

1 *For Teachers: When you use Dual method, please have the students do the shadowing. Then have*
 2 *them read by them self. And correct their pronunciation, through all of this material.*

3 イートックのレッスン以外で使用禁止。Ban using this without eTOC

4  Part2 Lesson4.G2-3B-2019.1chobundokkai  スマホの方は横にご覧下さい

4 **Metal Foam**

5 When we think about dangers to our health, we usually think of dangerous
 6 diseases. However, one of the leading causes of death around the world is traffic
 7 accidents. In fact, traffic accidents are the biggest cause of death for people aged
 8 15 to 29. Furthermore, not only do 1.2 million people die in such accidents every
 9 year, but 20 to 50 million people are also injured. While some wealthy countries
 10 have reduced the number of traffic accidents in recent years, they are increasing
 11 rapidly in developing countries.

12 **Further Questions & Sample Answers** *For Teachers: Please use the direct method like CALLAN*
 13 *for this part. 1. Ask student to answer the question on their own first. 2. Then read the "sample answer". 3. Tell*
 14 *student to close their eyes. 4. Let them repeat after you again. Because student can't see the answer. 5. Have the*
 15 *student try to memorize the answer. 6. Once they have memorized the answer, ask the question one last time.*

16 **1) What is one of the leading causes of death around the world?**

17 *1) One of the leading causes of death around the world is traffic accidents.*

18 **2) Where do traffic accidents increasing rapidly?**

19 *2) Traffic accidents are increasing rapidly in developing countries.*

20 One way to deal with this problem is to make cars that are better able to protect,
 21 the people inside them during accidents. For many years, the researchers have
 22 been interested in using metal foam to do this. Metal foam refers to a metal,
 23 usually steel or aluminum, which has had bubbles of air or another gas inserted
 24 into it. Usually the metal foam between 75 to 95 percent air. This makes it very
 25 light compared to ordinary metal. Metal foam have been created for some time,
 but most them have been very weak. This has made it difficult to use them in
 vehicles.

26 **Further Questions & Sample Answers** 

27 **3) What is one way to deal with traffic accidents?**

28 *3) To make better cars that are able to protect the people by using a metal foam.*

29 **4) What is a Metal Foam?**

30 *4) It refers to a metal usually steel or aluminum, which has bubbles of air.*

31 Afsaneh Rabei, a scientist at North Carolina State University in the United
 32 States has developed a new metal foam. Rabei spent five years developing it.
 33 According to her, the problem with earlier metal foams was the bubbles were
 34 various sizes. In the new metal foam, though the bubbles are in regular in
 35 size. This results in a much stronger metal foam. Test carried out by Rabei
 36 show that the new material is five to six times stronger than other metal
 37 foams and also greatly decreases the damage that occurs in crash. This
 38 means that, if it were be used to build cars, it would be much better than
 39 ordinary metals at protecting drivers and passengers. Rabei believes that
 40 new metal foam could also be used in boats and airplanes, as well as to help
 protect buildings against earthquakes.

Further Questions & Sample Answers

42 **5) Who was the scientist at North Carolina State University that had developed**
43 **a new metal foam?**

44 **5) *Afsaneh Rabei was the scientist who developed a new metal foam.***

45 **6) According to her, what was the problem with earlier metal foams?**

46 **6) *The problem with earlier metal foams was the bubbles were in different sizes.***

47 **(30) *Traffic accidents are***

48 **1 leading to more people having dangerous diseases.**

49 **the main cause of death for people of all ages in wealthy countries**

50 **becoming more and more of a problem in developing countries**

51 **usually caused by drivers who are between the ages of 15 and 29.**

52 **(31) *What is one problem with most type of metal foam?***

53 **1 They are not strong enough to improve the safety of cars.**

54 **2 They are made of aluminum which is too light use in cars**

55 **3 The steel that is used to make them is not filled with enough bubbles**

56 **4 The air inside causes environmental damage when it is released.**

57 **(32) *What has Afsaneh Rabei developed?***

58 **1 A way to release the unnecessary bubbles from metal form**

59 **2 A type of metal foam in which each of the bubbles is the same size**

60 **3 A stronger type of metal that can be used to create better metal foam.**

61 **4 A quicker way to produce the metal that is used to create metal foam.**

62 **(33) *What is one possible benefit of Rabei's new material?***

63 **1 It can reduce the damage and injuries that result from car crashes.**

64 **2 It can be used to prevent a large number of earthquakes**

65 **3 It may allow companies to build cars that are five to six times cheaper**

66 **4 It may also decrease the number of boat and airplanes accidents that occur.**



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67 Answers: (30)3 (31)1 (32)2 (33)1