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THE BB GUN: A HARMLESS TOY OR DEADLY WEAPON? PRACTICAL GUIDANCE FOR OBJECTIVE FACT FINDING IN A CRIMINAL CASE

Steven N. Gosney and John Zak***

BB guns (and the larger set of projective firing non-powder guns (“NPG”)) occupy an interesting niche in the law. They look like firearms and fire a projectile however the power of a BB gun is generally much less than that of a firearm. Most attorneys rarely deal with BB guns in their cases, and when the odd case does arise they are unprepared to tackle the issues involved.¹ This article provides a brief overview for the Florida² criminal law practitioner dealing with a BB gun case. The author further proposes an objective test based on the energy power of the specific NPG involved in any litigation for determining whether that NPG is capable of causing serious bodily harm.

The law in Florida. As outlined below, the law in Florida requires the State to establish the deadly nature of a BB gun, and states that this is a fact question for the fact finder.³ In Florida, BB guns arise in various criminal contexts. Often, the presence of a BB gun is used by the prosecutor as a “deadly weapon” enhancement to an existing crime.⁴ Common examples of these types of crimes with the enhancement attached are robbery with a deadly weapon,⁵ aggravated assault deadly weapon,⁶ aggravated battery (deadly weapon),⁷ and armed burglary with a dangerous weapon.⁸ The most commonly used statutes referencing BB guns are found in Florida Statute § 790.⁹ Section 790.22 prohibits minors under

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¹ See, e.g., *State v. Plummer*, 228 So. 3d 661, 668 (Fla. Dist. Ct. App. 2017) (holding that counsel was ineffective for failing to present evidence of the difference between a BB gun and an air pistol, which cannot be used as deadly weapon).

² This article is limited to the State of Florida, but the analysis described herein should be transferable to other state jurisdictions.

³ See *infra* pp. 4–5.

⁴ See *infra* notes 5–8.

⁵ See, e.g., *McCray v. State*, 358 So. 2d 615, 616–17 (Fla. Dist. Ct. App. 1978).

⁶ See *Duba v. State*, 446 So.2d 1167, 1167–68 (Fla. Dist. Ct. App. 1984) (holding that in cases of aggravated assault it is a question of fact for the jury to determine whether a BB gun is a deadly weapon); *but see Mitchell v. State*, 698 So. 2d 555, 562 (Fla. Dist. Ct. App.), *aff’d*, 703 So. 2d 1062 (Fla. 1997) (issue of whether the gun was deadly based on threat of its use in manner likely to cause great bodily injury was to be viewed from victims’ perspective); *see also c.f. J.W. v. State*, 807 So. 2d 148, 149 (Fla. Dist. Ct. App. 2002) (holding that the evidence did not show that the lighter in its design was likely to cause great bodily harm and the defendant did not use it in a manner likely to cause harm that it was not a deadly weapon).

⁷ *State v. Jeffers*, 490 So. 2d 968 (Fla. Dist. Ct. App. 1986).

⁸ *Santiago v. State*, 900 So.2d 710, 711–12 (Fla. Dist. Ct. App. 2005).

⁹ FLA. STAT. ANN. § 790.22 (West 2019).



the age of 16 from possessing or operating a BB gun or other air-powered weapon without the supervision of an adult or the consent of the minor's parent under the supervision of that adult.¹⁰ A Florida Appellate Court ruled that a BB gun qualifies as an "other deadly weapon."¹¹ Section 790.115 classifies the possession of a weapon on school property as a third-degree felony.¹² This is particularly relevant due to the fact that many BB gun cases involve minors bringing BB guns onto school property. These statutes can result in charges for carrying a concealed weapon,¹³ possession of a deadly weapon on school property,¹⁴ and exhibiting a deadly weapon.¹⁵ Note that this article does not address the issue of a BB gun's use as a bludgeon, only as a projectile firing device.

The leading case dealing with BB guns in Florida is *Dale v. State*.¹⁶ The key holding in *Dale* is that the issue of whether a BB gun is a deadly weapon is a fact question determined by the jury.¹⁷ In *Dale*, a defendant entered a bread store and proceeded to rob the store with an unloaded BB gun tucked into his pants, claiming it to be a real firearm.¹⁸ The defendant was arrested shortly after leaving store where a BB gun resembling a 9-millimeter Beretta pistol was confiscated by law enforcement.¹⁹ Dale was charged with armed robbery with a deadly weapon.²⁰ The Florida Supreme Court held

that the issue of whether or not a BB gun is a deadly weapon is a fact question to be determined by the jury.²¹ Applying this rule, the court opined that the evidence supported the jury's finding that the BB gun in evidence was a deadly weapon.²²

The *Dale* case contains a significant dissent by Justice J. Overton. Justice Overton argues that the characterization of an unloaded BB gun being a deadly weapon is illogical and not based on reasonable interpretation of the law.²³ Justice Overton declared that a BB gun is not a deadly weapon because it is unlikely to produce death or serious bodily harm by itself.²⁴ For example, in 2017, 10,128 persons were killed by firearms²⁵ and 1,591 people were killed as a result of knives or other cutting devices.²⁶ In contrast, between 1990 and 2000, 39 people died from BB guns, an average of only four deaths annually.²⁷ Justice Overton argued that in light of these statistics, BB guns should not be considered a deadly weapon in the same category as firearms.²⁸ Justice Overton's statistics show that it is illogical to equate BB guns with firearms since they vary so widely in capability.²⁹ Unstated in the Overton dissent is that public policy should weigh against classifying a low power NPG as deadly weapons since by blurring the distinction, there would be no rational reason for a bad actor to downgrade his weapon type.³⁰ Do we really want

¹⁰ *Id.* at § 1.

