

Midlands Pyrotechnic Association

A members-only organization dedicated to the art, safety, and preservation of pyrotechnics
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NFPA Code Exceptions

Application of NFPA Code for the purpose of Ensuring Safe Operations at MPA events.

- Whereas the The Midlands Pyrotechnic Association (MPA) presents pyrotechnic materials of complexity, cost, intricacy, artisanship and type NOT customarily presented at commercial displays NOR addressed by NFPA code documents.
- Whereas commercial displays are fired by small crews, but MPA activities are engaged in by and for the specific purposes of the MPA by its members.
- Whereas the MPA ensures safety through multiple and redundant safeguards, including but not limited to the following elements NOT provided at commercial displays: a safety director and safety team, an independent set of MPA safety regulations and seating arrangements designed to ensure safe operation.
- Whereas the NFPA code compliance is required by MPA insurers.
- Whereas NFPA code is NOT adopted in all fifty states.
- Whereas there is NO conflict between the purposes of the NFPA code and the desire of the MPA to ensure safe operation at all times as its first priority.

Whereas the MPA makes these requests:

The following exceptions of NFPA code are proposed and submitted for consideration by the Underwriter for the purposes of acquiring General Liability insurance:

NFPA 1126-2001:

No exceptions are proposed, the code will be enforced as written.

NFPA 1123-2000:

Section 2.1.7 Salute Shell Limits

Proposed: This code shall be waived in deference to the MPA Safety Guidelines.

Purpose: To allow the effects consistent with Italian and Spanish style salute effects not available at commercial displays, allow complex Maltese style shells with large “bottom shots”, and allow large ground salutes.

Relevant PGI Code, 2001 Safety Guidelines, Page 4 Section 13:

Salute restrictions:

Aerial size: 3.5 inches OD x 7.5 inches length

Ground size: 3.0 inches OD x 3.0 inches length and shall be suspended at least 2.0 feet above the ground.

Any exceptions to this must be approved by the safety chairperson or safety personnel responsible for the area where such devices are displayed.

Substantiation: These devices have NEVER been associated with accident or incident and are tightly regulated by MPA safety personnel. Each and every large shell must be inspected and approved by either a member of the MPA directors or safety committee. Any ground salute effects larger than the limits specified must be fired remotely by means of electric match or time delay fuse of sufficient means that no operator, member, or other personnel are less than 75 feet from said device at time of firing.

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Items NOT addressed by NFPA Code:

Proposed: For display items NOT addressed by NFPA code, such as pyrotechnic rocketry, competitions, etc., the relevant sections of the MPA safety guidelines shall apply

Purpose: To ensure safe operation by application of a document that is broader in scope and more germane to the types of activities that differentiate an artisan-oriented fireworks festival from a single site/date commercial display.

Relevant code: Rockets shall be launched from guide tubes or racks constructed to the specifications of the safety team. Rockets shall be launched to minimize flight toward spectators and from racks or launch tubes approved by safety.

Substantiation: These unique and rare pyrotechnic events are a significant part of each and every shoot and have NEVER been associated with nor caused any untoward incident or injury. They are closely regulated by code designed specifically for the firing of such devices.

NFPA 1124-2003:

Chapters 1 (Administration), 2 (Referenced Publications), 3 (Definitions), 5 (Storage of Display Fireworks), 6 (Storage of Consumer Fireworks), and 8 (Transportation) shall apply with and in coordination with relevant sections of the MPA safety guidelines without recourse to waivers or modifications.

Chapter 4 (Manufacturing Operations):

Proposed: This code shall be waived in deference to the MPA safety guidelines.

Purpose: NFPA code for manufacturing is written to ensure safe operation for facilities that are permanent business concerns that handle large quantities of material, that allow for the presence of employees, that require construction of facilities, etc. that are neither germane nor applicable to the activities engaged in by the MPA, where manufacturing is limited to specifically approved seminars, safety team requirements for demonstrations, and assembly of pyrotechnic rockets.

Relevant MPA Code:

Substantiation: The one-time use and production of small quantities of pyrotechnic materials as MPA seminars are each and every one specifically approved by the MPA safety team. The demonstrations and training exercise activities are similarly regulated and supervised by the MPA safety personnel who conduct said activities. Said activities have never caused nor been associated with accident, incident, or injury. Said activities are tightly regulated and severely limited in scope.

Chapter 7 (Retail Sales of Consumer Fireworks):

Proposed: This code shall be waived in deference to the MPA Safety Guidelines.

Purpose: Vending at the MPA shoots of consumer fireworks takes place at sites where construction and modification of existing structures is not permitted.

