ROAD TRIP
pennsylvania
DEPARTMENT OF TRANSPORTATION
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Bicycle Safety Starts with a Helmet

Helmets can help prevent or minimize head injuries during a crash or fall from a bicycle.

In Pennsylvania, anyone age 12 or younger is required to wear an approved helmet when on a bike. Older riders are encouraged to do the same.

This edition of the Road Trip looks at how helmets protect the head and brain, and offers information on how to properly wear a helmet and determine if replacement gear is needed.

It's Not about Fashion, It's about Safety

A helmet can help a bicyclist have a more aerodynamic shape while riding. It can also be a colorful part of a rider's wardrobe. But it's the injury prevention side of the accessory that makes it such an important part of any cyclist's gear.

Wearing a helmet when riding a bicycle can reduce a rider's risk of serious head injury by 85 percent.

So what is it about the molded form and plastic that makes it such effective?

When bicyclists crash and hit their heads against a hard surface, the impact on the outside of the head can transfer to the brain. As the head stops when it hits the surface, the brain continues to move until it impacts the inside of the skull. This is called crash energy.

A typical helmet stalls that impact by about six thousandths of a second. It might not seem like a lot, but correctly made and worn helmets can turn six thousandths of a second into a life-saving moment.

In that time, a helmet made with crushable foam will absorb some of the crash energy and lessen the impact on the head and brain.

Along with direct impact with the skull, the brain can also be damaged by a violet rotation of the head during a crash or fall.

Because the foam crushes and absorbs some of the crash energy, the brain experiences less rotational forces and internal strain.

While the foam interior helps protect the brain, the plastic exterior of most helmets is designed to protect the skull.

The hard shell is designed to spread the force of the impact over a broader area so the rider's skull is less likely to fracture.

(Information provided by explainthatstuff.com and helmets.org.)

Covered in this issue:

Embedded Tech and Engineering Topics — transfer of energy

Vocabulary Terms — aerodynamic; polycarbonate

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The newsletter is also available online at www.penndot.gov/RegionalOffices/district-1.

When's the Right Time to Replace Head Gear?

Even if a helmet still fits properly, it doesn't mean it's not due for a replacement.

Examine helmets often to keep tabs on the condition of the covering and foam interior.

The exterior shells are typically made of composite materials, like fiberglass or lightweight carbon fiber; or very hard plastic such as polycarbonate or Acrylonitrile butadiene styrene (ABS).

If that shell has cracks or splits, it may be time for a new helmet, especially if the shell does not spring back into place when pressed on.

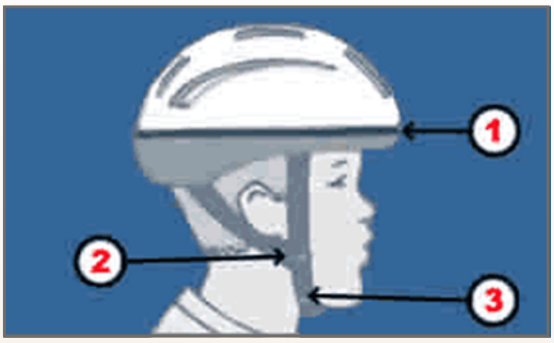
A helmet also should be replaced if the shell has faded due to UV exposure, since the plastic may have weakened.

Next, check the foam liner for any cracks or dents, and the straps and buckles for any worn or tattered areas.

Helmets should always be replaced after a major impact, like a crash or fall.

Helmets dropped onto a hard surface should be closely examined. Such events can cause the foam to weaken, lessening the effectiveness of the helmet during a crash.

DID YOU KNOW... Each year, about 900 people die due to bicycle crashes; 200 of those are children under 15 years old. In a typical year, 130,000 people suffer from a head injury due to a bicycle crash.



Properly Fit a Helmet

- **Adjust the helmet** — Size helmets to each individual's head using the right combinations of foam sizing pads or the retention system by using the dial on the back of the helmet to adjust the helmet.
- **Wear it low on your forehead** — The helmet should have two straps joined with a "tri-glide" to form a "V". The front and rear strap of each V should be snug when a tri-glide is positioned just below the earlobe. See number two in the picture above.
- **Tighten buckle strap** — The buckle strap should fit snug beneath the chin Only one adult finger should be able to fit between the clip and the chin.
- **Snug on the head** — Make sure the helmet cannot move from side to side or up and down.
- **Double-Check the Fit** — When securely fit, the rider's eyebrows should move up and down or side to side with the movement of the helmet.

Information provided by Safe Kids Pennsylvania.

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