¹¹ *Depasquale v. State*, 438 So. 2d 159, 160 (Fla. Dist. Ct. App. 1983).

¹² FLA. STAT. ANN. § 790.115(1) (West 2019).

¹³ *Id.*; *E.S. v. State*, 886 So. 2d 311, 312 (Fla. Dist. Ct. App. 2004).

¹⁴ *See, e.g., J.T. v. State*, 47 So. 3d 934, 936-37 (Fla. Dist. Ct. App. 2010).

¹⁵ Fla. Stat. Ann. § 790.10 (West 2019); *M.J. v. State*, 100 So. 3d 1286, 1286 (Fla. Dist. Ct. App. 2012).

¹⁶ *Dale v. State*, 703 So. 2d 1045 (Fla. 1997).

¹⁷ *Id.* at 1046.

¹⁸ *Id.*

¹⁹ *Id.*

²⁰ *Id.*

²¹ *Id.* at 1047.

²² *Id.*

²³ *Id.* at 1048 (Overton, J., dissenting).

²⁴ *See id.* at 1049.

²⁵ FBI, *Crime in the United States 2018: Expanded Homicide Data Table 8, 2014-2018*, U.S. DEP'T OF JUSTICE (2018), <https://ucr.fbi.gov/crime-in-the-u.s/2018/crime-in-the-u.s.-2018/tables/expanded-homicide-data-table-8.xls>.

²⁶ *See id.*

²⁷ Danielle Laraque, *Injury Risk of Nonpowder Guns*, 114 J. AM. ACAD. PEDIATRICS 1357, 1359 (2004).

²⁸ *See Dale*, 703 So. 2d at 1048.

²⁹ *See id.*

³⁰ *Cf. id.*



our armed robbers to have real firearms rather than BB guns? Note that the Florida approach seems to be the majority approach among the States, with many States requiring the prosecution prove deadliness on a case by case basis.³¹ Some states take the Justice Overton approach that BB Guns are not deadly as a matter of law, although usually based on that particular State's statutory interpretation.³²

Applying the Law in a Case. As stated at the beginning of the article, the law in Florida requires the State to establish the deadly nature of a BB gun, and that this is a fact question for the fact finder.³³ First, a defense attorney must hold the State to its burden of proof, and demand dismissal when they fail in presenting evidence supporting the deadly nature of a BB gun.³⁴ If the State does put on such evidence, the Florida criminal defense attorney should be prepared to cross examine the State witness. This requires an understanding of the different type of BB Guns and their relative capabilities. Successfully defending against the lethal nature of BB guns often hinges on whether the prosecution proved beyond a reasonable doubt that the actual BB gun used in a case was a deadly weapon.³⁵ It is not enough for the State to prove that BB guns generally are merely "capable" of inflicting serious bodily harm—the specifics of the weapon used may allow a practitioner to downgrade charges to a lesser

category.³⁶ A defense attorney must be dogged in holding the State to their burden. Thus, it is important to understand the different aspects of "deadliness" in a BB gun context.

If at all possible, the actual BB gun used in a situation should be examined and identified before trial so that its actual power capability can be determined. Because BB guns can differ so greatly in power based on the actual model used, it is critical to identify the actual model of BB gun used if at all possible. As discussed below, BB guns can vary in terms of their muzzle velocities, operations, ammunition used, and effectiveness in relation to environmental factors that impact the potential lethality of the weapon. Utilizing this information, a BB gun's energy projection ability can be directly related to its potential to inflict injury.

The attempt to create a model equating potential energy with injury severity seems to be very problematic since injuries seem to be caused by the seemingly infinite and random collaboration of causal factors that describe the specific circumstances of the incident. However, one researcher has developed a useful theoretical basis for predicting injury severity in relation to car accidents.³⁷ A physician and leader in highway accident research, William Haddon, Jr., asserted that injuries should be defined by their fundamental cause, hazard energy, or more specifically, the release of hazard energy and contact by an individual.³⁸ Under this explanation, there must be a form of energy exchange in excess of the body's vulnerability in order for an injury to be sustained.³⁹ Haddon's

³¹ See *People v. Ackah-Essien*, 874 N.W.2d 172, 182 83 (Mich. Ct. App. 2015); *Richardson v. State*, No. 0550, 2016 WL 3127656 at *3 (Md. Ct. Spec. App. June 3, 2016); see e.g., *Adame v. State*, 69 S.W.3d 581, 582 (Tex. Crim. App. 2002).

³² See *People v. Davis*, 766 N.E.2d 641, 647 (2002); *People v. Thorne*, 817 N.E.2d 1163, 1170 72 (2004).

³³ See *Dale*, 703 So. 2d at 1047.

³⁴ *E.S. v. State*, 886 So. 2d 311, 312 (Fla. Dist. Ct. App. 2004); *J.M.P. v. State*, 43 So. 3d 189, 191 (Fla. Dist. Ct. App. 2010); cf. *K.C. v. State*, 49 So. 3d 841, 842 (Fla. Dist. Ct. App. 2010).

³⁵ Cf. *Dale*, 703 So. 2d at 1046.

³⁶ Cf. Florida Standard Jury Instructions 790.001(3)(a) and (13).

³⁷ William Haddon, *Advances in the Epidemiology of Injuries as a Basis for Public Policy*, 95 PUB. HEALTH REP. 411, 418 (1980).

³⁸ *Id.* at 411.