Relevant MPA Code:

Substantiation: Activities are limited in time to one day. Vending is done outdoors offering maximum egress. Vending area is regularly inspected by the safety team. As the vending practices at MPA shoots are conducted in a safe manner and as said activities have never resulted in nor caused any accident, incident or injury, MPA practices provide appropriate regulation of consumer fireworks vending as conducted at MPA shoots.

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Safety Guidelines

Scope and Authority

These Guidelines shall be known as the Official Fireworks Safety Guidelines and be cited as such. They shall be referred to herein as "The Guidelines."

Authority: These Guidelines were adopted by the MPA and shall remain an official document of the MPA until amended or discontinued.

Scope: These Guidelines apply to the handling, storage, sale, discharge, or other use of all kinds of fireworks and pyrotechnic devices during any official MPA Activity. These Guidelines apply to all MPA Members regardless of voting status, and to friends, relatives, non-members and other persons attending a meeting.

Safety Committee

The need for safe conduct before, during, and after the discharge of fireworks cannot be over emphasized. In order to ensure the fundamental requirements for safe conduct are being observed during the handling and discharge of fireworks, a Safety Committee, having complete authority over safety matters, shall be appointed by the MPA.

Members of the Safety Committee shall be present before, during, and after the discharge of all fireworks.

The discharge of fireworks shall not begin until Members of the Safety Committee have surveyed the overall situation and are satisfied it is safe to proceed. Whenever adverse conditions arise that significantly affect safety, such as crowd control or weather, a Member of the Safety Committee, a Member of Fire and Medical, or a Member of Security shall halt or postpone any or all pyrotechnic activities as they deem necessary. The resumption of those activities shall only resume upon approval of the Safety Committee Chairperson or designate.

The Safety Committee Chairperson or his designate shall investigate any instances of unsafe behavior or conditions, whether observed directly or reported by others, and take appropriate action.

General Requirements

No person who is acting in an irresponsible manner or appears to be under the influence of alcohol or other drugs shall be allowed to handle or discharge any fireworks.

Only MPA Members, or persons escorted by MPA Members, shall be permitted in any of the firing areas. Any persons under the age of 18 must be accompanied by a responsible adult. (All decisions on the classification of this material shall be left to the discretion of the B-line Shoot Boss). Persons under the age of 18 may shoot their entries in competition under the following conditions:

1. Shells must have electric igniters installed and be loaded by a parent or Member of the Safety Team.
2. Shells must be fired electrically and from a minimum distance of 50 feet from the mortars.

Smoking or open flames, other than devices used to ignite fireworks, shall not be permitted in the firing areas. Smoking may be allowed in the Class C/1.4G shooting area and other areas specifically designated by the Safety Committee.

Only flashlights, electric lights, or approved means of illumination* shall be used at firing sites, except that fusees, or other approved means of ignition may be used by the pyrotechnist at a mortar line. (*Some chemical devices may be approved, such as Cyalume™ Light Sticks)

An adequate supply of portable water shall be available at all firing sites to be used for flooding mortars, extinguishing fires, or other needs.

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Mortar cleaning tools shall be provided and only be used to remove excess debris from mortars.

After delivery to the firing sites, fireworks shall not be left unattended. They also shall not be allowed to become wet.

The inside diameter of the mortar, rather than circumference measurements shall be used when describing shells and mortar sizes.

Persons bringing boxes, bags, or containers into the B-line, rocket, ground bomb, or Class C/1.4G areas shall also remove them. Shooters shall leave no garbage or other refuse. Dumpsters will be provided at various locations for trash disposal. No live material shall be placed in any trash container.

All aerial salutes shall be fired from paper or HDPE (High-Density Polyethylene) mortars. Multi-break shells containing large salutes shall only be fired from paper or HDPE mortars; however, exceptions may be granted by the Safety Committee to allow special traditional multi-break shells to be fired from steel mortars or fiberglass. No PVC or ABS plastic shall be used to fire shells of any size. PVC or ABS plastic may only be used for whistle effects (no gerbs, etc.)

Salute restrictions:

Aerial size: 3.5 inches OD x 7.5 inches length

Ground size: 3.0 inches OD x 3.0 inches length and shall be suspended at least 2.0 feet above the ground.

Ground salutes shall not be thrown and shall be tied and suspended from frames approved by the Safety Committee.

All steel mortars and any mortars to be used for repeated hand firing shall be buried at least three quarters of their length in earth or sand that is free of hazardous debris.

No torpedoes shall be allowed.

Dry grass or combustible materials located beneath ground display pieces shall be wet down before the display if they are a potential fire hazard.

