

Safety guidelines for the Michigan Pyrotechnics Arts Guild

Items to be enforced at all club functions and gatherings

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1. AUTHORITY AND SCOPE

1. 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.”

2. Authority: These guidelines were adopted by the Michigan Pyrotechnics Arts Guild (MPAG). As NFPA codes are continually revised, NFPA-1123 and NFPA-1126 in their current editions should serve to guide future revisions of these Safety Guidelines.

3. Scope: These Guidelines apply to the handling, storage, sale, discharge or other use of all forms of fireworks and pyrotechnic or explosive devices during any official MPAG event. These Guidelines apply, without exception, to all MPAG members, friends, relatives, non-members, hosts and to all other persons attending a shoot or on site during an event.

2. SAFETY TEAM/SAFETY COMMITTEE

1. The need for safe conduct before, during, and after the discharge of fireworks cannot be over-emphasized. In order to ensure that fundamental requirements for safe conduct during the handling and discharge of fireworks are being observed, the members of the MPAG shall elect a Safety officer who shall have complete authority over all safety matters, subject only to the discretion of the Board. The Safety officer shall be a member of the Board of Directors.

2. If the Safety Officer is unable to attend the event, the officers of the MPAG shall appoint a new chairperson for that shoot.

3. The discharge of fireworks shall not begin until the Safety officer has surveyed the overall situation and is satisfied it is safe to proceed. Whenever adverse conditions arise that significantly affect safety, such as crowd control or weather, a member of Board or the Safety officer shall halt or postpone any or all pyrotechnic activities as they deem necessary. The resumption of those activities shall only take place upon approval of the Safety officer.

4. All safety personnel shall be provided with and wear, identifying insignia, such as shirts, vests, armbands or other markings that are clearly identifiable.

5. The Board shall investigate all instances of unsafe behavior or conditions, whether observed directly or reported by others, and take appropriate action.

6. In the event of an accidental fire, explosion and/or similar emergency, the MPAG Safety officer shall respond to the emergency situation and attempt to resolve the problem using all available resources. The Safety Officer shall assume responsibility for management of explosive materials hazards in the area while working with outside resources as emergency medical and fire personnel render services. MPAG Members shall be prohibited from entering the problem area until the situation is resolved to the satisfaction of the Board. Priority shall always be given to saving life and minimizing hazardous risks to which the responding personnel are exposed.

3. GENERAL REQUIREMENTS

1. All safety personnel shall be qualified as determined by the Safety officer and may be required to attend a safety class given by the Safety officer. They shall carry and keep as a reference, a copy of these Guidelines, and they shall be familiar with its contents.

2. 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.

3. Only MPAG members or persons escorted by MPAG members shall be permitted in any of the firing areas. Any persons under the age of 18 shall be accompanied by a responsible adult. Persons under the age of 18 may discharge fireworks at open or other shooting sites as determined by the safety officer/member in charge of the firing area.

4. Smoking or open flames, other than devices used to ignite fireworks, shall not be permitted within fifty feet of any firing areas.

5. Only flashlights, electric lights or approved means of illumination (some chemical devices may be approved such as Cyalume™ Light Sticks) shall be used at firing sites. Fusees, propane torches, or other approved means of ignition may be used by the pyrotechnician at a mortar line.

6. A first aid kit shall be present at all times in areas where fireworks are present.

7. A portable water supply and/or fire extinguishers shall be available at firing sites, as specified by the safety officer, to be used for flooding mortars, extinguishing fires, etc.

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

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

10. Persons bringing boxes, bags or containers into the 1.3 G display fireworks firing line, hereinafter referred to as the "B line", rocket, or Class C/1.4G areas shall also remove the containers. Shooters shall leave no garbage. No live material shall be placed in any trash container.