³⁹ *Id.* at 414.



work resulted in a decrease in highway related deaths and injuries, primarily due to the adoption of additional restraint systems such as automobile air bags.⁴⁰ Note that Haddon's energy transfer theory has been confirmed and extended to workplace accidents.⁴¹ Applying the Haddon energy transfer theory to the BB gun situation, (i.e. in order to determine its "deadliness" of a BB Gun or NPG), the muzzle velocity of a BB gun must be combined with the projectile it fires to determine the potential energy projection of a given NPG.

If you recall from your high school physics class, the joule is the unit that measures energy.⁴² A joule is equal to kilograms times meters squared divided by seconds squared or $J = \text{kg} * [\text{m}(\text{m})] * [\text{s}(\text{s})]$.⁴³ This calculation of energy determines how much energy a given BB Gun can potentially transmit to a human body by its projectile. To see the importance of considering both the projectile being fired as well as the muzzle velocity, imagine a peppercorn striking the skin at 100 miles an hour. Now imagine a beer bottle striking the skin at that same velocity. One situation clearly is more deadly than the other. For energy comparison purposes, a .22 short, usually considered the weakest commonly used firearm round, regularly generates energy of 100 joules.

Analogously, a BB gun or NPG firing a projectile generating 100 joules of energy would be considered capable of inflicting serious bodily harm in most situations. The question then becomes at what energy level a projectile needs to meet to become capable of inflicting serious bodily harm. There is no magic threshold number of joules energy that becomes deadly, as shot placement and complex projectile physics affects the equation. According to one expert, the critical velocity for penetration of human skin by an air gun pellet is between 38 and 70 m/sec (125–230 ft/sec).⁴⁴ Using the heaviest BB weight of 7.7 grains, this translates into a relatively low energy number of 1.22 joules.

However, penetration of human skin does not necessarily equate to serious bodily harm, so this study is less useful in a legal context. Some researchers have equated a high energy threshold of 590 joules as sufficient to cause death in certain accidental injury situations, but this was in a workplace context and this high energy number does not account for the focused energy a projectile produces.⁴⁵

Most commonly, NPGs fire .177 caliber BBs or pellets weighing between 5.1 and 7.7 grains (.33 and .5 grams).⁴⁶ It is important to note that despite the considerably higher velocities at which these projectiles can be fired, the geometry of a BB or pellet, the lower range, and

⁴⁰ See Leon S. Robertson, *Behavioral and Environmental Interventions for Reducing Motor Vehicle Trauma*, 7 Ann. Rev. Public Health 13, 15 (1986), <https://www.annualreviews.org/doi/pdf/10.1146/annurev.pu.07.050186.000305>.

⁴¹ Matthew R. Hallowell, Dillon Alexander & John A. Gambatese, *Energy-Based Safety Risk Assessment: Does Magnitude And Intensity Of Energy Predict Injury Severity?*, 35 CONSTR. MGMT. & ECON. 1, 64-77 (2017), <https://www.tandfonline.com/doi/pdf/10.1080/01446193.2016.1274418?needAccess=true>.

⁴² *Joule*, Encyclopedia Britannica (2019).

⁴³ Ambler Thompson & Barry N. Taylor, *Guide for the Use of the International System of Units (SI)*, NAT'L INST. OF STANDARDS & TECH. 5 (2008), <https://physics.nist.gov/cuu/pdf/sp811.pdf>.

⁴⁴ H. Ceylan et al., *Air weapon injuries: a serious and persistent problem*, ARCHIVES OF DISEASE IN CHILDHOOD 234, 234 (2002), <https://adc.bmj.com/content/archdischild/86/4/234.full>.

⁴⁵ Hallowell et al., *supra* note 41, at 74.

⁴⁶ *A Comprehensive Guide to the Pellet Gun*, YOUR PELLET GUNS, <https://yourpelletguns.com/pellet-gun-guide/> (last visited Dec. 20, 2019) (utilizing the highest BB or pellet weight of 7.7 grains for all joules calculations as this is the highest weight combined with the highest reported velocity. The joules energy in the examples herein are probably calculated high.).



decreased accuracy makes them less dangerous compared to projectiles fired from a firearm.⁴⁷ Distance may or may not be relevant depending on the particular factual circumstance of a case. However, some specialized NPGs can fire heavier ammunition such as .20, .22, .35, and .45 caliber projectiles, and this should be taken into account when calculating the possible energy projection of a particular weapon.

A threshold question is whether a particular type BB-gun is a deadly weapon by itself. NPGs fire a variety of projectiles including steel pellets, BBs, paint balls and air soft pellets.⁴⁸ Because of the design and physics, a paint-ball or an air soft NPG should rarely if ever be considered a deadly weapon as a matter of law, since these projectiles are designed not to inflict injury, the energy transmitted by these guns is low, and are generally incapable of serious injury or great bodily harm.⁴⁹ The manner in which BB guns are used may also be relevant when considering how it impacts its effectiveness. For example, distance to target can greatly impact the energy of the projectile. Therefore, distance from target may need to be factored in when considering deadliness in a particular case.

BB guns are extremely diverse and thus the model used matters. There are many different types of NPGs. Covered below are 1) spring loaded, 2) Carbon Dioxide (“CO2”) cartridge–air propelled, 3) pneumatic pump–air propelled, and the special categories of 4) air-soft and 5) paint-ball.⁵⁰ Within each category,

there is tremendous variation in power, with BB gun rifles generally having a much higher power than BB gun handguns. Be aware that it is a particularly deceptive tactic to mix the two types by arguing that “BB guns” can achieve very high powers when the actual gun used was a low power handgun style BB gun.