Poles and other bracing used for ground pieces shall be firmly placed, guyed, or otherwise secured to prevent accidental displacement prior to or during the functioning of the ground piece.

Guy wires and stakes used to support ground pieces shall be marked with colored tape or ribbons to prevent personnel from becoming entangled.

All personnel shall wear protective clothing and utilize any safety equipment deemed appropriate by the Safety Committee. Safety glasses and hard hats shall be worn by all shooters at the Class B shoot lines and the competition lines.

Personnel at the shooting sites shall closely observe the firing in order to detect and maintain an accurate count and location of misfires and duds.

After the completion of shooting for the night, all firing lines and fallout areas shall be inspected in order to locate and retrieve hazardous materials. After securing the grounds for the night, Members of the Safety Committee or their appointees shall again inspect the firing sites and fallout areas very early the following morning for any remaining materials.

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Class B/1.3G Testing

This section provides Guidelines for the safe testing of Class B/1.3G fireworks in order to determine aspects of their performance.

The safety practices provided under Article 3 shall apply to all instances of Class B/1.3G testing. Clearly marked firing lines and firing direction shall be established by the Safety Committee or Site Chairperson and observed by all participants. Class B/1.3G testing shall be conducted only at these designated firing sites and only during times scheduled for this purpose.

All shooters shall provide one and only one assistant. Together they shall be responsible for spotting and retrieving duds or other hazardous material that may result from their testing. All duds and hazardous materials shall be turned over and disposed of by the Safety Committee in an approved manner.

At any one time, only one shooter and an assistant shall be allowed to shoot in an area.

No shells over six inches in diameter shall be hand fired. Only qualified personnel shall install electric matches. The Member of the Safety Team present shall determine a safe firing distance.

The Member of the Safety Team present prior to use shall approve equipment such as mortars or rocket launchers provided by a participant.

Rockets shall be launched from guide tubes or racks employing at least two metal eyelets and not from any type of rail, "V" or "U" shaped launcher which depends solely on gravity to control the rocket at the time of launching. Guide tubes shall be of such diameter that the rocket sticks have no more than one half inch clearance on all sides. Mortars are not adequate guide tubes.

Smoking is strictly prohibited at all Class B/1.3G firing sites.

All shells shall be in ready boxes with the lids closed at the time of firing. Cardboard boxes may be used only for transporting shells to the firing line. They must be emptied immediately upon arrival to the ready box.

Shells with short leaders shall not be fired. For Class B/1.3G testing and competition, at least eight inches of leader and at least three inches of black match shall be exposed from the mouth of the mortar. All black match shall be fully covered with a safety cap until the moment of firing.

Both shooter and assistant shall leave the B-line area immediately after their shooting. Security personnel shall allow only two sets of shooters on the B-line at any one time. When the number of available mortars and the distance between them allow it, the Shoot-line Boss may make exceptions to this guideline.

Only single shells shall be tested. No flights or multiple firings shall be allowed. Class B/1.3G cakes, properly designed and engineered, with a maximum of 1½" tubes mounted on a firm base and attached so as not to tip over when fired, shall be allowed at the discretion of the Shoot-line Boss. Shells or reports fired from commercially made flare guns shall also be allowed if approved by the Shoot-line Boss.

Safety personnel shall have the right to inspect any and all material brought to the shoot-line for firing. Defective material, bad leaders, under lifted shells and any items prohibited by BATF or PGI guidelines shall be disallowed.

The Safety Team shall handle all misfires. No shooter shall attempt to remove any shell from a mortar.

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Guidelines for the Public Display Area

These are provisional safety guidelines for events taking place in the "public display area". Nothing here is intended to reflect in any way on the knowledge or abilities of the Chairpersons, Designers, Planners or others involved with those events. These Guidelines are only intended to address safety considerations. It is felt that because of the increasingly larger numbers of attendees at meets and the growing amount of pyrotechnic materials that may be present and used, careful consideration for safety is essential.

Before any work starts, all persons in charge of the public display, product demonstrations, and other events in "the display area" or "center field area" shall meet with the Safety Chairperson and Members of the Safety Team to present a plan for their activities.

The plan for the Public Display, product demos, or other events should show a breakdown into sections or quadrants and provide for an orderly progression for groups of workers to complete the work. When the work is completed in a section, it should be marked-off and no unnecessary entry allowed.

Ample time should be allowed for unpacking, sorting, fusing, matching, loading, hooking up and foiling. Safety considerations shall not be sacrificed for speed.

For each event in the public display area, a qualified "pyrotechnician in charge" or his designate shall always be present while work is in progress.

