Using an air-rifle in schools to demonstrate velocity of a bullet

Posted by Anonymous on Wed, 2019-02-13 17:02

Using an air-rifle in schools to demonstrate velocity of a bullet: We are wondering what rules there are around using a BB pump rifle in schools to demonstrate velocity of a bullet. I expect the safety aspects are too great to perform anymore but am hoping that you may have some information for us.

Voting:

No votes yet

Australian Curriculum:
Physical Sciences
Year Level:
7
8
9
10
Senior Secondary
Laboratory Technicians:
Laboratory Technicians

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Air rifle - velocity of a bullet

Submitted by sat on 13 February 2019

Firstly, in Australia a licence or a permit is required to possess or use a firearm, and this is regulated in each state/territory[1]. For example, in NSW an air rifle is regarded as a Category A firearm[2], a genuine reason for owning and using a firearm is required[3] and this must also be registered with the Commissioner of Police[4]. Further information for NSW can be found here: https://www.police.nsw.gov.au/online_services/firearms/firearms_and_ammu.... Other states should consult their regulators.

Secondly, this is an extremely high-risk activity[5,6]. Managing the risks would require strict controls in place to manage the safety, security and legal requirements. (E.g. safe procedures; staff training; regular maintenance; secure storage; licencing and registration). In addition, we are not sure that a demonstration of the velocity of a bullet would qualify as a valid reason for schools to obtain a licence to possess and use a BB pump rifle.

The safety risks regarding the use of air rifles/ BB guns far outweigh the educational benefits. There are suitable and much safer alternatives to support the curriculum.

Science ASSIST recommends that the best risk management strategy is to substitute with a less hazardous activity. A standard projectile launcher, with appropriate safety controls in place, would be a suitable alternative. These are available from scientific suppliers, see our list of School science suppliers.

Alternative activities

We strongly advise that schools use safer activities for demonstrating and measuring velocity. Each activity would require a site-specific risk assessment and safety glasses are essential for all practical activities using projectiles. Here are some examples:

- ‘Discovering Velocity Outside of the Classroom’, Science Education Resource Centre at Carleton College website, https://serc.carleton.edu/sp/mnstep/activities/19859.html (Accessed February 2019)
- ‘Exploring Newtons Laws of Motion with Bottle Rockets’, National Geographic Society website, https://media.nationalgeographic.org/assets/file/Exploring_Newtons_Laws_... (2014)

- Robertson, William C. 2011. Companion Classroom activities for Stop Faking it! Force and Motion, NSTA website, http://static.nsta.org/pdfs/samples/PB295Xweb.pdf
- 'Teacher toolkits – Projectile motion', The Physics Classroom website. https://www.physicsclassroom.com/Teacher-Toolkits/Projectile-Motion (Accessed February 2019) (this website also includes computer simulations)
- 'Projectile motion', The University of North Carolina website, http://www.webassign.net/question_assets/unccolphysmechl1/lab_3/manual.html (2011)
- 'Simple motion experiments with a datalogger', Practical Physics website, http://practicalphysics.org/simple-motion-experiments-datalogger.html (Accessed February 2019)
- 'Ticker-timers for investigating speed', Practical Physics website, http://practicalphysics.org/ticker-timers-investigating-speed.html (Accessed February 2019)
- 'Timing a trolley on a slope', Practical Physics website, http://practicalphysics.org/timing-trolley-slope.html (Accessed February 2019)
- 'Walk this Way – NSTA News', NSTA website, https://www.nsta.org/publications/news/story.aspx?id=53329 (2 February 2007)

A word of caution: We are aware that some schools may be using NERF guns. The darts are made from foam but are still capable of causing serious eye damage, so safety glasses MUST be worn. Science ASSIST strongly advises against any modification of NERF guns[7].

References and further reading:

[1] 'Gun laws in Australia', Wikipedia, https://en.wikipedia.org/wiki/Gun_laws_in_Australia (Accessed February 2019)

[2] NSW Police Force. 2018. Firearms Registry, Licence Categories and Firearm Types, NSW Police Force website, https://www.police.nsw.gov.au/__data/assets/pdf_file/0007/133198/Licence...

[3] NSW Police Force. 2018. Licence Categories and Genuine Reason Table, NSW Police Force website, https://www.police.nsw.gov.au/__data/assets/pdf_file/0015/133134/GR_TABL...

[4] ‘What is a firearm?’, NSW Police Force website, https://www.police.nsw.gov.au/online_services/firearms/firearms_and_ammu... (Accessed February 2019)

[5] U.S. Consumer Product Safety Commission. 2012. CPSC Safety Alert. BB Guns can kill, U.S. Consumer Product Safety Commission website. https://www.cpsc.gov/s3fs-public/5089.pdf

[6] ‘Boy, 13, died after air rifle accidentally discharged, inquest hears’, The Guardian (UK) website, https://www.theguardian.com/uk-news/2017/jun/08/boy-13-ben-wragge-killed... (8 Jun 2017)

[7] ‘Are NERF Guns Dangerous? Hints and tips on NERF gun safety’, BlasterPiece website, https://blasterpiece.com/tips/nerf-guns-dangerous-hints-tips-nerf-gun-sa... (22 November 2017)

Attorney Generals Department. 2002. ‘National Firearms safety code’, WA Police Department website, https://www.police.wa.gov.au/~/media/Files/Police/Police-Licensing-Servi...

‘Firearms Licences and Categories’, WA Police Department website, https://www.police.wa.gov.au/About-Us/Our-Agency/Police-Licensing-Servic... (2 July 2018)