1) **Spring-loaded.** Spring-loaded BB guns generally feature a compression chamber separate from the barrel of the BB gun.⁵¹ A lever connects to a steel spring coil in the chamber and must be manually cocked by the user.⁵² Once the trigger is pulled, the lever pushes forward releasing the pressure in the chamber forcing the projectile out of the barrel.⁵³ Spring loaded air guns, the most commonly purchased, will typically have velocities of about 250 to 350 feet per second (“FPS”). Using common .177 caliber BBs, this translates to a potential muzzle energy of 2.83 joules. Examples of spring-loaded BB guns:

- A. Crosman PSM45 Spring Powered Air Pistol:⁵⁴ Resembling a real firearm and costing twenty-five dollars, the PSM45 is a typical handgun type used in criminal acts.⁵⁵ The PSM45 fires .177 caliber BBs at a maximum of 190 FPS.⁵⁶ This results in a projection capability of .84 joules.
- B. Umarex DX17 BB Pistol: Also resembling a real firearm and even less

⁴⁷ Max Vanzi, *Pellet Guns and BB Guns: Dangerous Playthings on the Open Market*, CAL. SENATE 5 9 (2005), <https://sor.senate.ca.gov/sites/sor.senate.ca.gov/files/%7BBB066D5C-2823-47A2-A0FC-5775B8B96C-D5%7D.PDF>.

⁴⁸ *Id.* at 2 3.

⁴⁹ *Cf.* State v. Coauette, 601 N.W.2d 443, 447 (Minn. Ct. App. 1999).

⁵⁰ *Types of Airguns*, CROSMAN, www.crosman.com/discover/airguns/types-of-airguns (last visited Dec. 20, 2019).

⁵¹ Jim Carmichel, *The Often Underrated Compressed Air Gun*, MOTHER EARTH NEWS (1981), <https://www.motherearthnews.com/homesteading-and-livestock/compressed-air-gun-zmaz81mjzraw>.

⁵² *Id.*

⁵³ *Id.*

⁵⁴ *Crosman PSM45 Spring Powered Air Pistol*, PYRAMYDAIR, https://www.pyramydair.com/s/m/Crosman_PSM45_Spring_Powered_Air_Pistol/3975 (last visited Dec. 20, 2019).

⁵⁵ *Id.*

⁵⁶ *Id.*



expensive than the PSM45 costing about eighteen dollars, the DX17 can fire a .177 caliber BB at a maximum of 200 FPS.⁵⁷ This results in a potential energy projection of .92 joules.

2) CO2 cartridge–Air Propelled. Another common type of BB gun are those utilizing the CO2 cartridge. These air propelled carbon dioxide cartridges provide pressure within chamber of the BB gun that results in the release of the BB or pellet.⁵⁸ Note that CO2 pressure can fluctuate depending on atmospheric temperature.⁵⁹ Generally, CO2 guns can generate muzzle velocities of 350-450 FPS.⁶⁰ Using common .177 caliber BBs, this translates to a potential muzzle energy of 5 joules. Examples of powerful Non-powder CO2 handguns:

A. H&K MP5 K-PDW CO2 BB Gun: This BB gun is made to physically resemble an actual firearm—the H&K MP5. The actual muzzle velocity of the BB gun is much less than the firearm, as can be expected, with the BB gun having a projectile velocity of 400 FPS compared to the firearm having a projectile FPS of 1,335 per second.⁶¹ Further, the BB gun fires .177 caliber BBs while the firearm fires 9 mm Luger.⁶² The firearm can project 617 joules of energy, compared with 3.71 joules for the BB gun.

The actual muzzle velocity of the BB replica coupled with the significantly lighter weight and kinetic energy involved in the discharge of BB pellets demonstrate that the two weapons are not comparable in deadliness.

B. Glock CO2 Air Pistol: This air pistol can fire a steel BB at a rate of 410 FPS, using a 12 gram CO2 cylinder with .177 caliber BBs.⁶³ This air pistol can project a total kinetic energy of 4.1 joules.

C. SIG Sauer P226. 177-Cal. Air Pistol: This CO2 powered air pistol fires .177 caliber pellets at an exit velocity of 450 FPS.⁶⁴ This weapon can project a combined kinetic energy of roughly 5 joules.

D. Smith and Wesson BB Repeater Air Pistol: Using .177 caliber rounds, this CO2 powered air handgun can shoot at a maximum velocity of 480 FPS.⁶⁵ This weapon can project a potential kinetic energy of 5.7 joules.

3) Pneumatic pump – Air Propelled. Another type of air propelled BB gun is the pneumatic pump. There are different types of pneumatic pump BB guns, and most guns using this design are rifles rather than handguns. There are pre-charged pneumatics that come with air reservoirs and tanks that can be filled with

⁵⁷ *Umarex DX17 BB Pistol*, PYRAMYDAIR, https://www.pyramydair.com/s/m/Umarex_DX17_BB_Pistol/4289 (last visited Dec. 20, 2019).

⁵⁸ TOM WARLOW, FIREARMS, THE LAW, AND FORENSIC BALLISTICS 107 (3d ed. 2011).

⁵⁹ *Id.*

⁶⁰ *Id.*

⁶¹ *H&K MP5 K-PDW BB Submachine Gun*, AIR GUN DEPOT, <https://www.airgundepot.com/hk-mp5-k-pdw.html> (last visited Dec. 20, 2019).

⁶² *Id.*; *MP5 Technical Data*, HECKLER-KOCH, <https://www.heckler-koch.com/en/products/military/submachine-guns/mp5/mp5/technical-data.html> (last visited Dec. 20, 2019).

⁶³ *Glock 19 Gen. 3 BB Pistol*, AIR GUN DEPOT, <https://www.airgundepot.com/glock-19-gen-3-bb-pistol.html> (last visited Dec. 20, 2019).