All persons who are "in charge" of an event or those who supervise others doing any work in the public display area shall have passed the PGI Display Operators Certification. State certifications or licenses will probably be acceptable but shall be cleared with the Safety Team prior to the commencement of work.

Exceptions to this Guideline shall be made for those setting-up their own Class C/1.4G competition items, provided all other safety provisions are followed.

Controlled Access

In the interest of safety, access to the public display areas shall be controlled; however, provisions shall be made for escorted or supervised tours.

Storage

Normal BATF and/or local Department of Labor and Industries rules shall apply to magazines and storage.

Spectator Protection

The minimum distances stated in Article 14 of the Official Fireworks Safety Guidelines shall apply for all events in the public display area.

All pyrotechnic items shall be pointed away from the spectators.

All reasonable care shall be taken to prevent inadvertent items from entering the spectator areas.

Precautions Against Fire

Adequate fire extinguishers, as required and maintained by the Fire Suppression Team, shall be available in the public display area during the setup and firing of any pyrotechnic items.

Smoking or open flames shall not be permitted closer than 50 feet from any pyrotechnic items and then only in designated smoking areas.

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Firing

Provisions shall be made for a secure and safe position for those who must be present to fire the display.

All persons in the public display area during firing shall wear eye protection and hard hats. Ear protection is strongly recommended.

Provisions shall be made for a signal or radio call that will cease all firing quickly in an emergency situation.

Incidents

In the event of fire, explosion, etc., absolutely no persons other than Fire, Safety, and Medical personnel shall enter the area without the express consent of the Safety Committee.

Mortars

Size Definition: Mortar size shall be stated as the measurement of the inside diameter.

Materials: Mortars shall be constructed of steel, HDPE plastic, heavy gauge sheet metal, spiral, or convolute wound kraft paper tubes or fiber reinforced plastic.

Plugs: All mortars shall be securely plugged at the bottom. Solid wood may be used. For mortars up to 6 inches in diameter, the thickness of the plug shall be at least equal to $\frac{1}{2}$ the inside diameter of the mortar. All plugs shall fit tightly against the inside of the mortar.

All mortar material shall be of sufficient thickness and strength to withstand the forces generated by the lift charges.

Mortars larger than 12 inches in diameter shall be constructed of steel with a steel bottom plate, HDPE plastic with adequate cross bolting or equivalent, or fiber reinforced plastic with an adequately plugged bottom so as to withstand the forces produced by the lift charge.

Sheet metal mortars: shall be limited to 3 inch diameter or smaller and shall be used for single shot, single break shells in finales or barrages only. The seam shall be placed at 90 degrees to the right or left of the Operator.

Paper mortars: shall have a plug thickness equal to or greater than the inside diameter of the mortar. Plugs shall be secured with at least 4 screws, nails, or staples set 90 degrees apart and penetrating at least $\frac{1}{2}$ the diameter of the plug. Alternatively, two bolts may be used which are installed in a 90 degree cross pattern, provided they are at least $\frac{5}{16}$ ths of an inch in diameter and are secured with the head and the nut/lock washer on the outside of the tube. Mortars greater than 6 inches in diameter shall have more fasteners. Paper mortars shall be inspected before each use to insure they have not been weakened by loose and unwinding layers.

Steel mortars: shall have a steel plate welded in/on the bottom, provided the weld is of good quality and forms a continuous water tight seal. The plate shall be equal to or greater than the wall thickness of the mortar. It is recommended that large caliber mortars or mortars for firing large multi-break shells have substantial bottom plates installed. The Safety Team shall inspect such mortars as to their integrity.

HDPE plastic mortars: up to and including 4 inches in diameter may be of a one-piece style with a molded bottom. Length: Mortars up to 6 inches in diameter shall have an inside length (excluding the plug) of at least five times their inside diameter. Mortars above 6 inches in diameter shall have a sufficient length to propel the type of shells fired to the proper height. Mortars used to fire long or multi-break shells shall be of sufficient length to propel the shell to the proper height.

Defects: Mortars with cracks, splits, bulges, excessive corrosion, loose or split plugs, delaminated paper tubes, or gaps between the plug and inside wall shall not be used. Mortars with dents, bends, or restrictions along their length or at the muzzle shall not be used.

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Burial: Mortars not in racks shall have a minimum of $\frac{3}{4}$ of their length buried in the ground. All mortars to be used above ground shall be constructed of HDPE plastic, paper, or fiber reinforced plastic. Single mortars may be secured in sand boxes or troughs and shall have a minimum of $\frac{1}{2}$ their length covered with rock and gravel free sand. A drum may be used only if it is constructed of HDPE plastic and it contains only one mortar of 12 inch maximum inside diameter and it has been inspected by the Safety Team for possible tip-over. Under no circumstances will free standing or staked and tied mortars be allowed. Mortar separation shall be a minimum of $\frac{1}{2}$ the diameter of the larger mortar and shall be placed a minimum of $\frac{1}{2}$ the mortar diameter from the box, drum, or trough walls.

