Part One　Health and Safety

Objective

This unit introduces automobile technologies and inventions concerning health and safety, the Personal Protective Equipment (PPE), and the 2011 World Day for Safety and Health at Work.

Warm-up

Questions:

1. Can you identify the Personal Protective Equipment (PPE) in the picture?
2. Have you ever used the Personal Protective Equipment (PPE)?
3. What is the significance of the Personal Protective Equipment (PPE)?

Workshop Speaking

Thomas is a college student. He is visiting the Ford *assembly line*. Richard is a director of the Ford assembly line. They are having a factory tour.

Richard: Hello, Thomas. Welcome to our factory.

Thomas: Hello, Richard.

Richard: You said yesterday that you wanted to see the production line. The tour will last about an hour. First, you'll have to put on this *helmet* for *safety*.

Thomas: OK. But this one seems a little small.

Richard: Please try this one.

Thomas: That's much better.

Richard: We will start with the assembly line.

Thomas: That's fine. I'll just follow you.

Activity One

Discuss in group and introduce five items of Personal Protective Equipment (PPE) in your automotive workshop.

Activity Two

Suppose you are a safety engineer. You are required to introduce the safety precautions to your partner.

Useful Words and Expressions:

helmet　　assembly line
safety　　caution
Personal Protective Equipment (PPE)

Workshop Reading A

Automobile Technologies and Inventions for Health and Safety

New *technologies* and *inventions* have been *applied* into automobile to make our world a safer place for you, your friends and the people in your *community*.

One of the important safety inventions is the seat belt. Seat belts save thousands of lives each year. Not until the mid-1960s did U.S. carmakers include seat belts as *standard* car parts.

Many cars also come with air bags, which will *inflate* if there is a car crash. Although the first air-bags were *installed* in 1973, the first cars with air bags didn't sell well. It wasn't until the 1990s that cars with air bags became popular with buyers and carmakers. Nowadays car makers and *suppliers* are developing occupant-sensing systems. The three *leading* technologies for smart *air bags* are weight-sensing in the seat, position sensing within the car and camera *monitoring*.

Traffic *Signal* Assistant is an audible signal which tells the driver about traffic *regulations* such as speed *limits*, parking or overtaking.

The GPS navigation system helps drivers plan routes and warns drivers about traffic jams and *congested* roads.

The virtual passenger's voice application wakes up drivers who are beginning to fall asleep. *Infrared* sensors *measure* head positions. If the drivers'head begins to fall forward, he or she is woken up with a loud greeting and a series of questions to keep him or her awake.

Scientists test the safety equipment in cars with *crash-test* dummies. Crash-test dummies are built to act as human bodies would do in a *crash*. This helps scientist's design better safety equipment.

Apart from the mentioned technologies and inventions, scientists have made great *efforts t*o develop green cars to lower the CO_2 emissions. A *fuel cell* produces an *electric* current and heat by *converting hydrogen* and *oxygen* into water. The output of a single cell is 0.6-0.8 V, but when many cells are *combined* into a stack, enough energy is produced to power a 50kW engine.A fuel cell has the highest *efficiency* in power generation, reaching over 60%, *compared t*o a gasoline –powered car which has 20%. The use of fuel cells promises a *reduction* in *environmental* pollution from car exhaust *emissions*, and the end of our dependence on oil for fuel.

New technologies and inventions in automobile make our cars more *intelligent*. The research

and development of Green Cars promise a reduction in environmental pollution from car exhaust emissions and facilitate our energy saving.

Words and Expressions

technology	n. 技术
invention	n. 发明
apply	v. 应用
community	n. 社区
standard	adj. 标准的
inflate	vt. 膨胀
install	v. 安装
supplier	n. 供应商
leading	adj. 领先的
monitor	vt. 监控
signal	n. 信号
regulation	n. 规章
limit	n. 限制
congested	adj. 拥挤的
infrared	adj. 红外线的
measure	vt. 测量
crash	n. 碰撞
effort	n. 努力
electric	adj. 电的
convert	v. 转换
hydrogen	n. 氢气
oxygen	n. 氧气
combine	v. 结合
efficiency	n. 效率
compare	vt. 比较
reduction	n. 减少
environmental	adj. 环境的
emission	n. 排放
intelligent	adj. 智能的
air bag	安全气囊
crash-test	碰撞试验
fuel cell	燃料电池

Exercises

1. Answer the following questions according to the passage.

1) When were the first air bags installed in the car?
2) What is the function of an air bag?
3) What is the Traffic Signal Assistant?
4) What is the advantage of the virtual passenger's voice application?
5) What is the function of crash-test dummies?
6) Why do scientists and researchers develop "Green Cars"?

