

The following excerpt contains answers given by Don E Morgan in response to questions asked by a French motorcycle journalist, soon after cone-head™ won the 2007 invention of the year on ABC TV's *The New Inventors* program.

'Do you think helmets don't evolve as fast as they need?'

Today, there is much more emphasis placed on the way a helmet looks but very little on the safety aspects. At present helmet manufacturers are manufacturing helmets only to meet the needs of standards but generally ignore the more important needs of protecting the head more effectively from intra-cranial injury. There have only been two real significant changes to the design of helmets since the introduction of the full-face helmet over 40 years ago and they are the new Cone-head shock absorbing foam liner for helmets to absorb an impact force more effectively and the Phillips Head Protection System (PHPS) to protect the brain from the dangers of rotation. To put it bluntly, apart from these two innovations, helmets are still pretty much in the dark ages and have not kept up with modern thinking and development. For example, cars had crumple zones years ago and the motor vehicle industry has been progressive with time. This is not entirely the fault of the helmet manufacturers since they must manufacture helmets to meet the stringent requirements of outdated helmet standards.

'What are the best directions to improve safety of helmets?'

To improve the safety of helmets, the standards for testing helmets need to drastically change.

The current standards (Snell, European, Australian and other World standards) are ridiculous and out dated. For example, the testing of a helmet to the Australian and New Zealand standards requires a helmet to be attached to a hard magnesium headform (same shape and size of an average adult skull) and dropped through a height of 1.8 m onto a hard flat or hemispherical steel anvil. The problem is there is nothing realistic about this test. This is the main reason why helmet liners are too hard and stiff and do not effectively absorb an impact force. The standards, for instance, should be using a humanoid headform which has similar bio-mechanical properties as a human head or a dummy attached to a humanoid headform. The helmeted dummy or humanoid headform should be dropped onto different real-life impacting surfaces. Helmets generally impact with surfaces such as side pillars or bonnets of motor vehicles or bitumen roads or concrete gutters. Helmets never impact with steel anvils. Also the double impact, required by standards for motorcycle helmets, is also ludicrous since motorcyclists rarely impact at the same point of the helmet twice.

The introduction of a new modern standard for testing motorcycle helmets, by using a humanoid headform or a dummy with a humanoid headform attached and using real-life impacting surfaces would produce helmets that are more compatible to the human head and helmets would provide more absorption in impacts.

New standards would encourage helmet manufacturers to be more innovative in improving helmet designs by using new absorbing materials and configuring the liner to absorb an impact force more effectively as cone-head is designed to do.