Racks: Racks for holding mortars shall hold the mortars securely and be constructed to stand up to the required forces. The maximum size mortars to be used in racks shall be 6 inch inside diameter. Mortar racks shall be adequately braced to prevent tip-over and shall be placed perpendicular to the spectators.

Protection: All loaded mortars shall be sealed with taped down foil, cap plugs, or other equivalent means of protection when the following conditions occur:

- Mortars will be left overnight.
- Other display material could drop sparks into the mortars causing pre-ignition.
- Rain or other precipitation is forecast or present.
- Paper mortars shall be protected from excessive moisture, and if buried in sand or earth, they shall be wrapped in plastic.

Shells

Size Definition: The size of shells shall be stated as the inside diameter of the mortar from which they are to be fired.

Transportation and Handling: All boxes of shells and other pyrotechnic materials entering the public display shall be organized and clearly labeled. Shells being transported in vehicles onsite shall be in containers or boxes and shall be so secured as to prevent damage from such movement.

To avoid possible hazards generated by friction or static, boxes or other containers of shells shall not be pushed or pulled around on the floor of magazines or transporting vehicles - they shall be lifted and carried.

The lids of all boxes and shell containers shall remain closed except when removing contents.

Whenever handled, individual shells shall be carried by their bodies, not by their leaders.

Shells 10 inches in diameter or larger shall be carried either in unopened factory packages or one at a time.

Shells 20 inches in diameter or larger shall be transported in such a manner that the danger of dropping or otherwise damaging the shell is minimized.

Shells shall never be allowed to be dropped.

Repair: Shells found to be damaged, or that have been damaged in handling, shall not be used unless repaired by a person trained and competent in that type of repair. Shells requiring more than minor repairs shall be inspected by the Safety Team after repairs have been made.

Quantity Limitations and Spacing: Boxes of salutes shall be limited to 100 or less in any mix of sizes. Outside of approved magazines or mortars, salutes in any vehicle or any one stack shall number no more than 500 in any mix of sizes. Outside of approved magazines or mortars, large quantities of other shells (500 or more) in any one place shall be avoided.

Loading: The "pyrotechnician in charge" shall brief inexperienced crew members on the correct method of handling and loading shells. To the extent possible, no part of the body shall be placed over the mouth of the mortar during loading, matching, or hook-up to the ignition source.

All shells, especially shells that are 8 inches and up, shall be lowered gently to the bottom of the mortar during loading.

Shells shall not be dropped into mortars during loading.

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Shells larger than 6 inches in diameter shall be lowered into their mortar with a lowering cord, if one is provided by the manufacturer, and not by the shell leader.

The "pyrotechnician in charge" or an experienced Supervisor and a Member of the Safety Team shall be present when mortars larger than 12 inches in diameter are being loaded.

Firing: All shells 7 inches in diameter or larger shall be fired electrically.

Multiple break shells, or unusually heavy shells requiring heavy lift charges, shall only be fired out of steel mortars.

Miscellaneous: The use of experimental, untested, or "non-production" shells in public displays is discouraged. If such shells are fired from the public display area, they shall be isolated to prevent disruption of other pyrotechnic items in the event of a malfunction.

Lift charges shall not be added directly into the mortar (salting).

Quick Match and Time Fuse

Quick Match: Pyrotechnicians are cautioned that quick match may be ignited by the heat of friction generated by abrasion. They should use care and take their time when working with quick match.

It is highly recommended that persons working in the public display areas refrain from using scissors or any "by-pass" type cutting tools when working with quick match. Recommended tools for cutting quick match are razor knives, side/end cutters, or teflon coated blade/anvil type pruners.

Quick match splices shall be secured against separation either from the weather or from handling.

Open ends on all quick match shall be covered with tape or safety caps.

Pyrotechnic items shall not be carried by their leaders (Exception: chained finales)

All time fuses shall be secured against separation and sealed with tape against the weather and stray sparks.

Thermolite: Thermolite may be used for ignition sequence or timing; however, work shall take place far enough away from other pyrotechnic items so that accidental ignition cannot set them off.

To the extent possible, thermolite shall be protected from sparks and other display items that might cause premature ignition.

Thermolite is "live, exposed pyrotechnic composition" and caution must be exercised in its use; accordingly, all use of "exposed" thermolite shall be reviewed by the Safety Team.