11. Salutes, Mortars:

a) All aerial salutes shall be fired from paper or HDPE (High-Density Polyethylene) mortars.

b) Multi-break shells containing large salutes shall be fired from mortars approved by the Safety officer. The Safety officer may allow or require special traditional multi-break shells to be fired from steel mortars or fiberglass.

c) PVC or ABS plastic mortars shall not be used unless specifically approved for such use, on site, by the Safety officer or his designate. The Safety Officer or his designate shall make all final determinations regarding the use of PVC or ABS plastic devices. These brittle plastics are NOT NFPA approved for use as display mortars, but, at the discretion of the safety Officer or his designate, may be occasionally used for firing small devices such as comets.

12. Salute restrictions: 5" O.D., 5" length. Ground salutes shall be suspended by string, wire, or other safety-approved means, at least 2 ft. above the ground, using frames assembled and approved by MPAG personnel. Exceptions to this rule and to the maximum salute dimensions must be approved by the Safety Chairperson or safety personnel responsible for the area where such devices are displayed.

13. 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 free of rocks and any other hazardous debris.

14. Dry grass or combustible materials located beneath ground display pieces shall be wet down or removed, if possible, prior to the display.

15. 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.

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

17. All personnel engaged in discharging fireworks shall wear protective clothing and utilize any safety equipment deemed appropriate by the Board. Examples of such clothing and equipment include, but are not limited to, safety glasses, ear plugs, and hardhats. All personnel at the firing lines, whether actually discharging fireworks, assisting, or observing the discharge of fireworks MUST wear safety glasses. The Safety Officer in charge of the particular site shall determine the distances within which safety glasses must be worn and at what distance hard hats must be worn.

18. At the shooting sites the Safety officer shall closely observe the firing in order to detect and maintain an accurate count and location of misfires and duds.

19. After the completion of shooting for the night, all firing lines and fallout areas shall be inspected by the Safety officer and the member whos shell malfunctions in order to locate and retrieve hazardous materials.

4. CLASS B / 1.3G OPEN SHOOTING AREAS

1. This section provides Guidelines for the safe shooting of Class B/1.3G fireworks.

2. The safety practices provided under article 3 shall apply to all instances of Class B/1.3G testing.

3. Clearly marked firing lines and firing direction shall be established by the Safety Team and observed by all participants. Class B/1.3G testing and open shooting shall be conducted only at these designated firing sites and only during times designated for this purpose

4. The Safety Officer present prior to use shall approve equipment such as mortars or rocket launchers provided by a participant.

5. Rockets shall be launched from guide tubes or racks constructed to the specifications of the Board.

6. Smoking is strictly prohibited within fifty feet of all Class B/1.3G firing sites.

7. All shells not loaded into mortars shall be in ready boxes, with ready box lids closed, at the time shells are fired from mortars. Cardboard boxes may be used only for transporting shells to the firing line. Upon arrival at the firing site, the shells must be placed in the ready box.

8. Shells with short leaders shall not be fired. For Class B/1.3G open shooting a length of leader as determined by safety personnel to be adequate 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.

9. 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 not consistent with MPAG guidelines shall be disallowed. Any unauthorized person possessing or attempting to use Class A/1.1 material shall be escorted from the shoot site and the material confiscated. A recommendation shall be made to the officers that the person be removed from the event pending a board review of the situation and may include actions of possible expulsion from the Guild. Use of this material is not generally to be approved or endorsed at MPAG events. Special effect demonstrations and other exceptions must be individually approved in each and every instance by the Board.

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

5. Mortars

1. Size definition

a. Mortar size shall be stated as the measurement of the inside diameter.

2. Materials

a. Mortars shall be constructed of steel, HDPE, epoxy reinforced fiberglass or paper.

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

c. 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 epoxy reinforced fiberglass with an adequately plugged bottom so as to withstand the forces produced.

ii. Paper mortars shall be inspected before each use to insure they have not been weakened by loose and unwinding inside layers.

3. Plugs

a. All mortars shall be securely plugged at the bottom.

b. 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 Safety officer may inspect mortars to ensure their integrity. c. HDPE plastic mortars up to and including 4 inches in diameter may be of one-piece construction

4. Length

a. Mortars used to fire very long or multi-break shells shall be approved by the Safety Team.

5. Defects

- a. 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.
- b. Mortars with dents, bends or restrictions along their length or at the muzzle shall not be used.