⁶⁴ *SIG Sauer P226 CO2 Pellet Pistol*, PYRAMYDAIR, https://www.pyramydair.com/s/m/SIG_Sauer_P226_CO2_Pellet_Pistol_Black/3691 (last visited Dec. 20, 2019).

⁶⁵ *Smith & Wesson M&P .177-Cal BB Repeater Air Pistol*, CABELA'S, <https://www.cabelas.com/product/S-W-M-P-PELLET-PISTOL/2225547.uts> (last visited Dec. 20, 2019).



pellets.⁶⁶ An air tank pressurizes the weapon which releases the pellet.⁶⁷ While tank capacity can vary, a tank based BB gun can generally take between 20-80 shots before needing to be refilled.⁶⁸ In contrast, single stroke pneumatics require one pump before each shot, are considered extremely accurate, and are often used in Olympic air shooting.⁶⁹ With multi-pump pneumatics, air must be pumped into the weapon to generate energy to release pellets.⁷⁰ Pneumatic air guns, generally the most powerful NPG category, can fire projectiles with velocities of up to 350 to as high as 950 FPS, depending on model and sometimes the number of times the gun is pumped.⁷¹ Examples of Air Propelled by Pneumatic Pump BB guns:

A. **Crosman M4-177 Multi-Pump Air Rifle:** The M4-177 is a commonly seen pneumatic pump rifle that resembles an AR-15, and is capable of firing typical .177 caliber BBs at 660 FPS.⁷² The sixty-dollar gun must be pumped three to ten times between each discharge, with additional pumps resulting in higher energy at discharge.⁷³ Maximum pumps can result in a relatively high energy projection of 10.7 joules. A typical AR-15 can project 1800 joules.⁷⁴ Thus, when compared

to an AR-15, the difference in deadliness is vast.

B. **Air Arms S510 Xtra FAC Sidelever Air Rifle:** This pneumatic air gun can fire BBs at 1,050 FPS, rivaling the threshold of firearms at 1,200 FPS.⁷⁵ Ammunition for the S510 used includes metal pellets of .177 caliber.⁷⁶ This air rifle can project energy of 27.7 joules.⁷⁷ Again, with the price tag of \$1,200 and 43.5" long, the S510 is not the go to weapon for your average criminal.

C. **Benjamin Bulldog .357 Bullpup Air Rifle:** Moving up to the most powerful of all NPGs, the Benjamin Bulldog represents a relatively new class of extremely powerful air rifles. This air gun typically uses pellets for its ammunition.⁷⁸ This pneumatic pump air rifle is capable of firing between 900 and 670 FPS depending on ammunition used.⁷⁹ The weapon uses 95 grain projectiles that can travel at 900 FPS while 145 grain travels at 800 FPS.⁸⁰ The rifle style air gun is designed to be lightweight, at 7.7 pounds, and must be refilled with air after 10 shots.⁸¹ This air rifle also has a kinetic energy using the 95 grain pellets equal to 176 joules while 145 grain pellets equals 241 joules of en-

⁶⁶ Warlow, *supra* note 58, at 107.

⁶⁷ *Id.*

⁶⁸ *Id.*

⁶⁹ *Which Airgun Poweplant is Right for You?*, CROSMAN, <https://www.crosman.com/connect/which-airgun-poweplant-is-right-for-you/> (last visited Dec. 20, 2019).

⁷⁰ *Id.*

⁷¹ *Id.*

⁷² *Crosman M4-177 Multi-Pump Air Rifle*, PYRAMYDAIR, https://www.pyramydair.com/s/m/Crosman_M4_177_Multi_Pump_Air_Rifle_Adj_Stock/2631 (last visited Dec. 20, 2019).

⁷³ *Id.*

⁷⁴ Warren Redlich, *Projectiles, Kinetic/Muzzle Energy and Stopping Power*, WARREN REDLICH (Jan. 23, 2013, 6:13

PM), <http://wredlich.com/ny/2013/01/projectiles-muzzle-energy-stopping-power/>.

⁷⁵ *Air Arms S510 Xtra FAC Sidelever*, AIR GUN DEPOT, www.airgundepot.com/air-arms-s510-xtra-fac-sidelever-air-rifle.html (last visited Dec. 20, 2019).

⁷⁶ *Id.*

⁷⁷ *Id.*

⁷⁸ *Benjamin Bulldog Bullpup*, AIR GUN DEPOT, www.airgundepot.com/benjamin-bulldog-357.html (last visited Dec. 20, 2019).

⁷⁹ *Id.*

⁸⁰ *Id.*

⁸¹ *Id.*



ergy.⁸² Priced at \$760 and 36" long, the Benjamin Bulldog is probably not the criminal's first choice.⁸³

D. The most powerful air gun of any type is the AirForce Texan SS 457 Air Rifle.⁸⁴ This air rifle is capable of producing a max exit velocity of 960 FPS and comes with a variety of calibers such as .308, .357, and .457.⁸⁵ The exit velocity of this air gun varies by weight of ammo used, as the heaviest ammo weighing 147 grain peaks at 960 FPS while 405 grain ammo has 785 FPS (grain=0.6 grams roughly). Common projectiles fired by this air gun are the Air Venturi 405 grain flat-nose bullets and the AeroMagnum 259 grain Lone Star Hollow Points.⁸⁶ This air rifle, using its 405 grain ammo, has a kinetic energy of 750 joules while its 147 grain ammo has 406.7 joules of energy. While cleverly designed and very powerful, the AirForce Texan price exceeds \$1000.⁸⁷ The price combined with the rifle style and relative rarity makes this weapon's appearance in a criminal episode highly unlikely.