Visco: Visco or green "safety fuse" may be used when factory installed or where deemed necessary by the "pyrotechnician in charge" of an event. To the extent possible, Visco shall be protected against accidental ignition.

Fused Timing Sequences: Long and elaborate, unstoppable sequencing utilizing Thermolite, Visco, time fuse, or other similar products is discouraged and shall be reviewed and inspected by the Safety Team.

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Electric Firing

Briefing: Persons handling any pyrotechnic items with the electric igniters installed, or those installing electric igniters, shall be briefed on their sensitivity to electrostatic discharge, impact, and friction.

Precautions: The installation of electric igniters and/or the storage and/or the setup of pyrotechnic items with their igniters attached shall not take place within 200 feet of "high tension" power lines.

Two or more experienced Members of the Safety Team and the "pyrotechnician in charge" shall assess such possible power line problems before set-up begins.

The installation of electric igniters and/or the set-up of pyrotechnic items with electric igniters installed shall not take place when electrical storms or lightning are present or forecast.

No radio transmitter shall be operated within 10 feet of electric igniters. Transmitters with power greater than 5 watts shall be kept a minimum of 25 feet away.

When at all possible, shrouded electric matches shall be used to prevent the match heads from coming in contact with pyrotechnic materials.

Hook-ups: No hook-up to the firing system shall be allowed until all work on that item is complete. Before continuity checks are made, the immediate area shall be cleared of all personnel and the Safety Team shall be notified.

All electric igniter leg wires shall be momentarily shunted until hook-up (twisted together or by a wire nut).

All firing circuit wires shall be momentarily shunted together before attaching igniter leg wires.

Firing wire (scab) connections shall only be made up with shunted circuits.

During final hook-up, only persons doing the actual wiring shall be present.

Ground Bombs

Ground salutes or bombs shall be suspended from string above the ground and far enough away from any wood or steel to prevent flying splinters or shrapnel.

Gerbs or Fountains

Gerbs or fountains shall be securely anchored to prevent their breaking loose when fired.

Gerbs or fountains shall be fired in such a manner as to prevent sparks from falling on unprotected pyrotechnic items.

Lancework

Lancework items shall be secured against falling over and/or burning through their braces.

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Rockets

Any rockets used in the public display areas within trajectory range of spectators shall be launched in such a manner as to prevent any flight towards the spectators. That is, some mechanism shall be used to force the rockets to launch vertically or in a safe direction away from the spectators.

Launching large numbers of common bottle rockets from a stove pipe or other confining cylinder will be permitted only if the launch direction is angled away from the spectators, and proper safety distances are observed.

Line rockets, pigeons, or radios shall not travel in the direction of the spectators.

Candles

Roman candles shall be secured against toppling and be shielded against "blowout" on the side towards the spectators to prevent errant projectiles from flying towards the crowd.

Wheels

Stands or supports for wheels shall be secured against toppling and shall be strong enough to withstand the wheel's torque forces.

Driver gerbs and other components mounted on wheels shall be securely fastened to prevent "flying off".

Petards, salutes, ground bombs or other explosive devices used on wheels shall be suspended or mounted securely and in such a manner as to prevent the production of splinters and/or shrapnel.

Class C/1.4G Displays

All Class C/1.4G displays shall comply with all of the provisions of these Guidelines. Exceptions shall be made only with prior approval of the Safety Team.

Setup of Class C/1.4G items for competition shall be supervised by the person whose name is on the competition entry. Exceptions shall be made only with prior approval of the Safety Team.

Special Effects

All special effect items shall be cleared by the Safety Team prior to setup and firing.

Even after prior approval, all special effect items shall require a Safety Team Member to be present during firing.

All of the above Guidelines shall generally apply. Special effects involving unnecessary risks or dangerous practices shall not be permitted.

Flammable liquid ground effects shall not be permitted.

Any devices utilizing Class A/1.1G high explosives shall not be permitted.

Special effects involving humans or animals in close proximity to the effect, i.e., body burns, bullet hits, coffin acts, pyrotechnics attached to the body, car stunts, etc., shall not be permitted.

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Duds and Misfires

The Safety Team shall be notified immediately of all duds and misfires.

No recovery of duds or misfires shall be attempted until after inspection by a Member of the Safety Team.

In all cases, the "pyrotechnician in charge" and a Member of the Safety Team shall agree on the method of recovery before recovery is attempted.

Misfires

If the item is a shell in a mortar without an electric igniter, the mortar shall be doused with water and let stand a minimum of 30 minutes.

If the item is a shell in a mortar with an electric igniter:

Isolate and shunt the leg wires.