6. Burial

- a. 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 epoxy reinforced fiberglass. Any above-ground use of steel mortars (for liquid fuel effects, in mortar boxes/troughs, etc.) MUST be explicitly approved by the Safety Officer or Board. Free-standing or staked and tied mortars are not generally used in displays but may be allowed if each and every such use/instance is EXPLICITLY approved by the Safety Officer or his designate. NO such use of free-standing, staked and/or tied mortars, without the requisite EXPLICIT permission, is allowed. Mortar separation in troughs or mortar boxes shall be a minimum of $\frac{1}{2}$ the diameter of the larger mortar and mortars shall be placed a minimum of $\frac{1}{2}$ the mortar diameter from box, drum, or trough walls. All steel mortars MUST be buried except as noted above.

7. Racks

- a. Racks for mortars shall hold the mortars securely and be well constructed. The maximum size mortars to be used in racks shall be 6 inch inside diameter. Pairs of eight-inch mortars may be allowed if approved by the Safety Officer.
- b. Mortar racks shall be adequately braced to prevent tip-over and shall be placed perpendicularly to the spectators, whenever possible.

c. Multi-break shells up to 3" in diameter and up to 3 breaks and up to 4" in diameter and up to two breaks may be fired from racks.

d. Racks or boxed devices (cakes) containing mortars 3 in. (76 mm) or less in diameter to a maximum of 25 mortars per unit and racks or boxed devices (cakes) containing mortars 4 in. (102 mm) in diameter to a maximum of 16 mortars per unit are allowed.

6. Shells/ground items

1. Size definition

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

2. Transportation and handling

a. All boxes of shells and other pyrotechnic materials entering the display area shall be organized and clearly labeled.

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

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

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

e. Shells 16 inches in diameter or larger shall be transported in such a manner that the danger of dropping or otherwise damaging the shell is minimized.

f. Shells shall never be allowed to be dropped.

3. Repair

- a. 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.
- b. Shells requiring more than minor repairs shall be inspected by the Safety officer after repairs have been made.

4. Loading

- a. The Safety officer shall instruct inexperienced crewmembers on the correct method of handling and loading of shells.
- b. No part of the body should be placed over the mouth of the mortar during loading, matching or hook-up to the ignition source.
- c. All shells, especially large caliber ones (8 inch and larger) shall be lowered gently to the bottom of the mortar during loading. Shells shall not be dropped into mortars during loading.
- d. Shells larger than 6 inches in diameter shall be lowered into their mortar with a lowering cord or rope and not by the shell leader.

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5. Firing

- a. All shells 7 inches in diameter or larger shall be fired electrically or with a visco delay.
- b. Multiple-break shells, or unusually heavy shells requiring heavy lift charges, shall be fired out of steel mortars unless specifically approved by safety.

1. Ground Salutes

- a. Ground salutes shall be suspended from string or kept above the ground by other

means approved by the safety Officer or his designate and kept far enough away from any wood or steel to prevent flying splinters or shrapnel. It is the policy of the MPAG to not endorse the use of single ground salutes. If the salute is needed for testing or is part of a multiple salute display their use will be at the discretion of the Safety officer and/or Board.

2. Gerbs or Fountains

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

3. Lancework

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

4. Rockets

a. Any rockets used in the display area shall be launched in such a manner as to minimize flight toward spectator area, as determined and approved by the Safety officer.

b. Line rockets shall not travel in the direction of the spectators. The Safety officer may grant exceptions to this requirement where other, equivalent or superior safety measures have been established.

5. Candles

a. Roman candles shall be secured against toppling and displayed in a manner approved by the Safety officer so as to minimize errant projectiles from flying towards the crowd.

6. Wheels

a. Stands or supports for wheels shall be secured against toppling. Wheels shall be displayed in a manner approved by the Safety officer so as to minimize the risks of malfunction.

b. Drivers, gerbs, and other components on wheels shall be securely fastened to minimize the risk of “flying off.”

c. 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.