4) **Airsoft guns.** Airsoft guns, along with spring loaded BB handguns, may be the most commonly used weapons in criminal activities because of their extremely low price and resemblance to actual firearms. Along with paintball guns, airsoft guns are intended to be used in recreational activities and are commonly used to shoot other people in target games. While capable of causing welts and burns without protective clothing, these guns are designed not to cause serious bodily injury. Further, airsoft guns are often used by criminals since they are also designed to mimic common firearms but are distinguished often with orange markings most commonly on the muzzle of the weapon. When this orange is removed, airsoft guns can be indistinguishable from a real firearm without close inspection. Criminals often use these items because they are very inexpensive and easy to purchase compared to real firearms. Airsoft guns do not fire steel BBs but instead shoot 6-millimeter plastic pellets weighing 3.09 grains.⁸⁸ Airsoft guns typically have muzzle velocities between 200 and 410 FPS.⁸⁹

Comparing the kinetic energy of generic airsoft handguns, they cannot realistically be considered a deadly weapon as the three examples listed below have kinetic energies that could not by themselves cause death. Comparing the kinetic energy of the real firearms with their analogous airsoft handgun yields starkly different energy capability. While the Beretta airsoft handgun has a kinetic energy of .13 joules, the actual Beretta firearm has a kinetic energy of 540.7 joules. This underscores how although these NPGs are similar to firearms in

⁸² *Id.*

⁸³ *Id.*

⁸⁴ *Texan SS*, AIRFORCE AIRGUNS, <https://www.airforceairguns.com/The-TexanSS-by-AirForce-Airguns-s/136.htm> (last visited Dec. 20, 2019).

⁸⁵ *Id.*

⁸⁶ *Air Venturi Flat Point .45 Cal, 405 gr.*, AIR GUN DEPOT, <https://www.airgundepot.com/air-venturi-457-caliber-405-grain-flat-point-50-count-pellet.html> (last visited Dec. 20, 2019); *Aeromagnum Lone-Star HP .457 Cal, 259 gr.*, AIR GUN DEPOT, <https://www.airgundepot.com/am-lone-star-hp-light-457-cal-245-gr-50-ct.html> (last visited Dec. 20, 2019).

⁸⁷ *Texan SS*, AIRFORCE AIRGUNS, <https://www.airforceairguns.com/The-TexanSS-by-AirForce-Airguns-s/136.htm> (last visited Dec. 20, 2019).

⁸⁸ B.B. Pelletier, *Everything You Need to Know about Airsoft BBs*, PYRAMDAIR (Mar. 25, 2005), <https://www.pyramyda.com/blog/2005/03/everything-you-need-to-know-about-airsoft-bbs/>

⁸⁹ *FPS Chart for Airsoft Guns*, AIRSOFT MASTER, <https://www.airsoftmaster.com/fps-chart-for-airsoft-guns/> (last visited Dec. 20, 2019).



physical appearance, they cannot be more different in terms of lethality and ability to inflict deadly harm. Those specific types of guns are relevant because they replicate common handguns that would most likely be used by a perpetrator in the committing of a crime. This results from a matter of practicality, as most crimes involving weapons would not involve assault rifles as they are difficult to conceal, and often more expensive. Due to the power of NPG handguns, power should carry the most weight in determining statutory law regarding NPGs.

The following NPGs listed are handguns that are modeled off of generic handgun firearms. These types of NPGs would likely be involved if someone were to commit a crime using these NPGs to give the impression they were an actual firearm, as their physical appearance is based off the real fire arm models.

A. Beretta 92 FS Electric Air soft pistol: This NPG is a handgun that fires 3.09 grain pellets capable of traveling at 150 FPS from a sixteen-round magazine.⁹⁰ Its force of kinetic energy equals a total of 0.2 joules. This compares with the actual Beretta 9 mm firearm that can project 540 joules of energy.

B. Lancer Tactical MK25 Electric Air soft AEP pistol: This electric powered air soft gun is capable of firing 3.09 grain airsoft pellets at a rate of 220 FPS.⁹¹ This equals a kinetic energy of 0.45 joules.

C. WG M9 CO2 Metal Blowback Air soft pistol: This NPG handgun is CO2 powered and is capable of firing 3.09 grain airsoft pellets from a 15 round magazine at a rate of 500 FPS equaling a total of 2.33 joules of kinetic energy.⁹²

5) **Paintball guns.** Like airsoft guns, paint-ball guns typically used for recreation. A paint-ball gun fires balloon type balls filled with paint and can cause bruising or welts in absence of protective gear.⁹³ Fired using CO2 tanks or compressed air, a large CO2 tank atop the gun contains small paint filled balls.⁹⁴ Depending on the size of the tank, different guns can store different quantities of paint-balls. Paint-ball guns typically feature a muzzle velocity of 280 FPS.⁹⁵ For example, a 9 oz. bottle can shoot 350 paint-balls, while a 12 oz. can shoot 500 and 20 oz. 900 paint-balls at a rate of up to 350 FPS.⁹⁶

The first paintball guns bore little resemblance to actual firearms and would not be mistaken for a real gun by anyone but the most novice spectator. However, these NPGs have evolved, with some models more closely resembling actual firearms. Regardless, paintball guns are often clustered together with BB guns.⁹⁷ Because of their obvious outward ap-

⁹⁰ *Beretta 92FS Electric Airsoft Pistol, Black AEP*, AIRSOFT STATION, www.airsoftstation.com/beretta-92fs-electric-airsoft-pistol-black-aep/ (last visited Dec. 20, 2019).