If there is enough leader outside of the mortar to permit safe removal of the igniter without placing any part of the body over the mouth of the mortar, the shell shall remain in the mortar. The igniter may be removed either by withdrawing it slowly and carefully from the leader match or, after the location of the igniter's head is positively identified, by cutting off the leader match below it. The shell may then be removed from the mortar in a manner agreed upon by the "pyrotechnician in charge" and one or more Members of the Safety Team.

If removal of the igniter is not possible without exposing body parts over the mouth of the mortar, the shell shall be removed from the mortar in a manner agreed to by the "pyrotechnician in charge" and one or more Members of the Safety Team. When the shell has been moved to a safe distance and has been placed on the ground with the lift charge at right angles to the pyrotechnician, the igniter shall be removed as described above.

Duds

If the item is a shell, it shall be flagged and left undisturbed for a minimum of 30 minutes, then it shall be disposed of in a manner agreed upon by the "pyrotechnician in charge" and one or more Members of the Safety Team.

If the item is a large detonating device, such as a "Gabe Mort", the Safety Team may require that it be detonated in place after the area has been cleared.

Roman candles, gerbs, lance work, or ground bomb misfires with quick match attached should be doused with water and left undisturbed a minimum of 30 minutes prior to removal for disposal.

If any of the above dud items has an electric igniter installed, the item may be recovered for later use after the wires have been isolated, shunted, and the igniter removed as described above.

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Class C/1.4G Sales

Sales shall be made only to MPA members. Un-escorted, non-MPA Members shall not be allowed in the Class C/1.4G sales areas.

Sales shall be made only to those persons who are at least 18 years of age or who are otherwise accompanied by a MPA Member of the required age.

A sale, gift, or other means of distribution shall not be made to anyone who appears to be under the influence of alcohol or drugs, or acting in an irresponsible manner.

Sales shall be conducted only in buildings approved and designated for this purpose by the Safety Committee.

Sales shall be conducted only during the time designated for this purpose.

Vendors and/or Members of the Safety Team, Fire and Medical, or Security have full authority to require anyone causing a safety hazard to leave the sales area.

Class C/1.4G Shooting

Specific times and locations shall be designated for the discharge of Class C/1.4G common fireworks.

Separate areas for distinct types of Class C/1.4G shooting shall be provided. Each area shall be separated from any adjacent area by at least 50 feet and from any rocket area by at least 150 feet.

The following is an example of minimum appropriate designations: All shooting locations shall be at a minimum distance of 500 feet from any fireworks assembly areas, magazines, Class C/1.4G vending, and chemical sales.

The shooting site shall be arranged so that the prevailing wind blows away from the shooter and spectators. Wind blowing parallel to the firing line shall also be acceptable. In a case of significant wind shift, shooting shall be stopped and the site rearranged as necessary.

Nothing but D.O.T. designated Class C/1.4G items shall be discharged in the regular shooting areas.

"Super C" or "Baby B" devices to be fired shall receive prior approval from the Safety Team.

Fountains, gerbs, cakes, and candles shall be bedded in sand or otherwise supported to prevent toppling when fired. No roman candle or any other device shall be held in hand when firing.

Any person who appears to be under the influence of alcohol or drugs, who is acting in an irresponsible manner, or who is under the age of 18 years and not accompanied by an adult shall not be permitted in any of the shooting locations.

Members of the Safety Team shall be present at all times during Class C/1.4G shooting to ensure enforcement of these Guidelines.

All unauthorized persons shall be prevented from entering any of the shooting locations by Security personnel or by fencing or other barriers.

All Class C/1.4G fireworks brought to a shooting location shall be kept in closed containers and maintained behind any established firing lines.

Fire extinguishers and a first aid kit shall be on site during shooting of Class C/1.4G devices.

Rockets shall be launched in a manner as described in Article 4.

The security personnel, barriers, and other means used to prevent unauthorized persons from entering the shooting locations shall remain in effect until the locations have been thoroughly policed and all materials removed.

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Manufacturing

Bulk quantities of flash powder are strictly prohibited.

All allowed assembly activities shall be conducted in designated areas.

A building designated to be used as a location for assembling fireworks shall not be used for any other activities.

Open-air assembly of set pieces and other competition entries shall be permitted in specifically designated areas which shall be located a minimum of 500 feet from any shooting location and a minimum of 300 feet from Class C/1.4G vending or magazines.

Hazardous materials such as flammable powder, fuse, match, and similar combustibles shall be stored in closed containers.

Completed devices shall be promptly transported to a magazine or storage area which is secured against fire and theft.