7. Flame Effects. Gas or Solid Fuel Flame effects shall be treated like Ground Display Pieces and fired according to 1123-2010 5.1.3.5

H. Special Effects

a. All special effect items shall be cleared by the Safety Officer prior to set-up and firing.

b. Flammable liquid ground effects must be specifically approved by the Safety officer.

c. Any devices utilizing Class A/1.1 high explosives must be specifically approved by the Safety Director.

d. 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., must be specifically approved by the Board.

7. Missfire/Dud

a. If the item is a shell, it shall be flagged and left undisturbed for a minimum of 30minutes. Then it shall be disposed of in a manner prescribed by the Safety officer.

b. Roman candles, gerbs, lance work or ground salute misfires with quick match attached should be doused with water and left undisturbed a minimum of 30 minutes or not doused with water and left undisturbed for the following times: 30 minutes (lancework); 45 minutes (candles, gerbs); or 60 minutes (ground salutes): prior to removal for disposal or disposed of as described in I.4.a or I.4.b above.

c. 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.

8. CLASS C/1.4G SHOOTING

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

2. Separate areas for distinct types of Class C/1.4G shooting shall be designated. Each area shall be separated from any adjacent area as determined by the safety team:

Area I - for the discharge of firecrackers, including celebration rolls.

Area II - for the discharge of fountains, gerbs, self-propelled ground devices, ground spinners, wheels and sparklers.

Area III - for the discharge of roman candles and similar devices.

Area IV - for the discharge of rockets and other ascending devices.

Area V - for the discharge of cakes.

Area VI - for the discharge of other items approved by the Safety Team.

3. Within an area, multiple shooting stations shall be provided. Recommended minimum separations are:

Area I - 15 feet

Area II - 15 feet between wheels, 8 feet between other devices (i.e., 2 shooters on one sheet of 4x8 plywood shall be allowed).

Area III - 20 feet

Area IV - 12 feet

Area V - 15 feet

Area VI - Discharge site shall be approved by the Safety officer.

4. All shooting locations shall be a minimum distance of 200 feet from fireworks assembly areas, magazines, Class C/1.4G vending and chemical sales.

5. In a case of significant wind shift, shoot shall be stopped and the site rearranged as necessary.

6. Items shall be displayed only in approved areas.

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

8. 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 16 years and not accompanied by an adult shall not be permitted in any of the shooting locations. Minors under age 16 may be also be accompanied by MPAG officers or staff or, if permission is granted by the MPAG Safety Officer or the Safety Officer member in charge of the consumer fireworks discharge area, may be allowed to discharge consumer fireworks IN THE DESIGNATED AREA without direct adult supervision.

9. Members of the Safety Officer shall be present at all times during Class C/1.4G shooting to ensure enforcement of these safety regulations and practices.

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

11. Safety glasses and other appropriate safety gear, as determined by the MPAG Safety Officer or designee, shall be required for all those participating in Class C/1.4G open shooting.

12. Rockets shall be launched to minimize flight toward spectators and from racks or launch tubes approved by safety.

9. AUCTION

1. SMOKING IS PROHIBITED any time live items are present in the auction area.
2. The Safety Officer shall inspect donations and remove any items which are deemed inappropriate for auction.

10. ASSEMBLY OF PYROTECHNIC DEVICES

1. Assembly of pyrotechnic devices shall be limited to:
 - a. The attachment of lance, drivers, gerbs, match and other components to wheels and set pieces.
 - b. The fusing of Class C/1.4G devices.
 - c. The attachment of sticks, fins and headers to rockets.
2. Manufacturing of individual components, such as drivers, gerbs, lances, rockets, shells, salutes and

stars is specifically permitted as described in the Manufacturing section (13) of these guidelines.

3. 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 during the convention unless approved by Board.

4. Open-air assembly of set pieces and other competition entries shall be permitted in specifically designated areas which shall be ideally located a minimum of 500 feet from any shooting location and a minimum of 300 feet from Class C/1.4G vending or magazines. Lesser distances may be approved by the Safety Officer or Board ONLY.

5. Occupancy of the assembly building shall be limited to MPAG members or other persons with prior approval from the Board.