⁹¹ *Lancer Tactical MK25 Electric Airsoft AEP Pistol*, AIRSOFT STATION, <https://www.airsoftstation.com/lancer-tactical-mk25-electric-airsoft-aep-pistol/> (last visited Dec. 20, 2019).

⁹² *WG M9 CO2 Metal Blowback Airsoft Pistol*, AIRSOFT STATION, <https://www.airsoftstation.com/wg-m9-co2-metal-blowback-airsoft-pistol/> (last visited Dec. 20, 2019).

⁹³ *How Does a Paintball Gun Work?*, THE ELITE DRONE, <https://www.theelitedrone.com/how-does-a-paintball-gun-work/> (last visited Dec. 20, 2019).

⁹⁴ *Id.*

⁹⁵ Gary Dyrkacz, *A Theoretical Treatment of Paintball Dynamics*, Results Section, <http://lennon.csufresno.edu/~nas31/nsa/pballResults.html> (last visited Dec. 20, 2019).

⁹⁶ *Paintball CO2 Tanks*, TIPPMAN PARTS, <https://www.tippmannparts.com/Paintball-CO2-Tanks-Bottles-s/66.htm> (last visited Dec. 20, 2019).

⁹⁷ ROBERT E. WALKER, *CARTRIDGES AND FIREARM IDENTIFICATION* 226 (1st ed. 2012).



pearance, paint-guns are rarely used in criminal episodes to emulate firearms. Regardless, the paint-ball gun is often clustered together with BB guns.

Injuries from BB guns. Injury rates for BB guns have been steadily declining since the 1990's.⁹⁸ For those aged 19 or younger, the 1980's and early 1990's saw an increase in non-fatal injuries.⁹⁹ Peaking at 32.8 per 100,000 people in 1992 but steadily declining throughout the 1990's to 18.3 injuries per 100,000 in 1999.¹⁰⁰ From 1993-1999, an estimated 122,068 people 19 or younger were treated for non-fatal BB gun injuries in U.S. emergency rooms.¹⁰¹ This calculates to an annual average of 20,345 cases of non-fatal injuries from BB guns. Also, between 1993 and 1999, 65.8% of BB gun injuries were unintentional for those between 15 and 19, only 13% were those used in an assault.¹⁰² BB gun injuries among youth continued to decline throughout the 2000's.¹⁰³ By 2005, injuries were occurring at a rate of 17.5 injuries per 100,000 people.¹⁰⁴ By 2015, 11 per 100,000 people 18 or younger suffered non-fatal injuries as a result of BB guns.¹⁰⁵ Ninety percent of those 18 or younger afflicted with BB gun injuries did not require major treatment when taken to the emergency room.¹⁰⁶ Further, the majority of children are evaluated and discharged from

the emergency department without treatment (90%), while children with more significant injuries are either admitted directly (5%) or transferred to a higher level of care (2%).¹⁰⁷

Of course, the most common example of persons advocating for serious bodily injury capability is that a BB gun could “put an eye out” which would generally be considered serious bodily harm. While basketball, baseball, and softball injuries were more common, NPGs accounted for the more serious eye injuries and have been greatly increasing, probably due to the proliferation of NPGs in the marketplace as well as increasing power in newer models.¹⁰⁸ The most common sports and recreation activities and equipment associated with eye injuries were basketball (15.9%), baseball and softball (15.2%), and NPGs (10.6%).¹⁰⁹ According to one study, in 2012 roughly 3,161 children were treated in US emergency departments for NPG related eye injuries.¹¹⁰ That study only looked at children “treated.” Therefore, not all of these injuries can be said to have resulted in impairment or considered serious bodily harm.¹¹¹ Ultimately, the “put an eye out” possibility is very subjective and subject to confirmation bias of the listener, and therefore not useful to the practitioner.

⁹⁸ M H Nguyen et al., *Trends in BB/Pellet Gun Injuries in children and Teenagers in the United States, 1985-99*, INJURY PREVENTION 185, 185-91 (2002), <https://injuryprevention.bmj.com/content/injuryprev/8/3/185.full.pdf>.

⁹⁹ *Id.* at 185.

¹⁰⁰ *Id.*

¹⁰¹ *Id.* at 186.

¹⁰² *Id.* at 187, 190.

¹⁰³ Erik G. Pearson et al., *Keeping an eye on Bb/pellet Guns and Children - United States Injury Patterns and Trends Between 2005-2015*, PEDIATRICS, Jan. 2018, at 1, <https://pediatrics.aappublications.org/content/141/1/Meeting-Abstract/71>.

¹⁰⁴ *Id.*

¹⁰⁵ *Id.*

¹⁰⁶ *See id.*

¹⁰⁷ *Id.*

¹⁰⁸ Krystin N. Miller et al., *Pediatric Sports and Recreation Related Eye Injuries Treated in US Emergency Departments*, 141 PEDIATRICS 1, 1 (Feb. 2018), <https://pediatrics.aappublications.org/content/pediatrics/141/2/e20173083.full.pdf>.

¹⁰⁹ *Id.* at 4.

¹¹⁰ Rachel Lee & Douglas Frederick, *Pediatric eye injuries due to nonpowder guns in the United States*, 19 J. AM. ASS'N FOR PEDIATRIC OPHTHALMOLOGY AND STRABISMUS 163, 163-64 (2015), [https://www.jaapos.org/article/S1091-8531\(15\)00070-1/pdf](https://www.jaapos.org/article/S1091-8531(15)00070-1/pdf) (The treatment of roughly 3,161 children in 2012 could be characterized as a “crisis” or as “de minimis” depending on the bias of the speaker, and neither characterization could be falsified).

¹¹¹ *Id.* at 167.



