

## Injuries Related to "Toy" Firearms

Both projectile and nonprojectile toys, and nonpowder guns such as air guns and air rifles, are categorized as toy firearms. Although the Academy realizes that the welfare of children and adolescents would be best served by banning these instruments, we are unable to prevent their availability and use. We offer this statement in an attempt to safeguard the young user from possible injury.

Between 1980 and 1981, accidents involving projectile toys were responsible for 747 reported injuries to children younger than 15 years of age.<sup>1</sup> Most of these injuries involved the face or eyes, 2.9% of these injuries required hospitalization, more than 400 days were lost from school and/or work, and nearly 3,000 days of activities were restricted. In addition, there have been severe or even fatal consequences following the use of substitute projectiles or live ammunition. Children have also died as a result of aspiration of projectiles.

Accidents involving air guns and air rifles are an even more frequent cause of injury to children. In 1980, approximately 23,000 injuries associated with nonpowder guns were treated in US hospital emergency rooms.<sup>2</sup> In two thirds of the cases the victim was less than 16 years of age.

In a 1973 review of 105 air gun-related injuries to the eye, sequelae included traumatic cataract, retinal detachment, and sympathetic ophthalmitis.<sup>3</sup> Eighteen of the injuries required enucleation of the eye. More than 70% of those injured were children 6 to 15 years of age. The continuing nature of this problem has been demonstrated by Sternberg et al<sup>4</sup> in a 1984 review of 32 children with air gun-related eye injuries. Of the 22 eyes penetrated by BB pellets, 19 required enucleation. In addition, nonpowder guns are known to have been involved in 15 fatalities during a 6-year period.<sup>5</sup> Air rifles are particularly dangerous toys; their use involves a

significant propensity for both serious injury and death.<sup>5-7</sup>

The likelihood of a BB or pellet penetrating the skin is determined by impact velocity; this varies between 36 and 70 m/s (120 and 230 ft/s). Eye penetration requires a velocity of 39 m/s (130 ft/s). For the penetration of skin and primary penetration of bone, a minimum impact velocity of 106 m/s (350 ft/s) is needed. Interposed clothing and distance will diminish the speed of the missile. Air guns are capable of attaining an impact velocity of 83 to 106 m/s (275 to 350 ft/s) and air rifles up to 273 m/s (900 ft/s). Air rifles operated by compression or a carbon monoxide canister may attain bone-penetrating velocities. The multiple-pump air rifles, which can attain the highest velocities, are of particular concern.<sup>5,7</sup>

### PREVENTION

Despite the serious and even fatal consequences of accidents related to toy firearms, little has been done to protect children from these injuries. Voluntary industry product standards for projectile toy guns do not include specifications for projectile tip geometry, maximum velocity, impact force, or protective devices. In addition, there is no protection against the use of improvised ammunition. At present, there are no federal, state, or local regulations for these devices.<sup>8</sup>

The industry's voluntary statement specifies that nonpowder guns be labeled to be used with adult supervision. Age 16 years is the generally acceptable cutoff point for unsupervised use. A US Consumer Product Safety Commission study<sup>2</sup> showed that no adult was present at the time 80% of the children less than 16 years of age were injured. In addition, recent data<sup>5</sup> indicate that 40% of the children using multiple-pump air rifles are less than 16 years of age and 12% are 12 years of age or younger.

There have been calls for government regulation of these weapons. Although some have suggested that legislation mandating protective eye wear might be helpful,<sup>4</sup> this legislation should be coupled

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with regulations that prevent manufacturers from labeling BB guns as suitable for children as young as 8 years of age.<sup>9</sup> However, only 11 states currently have legislation that regulates the sale and use of air guns.<sup>10</sup>

The main hazard presented by nonprojectile toy guns is that children who play with them may inadvertently be drawn to playing with real weapons which they mistake for toys.<sup>11</sup> In addition, some toy guns have been shown to produce sound at a peak level greater than 140 dB, the point at which hearing damage may be incurred.<sup>12</sup>

## RECOMMENDATIONS

In consideration of the scope of this problem, the AAP Committee on Accident and Poison Prevention makes the following recommendations:

1. Pediatricians should support enactment of federal regulations specifying safety standards for projectile toy guns including design to prevent substitute ammunition.
2. Impact velocity of all toy firearms should be regulated to levels below those that can penetrate skin or cause ocular injuries.
3. Multiple-pump air rifles should be regulated with the same strategy used in the sale and distribution of firearms.
4. Pediatricians should counsel parents concerning the hazards of having toy firearms in the house.

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