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

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

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

11. EDUCATIONALWORKSHOPS AND DEMONSTRATIONS

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

2. Smoking shall not be permitted during any workshop or demonstration where hazardous materials are present. NO SMOKING signs and fire extinguishers shall be prominently displayed.

3. Proper safety equipment shall be present and used, where appropriate (as determined by safety) during demonstrations and workshops to emphasize safety technique. This includes, but not limited to: respirators, rawhide mallets, face shields, gloves, anti-static products and devices, etc.
4. Hazardous materials shall be brought to workshops and demonstrations in closed containers.
5. Excess or unused hazardous materials shall be returned to their respective containers and not be allowed to accumulate in work areas.
6. Only enough hazardous materials necessary (as determined by the Safety Chairperson) to conduct the demonstration or workshop shall be permitted at the work area.
7. All work areas shall be thoroughly cleaned as soon as the demonstration or workshop is completed.

12. MINIMUM SEPARATION DISTANCES FROM AUDIENCES

1. All devices (both Class C/1.4G and Class B/1.3G) when ignited, shall be separated from the audience by a safe distance which is determined solely by these Guidelines and which have taken NFPA-1123-2010 distances into consideration. The “audience” is defined as all public, non-MPAG member spectators AND MPAG members in the specifically designated display viewing area(s). It is recognized that MPAG members attending an event, having signed appropriate waivers, have access to almost all convention site areas, including “live-fire” areas. Separation distances apply only to audiences (MPAG members OR public) in designated viewing areas for displays, demos, competition, and other firing of pyrotechnic materials. As MPAG displays experimental, non-commercial, complex, and other unique devices and assemblies of devices, the Safety Officer or his designate may require increased separation distances for any device at any time at his discretion.

Item Minimum Distance

1. All metal mortars300 feet
2. Individually fired shells (vertical mortars 70 feet per inch of mortar diameter
3. Individually fired shells (angled mortars) 70 feet per inch of mortar diameter
4. Chain fused shells from 70 feet per inch of shell diameter
5. Mines (containing stars or non-splitting/non-bursting comets)..... 35 feet per inch of device diameter
6. Mines (containing other effects 70 feet per inch of device diameter
7. Roman candles and cakes (Class C/1.4G150 feet
8. Roman candles and cakes (Class B/1.3G)300 feet
9. Non-bursting/non-splitting comets 35 feet per inch of device diameter
10. All other comets 70 feet per inch of device diameter
11. Wheels150 feet
12. Saxons or Merry Go Rounds.....100 feet
13. Line rockets150 feet
14. Buzz Bombs and Helicopters200 feet
15. Fountains, gerbs & whistles (1" I.D. and smaller)75 feet
16. Fountains, gerbs & whistles (Above 1" and small than 2" I.D.)100 feet
17. Fountains, gerbs & whistles (2" I.D. and larger)150 feet
18. Waterfalls (without reports)75 feet
19. Rockets 300 feet min. Large rockets subject to Safety Officer approval
20. Lance work (No pyrotechnically driven parts)75 feet
21. Lance work (Pyrotechnically driven parts)150 feet
22. Concussion mortars Subject to Safety Officer approval
23. "Creamora" effects..... Subject to Safety Officer approval
24. Bowling balls, pumpkins, and other solid, inert projectiles fired from mortars

..... only upon specific approval by the Safety Director at distances established by him.

25. Special effects and all other items not listed Subject to Safety officer approval

2. The Safety officer may increase these separation distances at any time. The Safety officer will consider wind direction and velocity; shoot site peculiarities, and any other relevant factors. Lesser distances shall be utilized only upon approval of the Safety Director.

3. The discharge areas shall be located so that the trajectory of shells and other aerial effects shall not come within 25 feet of any overhead object.

13. MANUFACTURING:

1. A copy of these guidelines shall be conspicuously posted at each entrance to the Manufacturing Area (the Area).

2. Any of these guidelines may be waived, modified, or enhanced by the Board

3. The Area and/or facilities used must be approved by the Board.

4. Access to the Area shall be restricted to members using the Area and their guests.

Members using the Area are responsible for their guests. Members using the Area shall assist in monitoring each entrance to prevent unauthorized access to the Area.

