil, the bottom of the mortars will be wrapped in plastic to prevent moisture damage to the plugs.

7. All shells used shall be inspected for defects, e.g. tears, powder leaks or broken leaders (fuses) before being placed in the ready box.

8. Ready boxes shall be constructed of wood, thick fiberboard or plastic and placed so the lid opens away from the mortar line. All ready boxes must have fixed, solid lids. They shall be placed no closer than 25 feet away and not directly down wind from the mortar line. If the wind shifts during shooting, the boxes shall be adjusted accordingly.

9. Shells shall be carried by their bodies and not by their fuses.

10. Shells shall be gently lowered into the mortars by their leaders (or tether/guide cords on larger shells).

11. Fuse safety caps shall only be removed when the shell is to be fired except for electric fired devices.

12. All commercial shells designated to be hand fired in a display and using quick match for ignition shall have 3 inches or more of black match exposed when the safety cap is removed to allow the operator time (a minimum of 3-4 seconds) to retreat.

13. Personnel at the mortar line should never place any part of his/her body over the muzzle of any mortar.

14. Shells that do not fit easily in the correct sized mortar shall not be used. Nothing shall be used to force a shell into a mortar.

15. A test shell may be fired in order to determine if the shells' trajectory is suitable and if debris falls in the designated fallout area. Mortars will be reset or re-angled if the safety committee determines the trajectory to be unsafe.

16. If a shell fails to ignite (a hang fire or misfire) the mortar shall be marked. After a period of time to be determined by the safety committee, water will be cautiously poured into the mortar.

Caution must be used in order to barely wet the shell without allowing it to float. The mortar shall not be used for the duration of the shooting activities.

17. The separation of the mortar line from spectators and the class "C" area shall be a safe distance as determined by the safety committee using current guidelines, and at least 300 feet from the personal shell area. Safe distance for other class "B" devices shall be determined by the safety committee, using current guidelines, such as the most current NFPA 1123.

18. All class "B" firing of any devices shall immediately cease if, in the determination of the Safety Director, any circumstances arise that would jeopardize spectators or members.

19. There shall be a safety committee member responsible for the class 'B' line. In addition, there may be additional personal to man the ready box, load mortars and fire shells.

20. All class "B" firing of any devices shall immediately cease if, in the determination of a safety member, Guild officer or AHJ, any circumstances arise that would jeopardize spectators, members or private property.

ARTICLE VI

Personal fireworks area

1. This article provides guidelines for the safe use and testing of personal hobby and class "B" fireworks that are unknown to the safety committee and/or Guild members.

2. Regardless of the owner's opinion of the class of the fireworks to be tested, all items deemed personal by the safety committee will only be allowed in the area deemed appropriate by the safety committee.

3. All fireworks in this category to be discharged must be properly labeled as to their content and/or intended effect or they will not be shot. If there is any doubt about the class status of any device to be discharged at a Guild sponsored event, that item shall be inspected by the safety committee for their approval.

4. Only one shooter, and if required, an assistant will be allowed to operate at one time. If more than one person wants to fire at the same time, the safety committee will insure that additional shooters are at least 25 feet away from others and a minimum of regulation distance from spectators.

5. Equipment such as mortars, girandola stands, wheel posts, waterfall cables, castillos or other devices used for personal fireworks will be inspected and approved by a member of the safety committee before use.

6. Aerial shells, comets, mines, etc. to be fired from mortars will meet the following minimum requirements:

- a) A firm construction.
- b) Outside dimensions within recommended tolerances for the mortar being used (reference: NFPA 1123).
- c) Contain proper lift for shell weight, using guidelines like those published in the

December, 1989, Fireworks News (No. 99). The Safety Director and Guild Secretary have copies of the above guidelines.

d) These items cannot be hand fired. They must either be fired with e-match or with a minimum of 6" of visco.

7. All salutes and salute components of more complex shells must be constructed entirely from paper based material (no plastic, wood, metal). Exception: film canister salutes. Salutes and Flash Powder are now classified as high explosives and must be treated as such. The safety committee shall make case by case decisions to insure acceptability.

8. The personal area may also be used for the discharge of commercial class "B" material.

9. All mortars to be used for personal shells shall be buried to at least 3/4 of its length or boxed or sandbagged as approved by the safety committee.

10. A suitable barricade (deemed appropriate by the safety committee) shall be erected between the ready box and the mortar line with enough room for the shooter, safety personnel and spectators.

11. The personal area(s) shall be at least distances specified by NFPA 1123 away from spectators and other firing areas.

ARTICLE VII

Rocket area

1. Rockets will be fired from a rocket firing rack.

2. Rockets will be ignited with 6" or more of visco.

3. A suitable barricade (deemed appropriate by the safety committee) shall be erected between the ready box and the rocket line with enough room for the shooter, safety personnel and spectators.

ARTICLE VIII

Ground device area

1. At each Guild sponsored event that will include the discharging of fireworks, a ground device firing area may be designated by the safety committee and will be appropriately marked.

2. No ground device will be held in the hand when igniting.

3. All ground devices shall be suspended per recommendation of the safety committee.

4. Any ground device larger than firecrackers (nominal size 2.5 grains) will be fired in this area.

5. The separation of the ground device area shall be a safe distance as determined by the safety committee using current guidelines. Safe distances for other class "B" devices shall be

determined by the safety committee, using current guidelines such as NFPA.

6. The safety committee must grant prior approval of any ground device containing more than 71 grams (2.5 oz.) of energetic material, and said device will not leave the ground device area vertically or horizontally. It must remain suspended as it functions.

ARTICLE IX

Indoor pyrotechnics & proximate

1. The NFPA 1126 Use of Pyrotechnics Before A Proximate Audience (most current edition) shall be used as a guideline.
2. Reference: The UFC Article 78-1997, (Fireworks and Special Effects Material)
3. Local regulations and the Authority Having Jurisdiction shall have final determination.
4. All applicable codes and regulations shall apply.

ARTICLE X

Electrical firing

1. Indoor, proximate, and personal fireworks shall be fired electrically unless prior approval by the safety committee has been granted.
2. Outdoor displays may be fired electrically.
3. All power sources shall remain disconnected during loading, inspecting, repair procedures or during lightening, thunder storms, or other emergency conditions. Firing circuit wires and electric matches and igniters shall be properly shunted.
4. All persons will remain out of the firing area during continuity testing.
5. Electric firing units shall be powered by batteries or isolated power supplies.
6. Electrical firing systems shall require a removable key operated switch to prevent unauthorized or accidental firing. A minimum of two positive actions are required to initiate firing, one for arming and one for firing.
7. All electrical firing systems shall comply with current NFPA standards. All questions shall be presented to the safety committee for qualification or clarification.

ARTICLE XI

Hand firing

Although electric firing is the preferred method, there are instances where hand firing is

preferred or necessary. These situations could be; no firing panel available, a small show, a backup to electric firing, re-igniting misfires, shells too far away from the panel, etc.

1. Shooters hand firing must wear complete personal safety equipment.
2. Shooters should be experienced.
3. Only the shooter will remove the safety cap prior to lighting the device.
4. If a shooter has a misfire, he must mark the device and inform the safety committee.

ARTICLE XII

Manufacture and Manufacture As a Laboratory (BATFE "Orange Book")

1. The NFPA 1124 Manufacture, Transportation and Storage of Fireworks shall be used as a guideline.
2. All applicable codes and regulations shall apply, including but no limited to NFPA 1124, UFC 77 and 78, BATFE "Orange Book", CRS and local regulations.
3. The Authority Having Jurisdiction (AHJ) shall have final determination.