



SUBJECT: High Powered AA Batteries

RECIPIENTS: All LCC Schools

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Short Circuits with High Powered AA batteries

There have been several reports nationally of pupils receiving burn from metal battery connection boxes were there had been a short circuit with a high powered AA battery. In the past it was assumed that AA batteries were very safe due to the limited current they could provide, but new battery technology means that they can now provide much greater currents (and thus potential heat). A Physics adviser has written the following advice about how to choose your batteries:

When children are trying out circuits such as connecting torch lamps to batteries, short circuits are bound to happen. (A short circuit is when you connect one terminal of the battery directly to the other. It is easily done, even by teachers!) Many batteries will overheat and vent gases if short-circuited, and current flowing can be high enough to melt the plastic holders and insulation of the wires too. When doing circuit work it is important to choose batteries that can safely withstand a short-circuit.

It is recommended that ordinary (not heavy-duty) zinc-carbon batteries, preferably AA or AAA size are used. If you short-circuit a zinc-carbon battery, the current is only a few amps and is not normally enough to cause overheating or melting. In comparison, alkaline batteries, particularly the high-capacity types, can produce much higher currents that cause overheating.

Avoid rechargeable batteries for circuit work; they can produce very high current indeed when short-circuited.

There are some disadvantages to zinc-carbon batteries. They don't have the same shelf life as alkaline batteries so don't stock up on them and keep them for years. They also corrode more easily particularly when discharged, so keep them in a plastic container and check they are in good condition before each use.

To see the effects of short circuiting four high power alkali AA batteries see the video on the CLEPPS Youtube Channel at <http://youtu.be/4fj5BLo27yw>



Source: Spring 2013 - "Primary Science and Technology".

If you require further assistance or clarification on the subject please contact:

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