Crime statistics. As discussed earlier, many NPGs produced by manufacturers are designed to resemble real firearms. Law enforcement can often confuse these for real firearms and criminals can exploit the similar appearance of these BB guns to commit crimes. Unfortunately, the FBI does not track the use of NPGs in its uniform crime report. However, while an older study, the Bureau of Justice Statistics attempted to quantify the uses of NPGs in crime.¹¹² They found that between 1985 and 1989, 471 incidents have occurred where a police officer had warned or threatened the use of force because they believed a NPG possessed by a suspect to be a real firearm.¹¹³ Crimes committed using NPGs most often involve handguns replicating the appearance of real firearms while rifles are more rare.¹¹⁴

Between 1985 and 1989, 5,654 robberies were reported involving imitation guns, for a total of 15 percent of all robberies in this time period.¹¹⁵ Between 1985 and 1989, 4,329 assaults were committed involving NPGs.¹¹⁶ During this same period, 19,107 NPGs were seized by law enforcement because they were involved in committing criminal activities or illegally owned.¹¹⁷

Potential Objective Test. The findings herein support an objective approach to determining if an NPG is a deadly weapon. A potential energy cutoff could distinguish between different types of BB guns. Any NPG with a

muzzle energy of under 4 joules could be objectively considered incapable of serious bodily harm as a projectile firing device. For example, the Daisy Manufacturing Company has divided its NPGs into different categories of power based on muzzle velocities.¹¹⁸ Daisy BB guns intended for “young shooters” have a muzzle velocity of 275 to 350 FPS, equating to approximately 2 joules of projected energy.¹¹⁹ Daisy Powerline Models “not intended for children under 16,” according to the company’s website, have a muzzle velocity of 550 to 800 FPS” equating to a minimum of 7 joules of energy projection.¹²⁰ Hong Kong regulates NPGs using a very strict threshold of 2 joules, classifying any air gun discharging muzzle velocity greater than 2 joules as a firearm.¹²¹ While the precise joules amount might be the subject of further refinement and study, the authors would suggest, that a number between 2 and 6 joules is appropriate given the distinctions between the different types of NPGs described herein. Using joules as a measure of capability provides an objective way to distinguish between high power and low power models. Of course, actual use as a bludgeon would place it in a different category, just as the use of any object as a bludgeon would place it in that category. This type of simple distinction would have the added benefit of being objectively determined – always an asset in the law that struggles with locating objective tests.

Conclusion. Unlike other deadly weapons (such as firearms), most BB guns are not designed to kill or inflict serious bodily harm. The law should recognize this distinction as

¹¹² Craig Perkins, *National Crime Victimization Survey, 1993-2001: Weapon Use and Violent Crime*, U.S. DEP’T OF JUST. 3 (Sept. 2003), <https://www.bjs.gov/content/pub/pdf/wuvvc01.pdf>.

¹¹³ David L. Carter et al., *Toy Guns: Involvement in Crime and Encounters with Police*, U.S. DEP’T OF JUST. 34 (June 1990), <https://www.bjs.gov/content/pub/pdf/tg-icep.pdf>.

¹¹⁴ *See id.* at 31–32.

¹¹⁵ *Id.* at 28–29.

¹¹⁶ *Id.* at 32.

¹¹⁷ *Id.* at 33.

¹¹⁸ Sabrina K. Presnell, *Federal Regulation of BB Guns: Aiming to Protect Our Children*, 80 N.C. L. REV. 975, 982–83 (2002).

¹¹⁹ *Id.*

¹²⁰ *Id.* at 983.

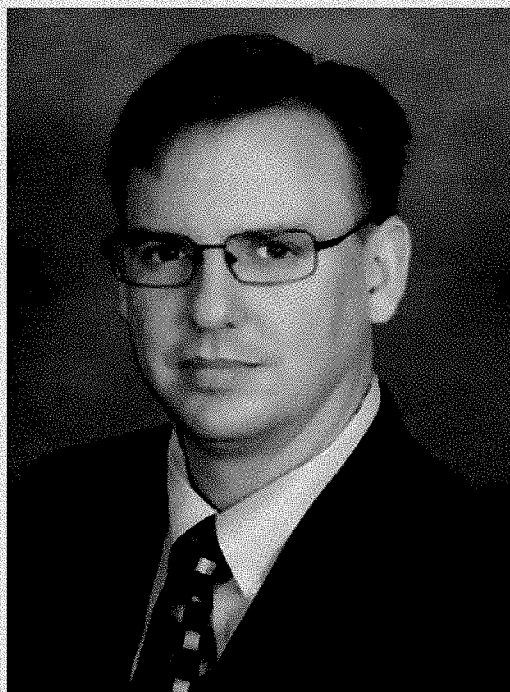
¹²¹ CL Tsui et al., *Ball Bearing (BB) Gun Injuries*, 17 H.K. J. OF EMERGENCY MED. 488, 491, (Nov. 2010), <https://journals.sagepub.com/doi/pdf/10.1177/102490791001700510>.



well as the significant differences between BB guns and firearms in terms of their power and damage capabilities. Most crimes committed with NPGs are handguns as a matter of practicality for the perpetrator. Since the energy projection capabilities of most common NPG handguns cannot be characterized as deadly, a defense attorney should scrutinize any government allegations that a handgun style NPG is “likely to cause death or inflict major bodily injury.” Ultimately, the question of BB guns/NPGs and their lethal capabilities is treated as a question of fact to be decided by a jury or fact finder on a case by case basis. Those attorneys involved in cases involving NPGs must understand the complexities of these weapons and how diverse they are, in order to effectively advocate for their client.



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