Manufacturing safety officer shall monitor each entrance to prevent unauthorized access to the Area and control the flow of persons in this Area at all times. All persons who enter the Manufacturing Area, including guests, must have a safety briefing. Those admitted to the Manufacturing Area must obey MPAG safety guidelines for this area at all times.

5. When unattended, the Area must be secured.

6. Finished materials not being worked upon further must be placed in the magazines at the earliest opportunity. Completed items shall not be left open in the work area. A day box shall be used for temporary storage. In no case will completed items be stored in the day box overnight.

7. At the end of each day, all live material must be placed in the magazines.

8. The Safety officer or his/her designate shall approve each individual work area setup. An egress path of at minimum two feet in width must be maintained on all sides of each manufacturing area and must, at all times be free of any objects or impediments to egress.

9. The Safety officer or his/her designate may refuse to approve day boxes and working containers and such unapproved containers and day boxes shall not be used.

10. Each work area shall have a working container(s) for composition(s) being used, a composition day box, and a completed effects day box. These containers shall be closed and sealed after each removal from or addition of any items to the container.

11. Only one working container with less than 500 grams of composition, stars, or components shall be out of the day box in any one working area at any time, except as approved by the Safety officer.

12. When a work area is unattended, all live materials shall be placed into sealed or securely closed day boxes. Whenever the manufacturer leaves the Manufacturing Area, except as specifically permitted by the Safety officer for brief absences, ALL live material must be removed from the Area and placed in the temporary/day magazine outside the area or in the approved storage magazines. If the officer has to clear live material from the building, the member in violation shall be given a warning and, upon further such violations, may be refused further access to and use of the Manufacturing Area.

13. Blast shields for hydraulic presses are recommended for use whenever possible. When groups of people wish to gather to observe the pressing of rockets, the Manufacturing Safety officer shall determine how many may observe and where they may observe from. While unshielded presses may be used to make rockets, depending upon the type and size of rocket being pressed, observers may be kept away from unshielded presses at the discretion of the Safety officer. MPAG recognizes that certain activities are less hazardous and that individual members may not have installed blast shields on their presses. We will not absolutely forbid unshielded presses and cannot guarantee that all presses will be fitted with blast shields, but, activities using unshielded presses may be constrained by the Safety officer to reduce attendant risks.

14. All flash-containing devices and components (e.g., salute or report headings, bottom shots, "bumps," lambetti, shellinserts, etc.) must be pre-made, prior to the event, and brought to the convention and manufacturing area in closed, finished, assembled form.

15. Manufacture of flash composition or components - in any quantity is strictly prohibited.

16. Steel mixing bowls are to be avoided where possible and, if used, must be kept out of and away from direct sunlight.

17. No smoking or open flames are allowed in the Manufacturing Area or within 50 feet of the perimeter of the designated Manufacturing Area(s).

18. Except as approved by the Safety officer or his/her designate, no flash photography is allowed in the manufacturing area(s).

19. Unless unpowered, no electrical devices of any kind (drills, glue guns, etc.) may be on

the same table containing any exposed compositions or open containers of pyrotechnic composition.

20. For specific high hazard manufacturing activities, the Safety officer may approve such activities by a member to be done at a remote site, separate from the main manufacturing area. A clearly demarcated perimeter must be established. Only persons approved by the Safety officer may be at the remote site.

21. Personal protective gear is encouraged. At MINIMUM, eye protection MUST be worn when in the manufacturing area.

22. No motorized vehicles of any type are allowed in the Manufacturing Area. Motorized vehicles must be parked at least fifty feet away from the Manufacturing Area except to pick up or drop off material. Charging of batteries by using jumpers from a vehicle is not allowed within the Manufacturing area. Bicycles must be parked outside the Manufacturing Area.

30. No alcohol, illicit drugs, or intoxicants are allowed in the Manufacturing Area. Any intoxicated persons will be evicted from the Manufacturing Area.