

FOR YOUR INFORMATION

LOS ANGELES UNIFIED SCHOOL DISTRICT  
Office of the Superintendent

DISTRIBUTION: All Schools

ROUTING  
Administrators

SUBJECT: SCIENCE EXPERIMENTS PRESENTING  
FIRE HAZARDS: HOT AIR BALLOONS  
AND MODEL ROCKET LAUNCHINGS  
BULLETIN NO. 11

DATE: April 23, 2001

OFFICE: Environmental Health and Safety

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For further information, please call Chris Holle of Los Angeles – Systemic Initiative at (213) 625-6420 or the Office of Environmental Health and Safety at (213) 743-5086.

This bulletin replaces Bulletin No. 11, dated June 20, 1996, titled “Prohibition and Restrictions on Some Experiments,” from the Office of the Associate Superintendent, Instruction. The information in this bulletin has been updated.

I. INTRODUCTION

Scientific experiments are vital teaching tools in the educational program; however, some experiments, such as those involving hot-air balloons and model rockers, are hazardous and must be prohibited or stringently restricted in schools.

II. EXPERIMENTS WITH HOT-AIR BALLOONS RESTRICTED

A hot-air balloon is made by inflating a plastic bag or other material with heated air. In the past, hot-air balloons heated by open-flame were used by science classes to perform wind drift experiments. However, because of the extreme fire hazard, the District prohibits use of an open flame in hot air balloon experiments. If such experiments are to be performed, a safer alternative heat source, such as a blow dryer, must be used.

III. STRIDENT RESTRICTIONS ON MODEL ROCKET LAUNCHINGS

Model rocket launching experiments are permitted in schools; however, such experiments are strictly regulated by Title 19, California Code of Regulations, Article 17, “Model Rockets or Missiles,” and may only be conducted by permit from the fire department.

A. Permit Request Procedures

At least four weeks prior to the rocket launch date; the school shall submit a written request to the Office of Environmental Health and Safety, Business Services Center Annex, 1449 S. San Pedro Street. The request shall include:

1. Name of the instructor and site administrator.
2. Launch date(s). It is the fire department's policy to issue a permit to cover one week's time.

The Office of Environmental Health and Safety will forward the request to the fire department. The fire department will then issue the permit to the school in the name of the site administrator. Rocket launching shall not proceed until a permit is issued to the school.

B. Model Launch Regulations (19 CCR, Article 17)

1. Supervision and Age Requirements

Model rocket launches must be supervised at all times by the instructor. The instructor shall supervise the arming of the rocket with the rocket engine, the firing of the rocket, and the disposing of all unfired or defective rocket engines. In addition, he or she shall comply with all safety standards and conduct the launching in a manner that is also acceptable to the school administrator. A second adult shall be responsible for the safety of all spectators and other individuals at the firing site.

Students participating in rocket launch activities must be at least 12 years of age. These students may be permitted to fire approved model rocket engines if under the direct supervision and control of an adult.

2. Model Rocket Standards

Model rockets are defined as nonprofessional rockets that are propelled by approved, commercially manufactured solid propellant engines.

Model rocket design and construction standards shall comply with the following:

- The propellant charge shall not exceed 2.2 ounces. If more than one rocket engine is used, the total propelling charge shall not exceed 4 ounces.

- The rocket shall be constructed of paper, plastic, rubber, or wood, except minor components such as screw eyes, motor mounts, etc., which may be made of light gauge metal. The length of the rocket must not measure less than 10 inches (25cm) or more than 15 inches (38cm).
- The rocket shall include in its construction a means for returning the rocket safely to the ground without causing injury to person or property.
- The entire weight of the finished rocket with any payload shall not exceed 500 grams (1.1 pounds).
- The rocket shall not contain any type of explosive or pyrotechnic warhead.

### 3. Launch Facilities

- Rockets shall be launched only from platforms meeting the following conditions:
- A launch guide (tube, wire, etc.) shall be used to restrict the horizontal motion of the rocket until sufficient flight velocity is achieved to maintain stability during flight.
- Engine ignition shall be by remote electrical means only under the control of the person launching the rocket, properly supervised by the instructor in charge.
- The launching angle shall not be less than 70 degrees from the horizontal.
- Surface winds at the launch site shall not exceed 20 miles per hour and visibility vertically from the firing area shall be at least 2,000 feet.
- The recovery device material (parachute or other) shall be made of a flame resistance material.
- All personnel conducting firing shall maintain a clear distance of 25 feet from the boundary of the launch platform during countdown and firing. Spectators and others observing the firing shall maintain a distance of 100 feet from the firing position during firing.
- The model rocket shall be launched only during daylight hours.

#### C. Launch Site Standards

The launch site shall consist of a firing area and recovery area. The firing area shall

be considered that area surrounding the launching devices contained within a radius of 100 feet outward from the location of such launching devices. The recovery area shall include the firing area and shall be determined by the minimum area needed to recover the rocket based on the rocket's performance. In addition:

- The launch site shall not be located in any dry grain field, dry grass, brush or forest covered land.
- The launch site shall not include any buildings or structures unless approved by the fire department.
- The launch site shall not contain nor be close to any high voltage lines, major highways, or any other obstacles deemed hazardous by a fire authority.
- The firing area shall not be located closer than 25 feet to the boundary of the launch site.
- After any misfire, the rocket shall be allowed to sit for two full minutes before the rocket is approached. All disarming shall be performed under the supervision of the instructor in charge. The person checking the misfire must wear a face shield and flame resistant gloves.