2. Spell the word according to the initial letter and the definition in the bracket.

1) E_ _ _ _ _ _ _ (of, relating to, or operated by electricity)
2) I_ _ _ _ _ _ _ _ (the act or process of inventing)
3) M_ _ _ _ _ _ (to test)
4) R_ _ _ _ _ _ _ _ _ (the act of regulating or the state of being regulated)
5) S_ _ _ _ _ (an indicator that serves as a means of communication)
6) T _ _ _ _ _ _ (vehicles or pedestrians in transit)

3. Match the English terms with their Chinese equivalents.

GPS	安全气囊
air bag	燃料电池
speed limit	汽车尾气排放
crash-test	碰撞试验
infrared sensor	新能源汽车
fuel cell	全球定位系统
car exhaust emissions	红外线传感器
Green Cars	限速

4. Read the following statements carefully and decide whether each of them is true or false according to the passage.

( ) 1) The three leading technologies for smart airbags are weight-sensing in the seat, position sensing within the car and ABS.
( ) 2) Traffic Signal Assistant is an visual signal which tells the driver about traffic regulations such as speed limits, parking or overtaking.
( ) 3) The GPS navigation system helps drivers plan routes and warns drivers about traffic jams.
( ) 4) The use of fuel cells promises a reduction in environmental pollution from car exhaust emissions.

( ) 5) A fuel cell has the highest efficiency in power generation, reaching over 60%.

( ) 6) New technologies and inventions in automobile make our cars more intelligent.

5. Translate the following sentences into Chinese.

1) One of the important safety inventions is the seat belt.

_____

2) The GPS navigation system helps drivers plan routes and warns drivers about traffic jams and congested roads.

_____

3) Traffic Signal Assistant is an audible signal which tells the driver about traffic regulations such as speed limits, parking or overtaking.

_____

4) Scientists test the safety equipment in cars with crash-test dummies.

_____

5) The use of fuel cells promises a reduction in environmental pollution from car exhaust emissions, and the end of our dependence on oil for fuel.

_____

6) New technologies and inventions in automobile make our cars more intelligent.

_____

6. What do you think these signs mean?

Workshop Reading B

Occupational Safety and Health Management System (OSHMS)

The 28th of April is the World Day for Safety and Health at Work. The 2011 World Day for Safety and Health at Work focuses on the *implementation* of an *Occupational* Safety and Health *Management* System (OSHMS). The system is a tool for *continual improvement* in the *prevention* of workplace incidents and accidents.

1. *Principle* of OSHMS: PLAN, DO, CHECK, ACT

An OSHMS is a *preventive* method to implement safety and health measures which consists of four steps and incorporates the principle of continual improvement. Its principles are based on the PDCA Cycle: PLAN, DO, CHECK, ACT. Its purpose is to establish a *comprehensive* and structured mechanism for joint action of management and workers in the implementation of safety and health measures. OSHMS can be an *effective* tool for the management of *hazards* specific to a given

industry, *process* or organization.

2. Safety and Health measures: Personal *Protective* Equipment

Personal *Protective* Equipment (PPE) should be *selected* to ensure that it is comfortable and *practicable* for those who have to wear it. This can be onerous, particularly if more than one type of protection needs to be worn at the same time.

It is essential that *appropriate training* in the use, care and *maintenance* of PPE should be given to the users. *Suitable* facilities should be provided for the *storage* of PPE when it is not in use. The facilities should include means of *drying,* where necessary.

All PPE should be *maintained* in a clean, *hygienic* and effective condition, in accordance with the manufacturer's *recommendations*.

3. Safety and Health measures: First Aid

First aid aims to:

• promote a safe environment

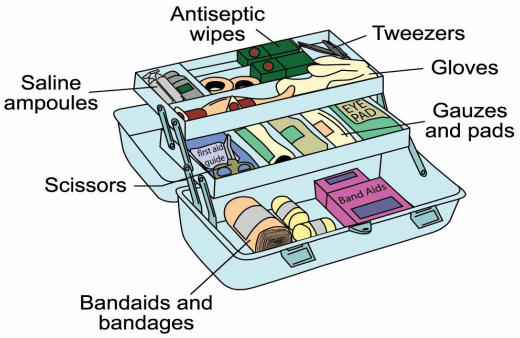
• preserve life

• prevent injury or illness from becoming worse

• help promote *recovery*

• protect the *unconscious*

• *Reassure* the ill or injured



Employers have an *obligation* to ensure that appropriate *infrastructure* is in place to ensure that first aid can be provided if injuries or illnesses occur, prior to the provision of proper medical assistance. First aid infrastructure includes the *provision* of:

• first aid kits that are in appropriate locations and are appropriately stocked

• trained first-aid personnel in suitable numbers to cover all areas of the workplace

• first aid rooms if necessary

Words and Expressions

implementation	n. 实施
occupational	adj. 职业的
management	n. 管理
continual	adj. 连续的
improvement	n. 完善
prevention	n. 预防
principle	n. 原则
preventive	adj. 预防的
comprehensive	adj. 全面的
effective	adj. 有效的
hazard	n. 危险
process	n. 过程
protective	adj. 保护的
select	v. 选择
practicable	adj. 可行的
appropriate	adj. 适当的
training	n. 培训
maintenance	n. 维修
suitable	adj. 合适的
storage	n. 贮藏
drying	n. 烘干
maintain	vt. 维持
hygienic	adj. 卫生的
recommendation	n. 推荐
recovery	n. 恢复，痊愈
unconscious	adj. 无知觉的
reassure	vt. 使…安心
obligation	n. 义务，职责
infrastructure	n. 基础设施
provision	n. 储备

Exercises

1. Answer the questions according to the passage.

1) What is the focus of the 2011 World Day for Safety and Health at Work?