All bare match and ends of completed devices shall be covered with safety caps or equivalent.

All assembly and subsequent storage shall be subject to control by the Safety Committee.

Educational Workshops and Demonstrations

All demonstrations, workshops, and other comparable activities shall be conducted in appropriate locations depending upon the nature of the materials. Presentations using pyrotechnic compositions, black powder, stars, live fireworks and components shall be conducted in designated areas approved by the Safety Chairperson.

Smoking shall not be permitted during any workshop or demonstration where hazardous materials are used.

Proper safety equipment shall be present and used during demonstrations and workshops to emphasize safety technique. This includes, but is not limited to, respirators, rawhide mallets, face shields, gloves, anti-static products and devices, etc.

Hazardous materials shall be brought to workshops and demonstrations in closed containers.

Excess or unused hazardous materials shall be returned to their respective containers and not be allowed to accumulate in work areas.

Only enough hazardous materials necessary to conduct the demonstration or workshop shall be permitted at the work area.

All work areas shall be thoroughly cleaned as soon as the demonstration or workshop is completed.

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Storage

Explosive storage facilities (magazines) used during a meet shall meet federal requirements and be approved by the Safety Committee.

Persons appearing to be under the influence of alcohol or drugs or acting in an irresponsible manner shall not be allowed in or near any storage magazine.

Smoking is prohibited within 50 feet of any magazine or fireworks storage area. Any explosive storage facility shall remain locked at all times when unattended.

Possession and storage of any fireworks or chemicals in hotel/motel rooms is strictly prohibited.

Minimum Distances from Spectators

All devices (both Class B/1.3G and C/1.4G), when ignited, shall be separated from the main body of spectators by a minimum safe distance which is determined solely by these Guidelines.

ITEM DISTANCE

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| 1. All metal mortars 300 feet | 18. Non-exploding comets (smaller than 3") 200 feet |
| 2. Individually-fired shells (vertical mortars) 70 feet per inch of mortar diameter | 19. Non-exploding comets (3" and larger) 300 feet |
| 3. Individually fired shells (properly angled mortars) 50 feet per inch of mortar diameter | 20. Crossettes or exploding comets (smaller than 2") 200 feet |
| 4. Chain fused shells fired from racks not capable of withstanding a mortar misaligning detonation | 21. Crossettes or exploding comets (2" and larger) 300 feet |
| 1. Twice the distances of #2 | 22. Wheels 150 feet |
| 5. Mines (3" and smaller containing stars only) 150 feet | 23. Saxons or Merry-Go-Rounds 100 feet |
| 6. Mines (4" containing stars only) 200 feet | 24. Line rockets 150 feet |
| 7. Mines (5" to 6" containing stars only) 250 feet | 25. Buzz bombs and Helicopters 200 feet |
| 8. Mines (containing inserts, i.e., salutes, hummers, etc.) Add 25% to #'s 5, 6, & 7 | 26. Fountains, gerbs. and whistles (1" ID and smaller) 75 feet |
| 9. Mines (7" and above) Subject to Safety Team approval | 27. Fountains, gerbs & whistles (above 1" and smaller than 2" I.D.) 100 feet |
| 10. Roman candles and cakes (Class C/1.4G) 150 feet | 28. Fountains, gerbs & whistles (2" I.D. and larger) 150 feet |
| 11. Roman candles and cakes (Class B/1.3G w/stars only) 200 feet | 29. Waterfalls (without reports) 75 feet |
| 12. Roman candles and cakes (Class B1.3G w/inserts, shells, whistles, salutes, etc.) 300 feet | 30. Waterfalls (with reports) See above salute distances |
| 13. Suspended salutes (1" x 2") 100 feet | 31. Bottle rockets (1/4" diameter max.) 200 feet |
| 14. Suspended salutes (2" x 4") 200 feet | 32. Rockets 300 feet min.. Large rockets subject to Safety Team approval |
| 15. Suspended salutes (3" x 6") 300 feet | 33. Lancework (no pyrotechnically-driven parts) 75 feet |
| 16. Suspended salutes (larger than 3" x 6") Subject to Safety Team approval | 34. Lancework (pyrotechnically-driven parts) 150 feet |
| 17. Non-exploding comets (2" and smaller) 150 feet | 35. Creamora bombs Subject to Safety Team approval |

The Safety Committee may alter these distances at any time. Conditions may warrant increased separations.

The Safety Committee's decisions may be influenced by wind direction and velocity, by shooting peculiarities, or by other factors. Lesser distances shall be utilized only upon approval of the Safety Chairperson.

The mortar areas shall be located so that the trajectory of shells shall not come within 25 feet of any overhead object.