2) What is the Principle of OSHMS?

3) Why do people use Personal Protective Equipment?

4) How do people select Personal Protective Equipment?

5) How do people maintain Personal Protective Equipment?

6) What are the aims of First Aid?

2. Match the words with the corresponding pictures.

a ( )

b ( )

c ( )

d ( )

e ( )

f( )

(1) safety boots	(2) safety helmet	(3) safety goggles
(4) safety gloves	(5) safety earmuff	(6) welding face shield

3. Spell the word according to the initial letter and the definition in the brackets.

1) E _ _ _ _ _ _ (the act of equipping or the state of being equipped)

2) H _ _ _ _ _ _ _ (of or relating to hygiene)

3) M_ _ _ _ _ _ _ _ _ _ (the act of maintaining or the state of being maintained)

4) O_ _ _ _ _ _ _ _ _ _ _ (relating to a particular occupation)

5) R_ _ _ _ _ _ _ _ (a return to a normal condition)

6) S_ _ _ _ _ (the act of storing goods or the state of being stored)

4. List three things you have in your workshop first-aid kit and use these words to develop a mini dialogue with your partner.

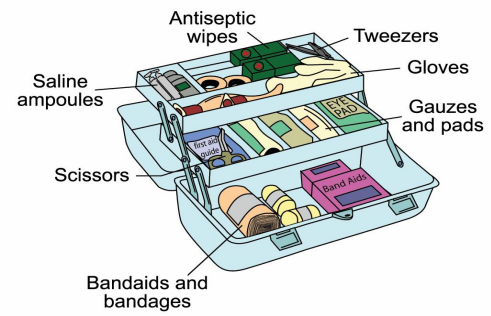
Example:

PAIR A: Have you got a pair of tweezers in your workshop first-aid kit?

PAIR B: Yes, we have. / No, we haven't.

PAIR B: Have you got a thermometer in your workshop first-aid kit?

PAIR A: Yes, we have. / No, we haven't.



5. Read the following statements carefully and decide whether each of them is true or false according to the passage.

( ) 1) The 28th of April is the World Day for Safety and Health at Work.

( ) 2) The principles of OSHMS are based on the PDCA Cycle: PLAN, DO, CHECK, and ACT.

( ) 3) It is essential that appropriate training in the use, care and maintenance of PPE should be given to the users.

( ) 4) Suitable facilities should be provided for the storage of PPE when it is not in use.

( ) 5) Some PPE should be maintained in a clean and hygienic condition, in accordance with your friends' recommendations.

( ) 6) First aid infrastructure includes the provision of first aid kits, trained first-aid personnel and first aid rooms.

6. Translate the following English sentences into Chinese.

1) The 2011 World Day for Safety and Health at Work focuses on the implementation of an Occupational Safety and Health Management System (OSHMS).

_____

2) OSHMS can be an effective tool for the management of hazards specific to a given industry, process or organization.

_____

3) It is essential that appropriate training in the use, care and maintenance of PPE should be given to the users.

_____

4) All PPE should be maintained in a clean, hygienic and effective condition, in accordance with the manufacturer's recommendations.

_____

5) Personal Protective Equipment (PPE) should be selected to ensure that it is comfortable and practicable for those who have to wear it.

_____

6) First aid aims to promote a safe environment.

_____

7. Design a bilingual safety rules poster for your workshop. (The following sentences can be used as references)

Safety Rules
1……
2……
3……..
4……
5……
6……

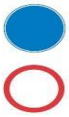
- Keep your work area clean and tidy.
- Store tools and equipment safely.
- Wear protective equipment where necessary.
- Learn how to get first aid.
- Learn the locations of emergency exits.
- Learn the proper use of machines and equipment.
- Learn the location and the use of fire extinguishers and fire alarms.

Supplementary Reading

The signing system

Traffic signs or road signs are signs erected at the side of roads to provide information to road users.

Road signs in the United Kingdom conform broadly to European norms, though a number of signs are unique to Britain. The Department for Transport of the UK is responsible for the signing system.



There are three basic types of traffic sign: signs that give orders, signs that warn and signs that give information. Each type has a different shape. A further guide to the function of a sign is its color. All triangular signs are red.

Blue circles generally give a mandatory instruction, such as “turn left”, or indicate a route available only to particular classes of traffic, e.g. buses and cycles only. Red rings or circles tell you what you must not do, e.g. you must not exceed 30 mph, and no vehicles over the height shown may proceed.