



全国高等职业教育“十二五”规划教材
中国电子教育学会推荐教材
全国高职高专院校规划教材·精品与示范系列

机械制造类 专业英语

◎ 杨 成 主编

- Basics in Mechanical Workplace
- Mechanical Machining
- CNC Machining
- Die & Mold Tech

- ◆ 结合国家示范专业课程建设和中澳职业教育合作项目成果，根据职业岗位需求进行编写
- ◆ 充分听取教师和专家意见，介绍机械制造、数控、模具、计算机辅助制造等专业有关的职场英语
- ◆ 内容均选自英、美等国专业教材和刊物原文，为力求用语地道，对内容只做删减不做修改
- ◆ 提供免费的电子教学课件、练习题参考答案，详见前言



电子工业出版社

PUBLISHING HOUSE OF ELECTRONICS INDUSTRY

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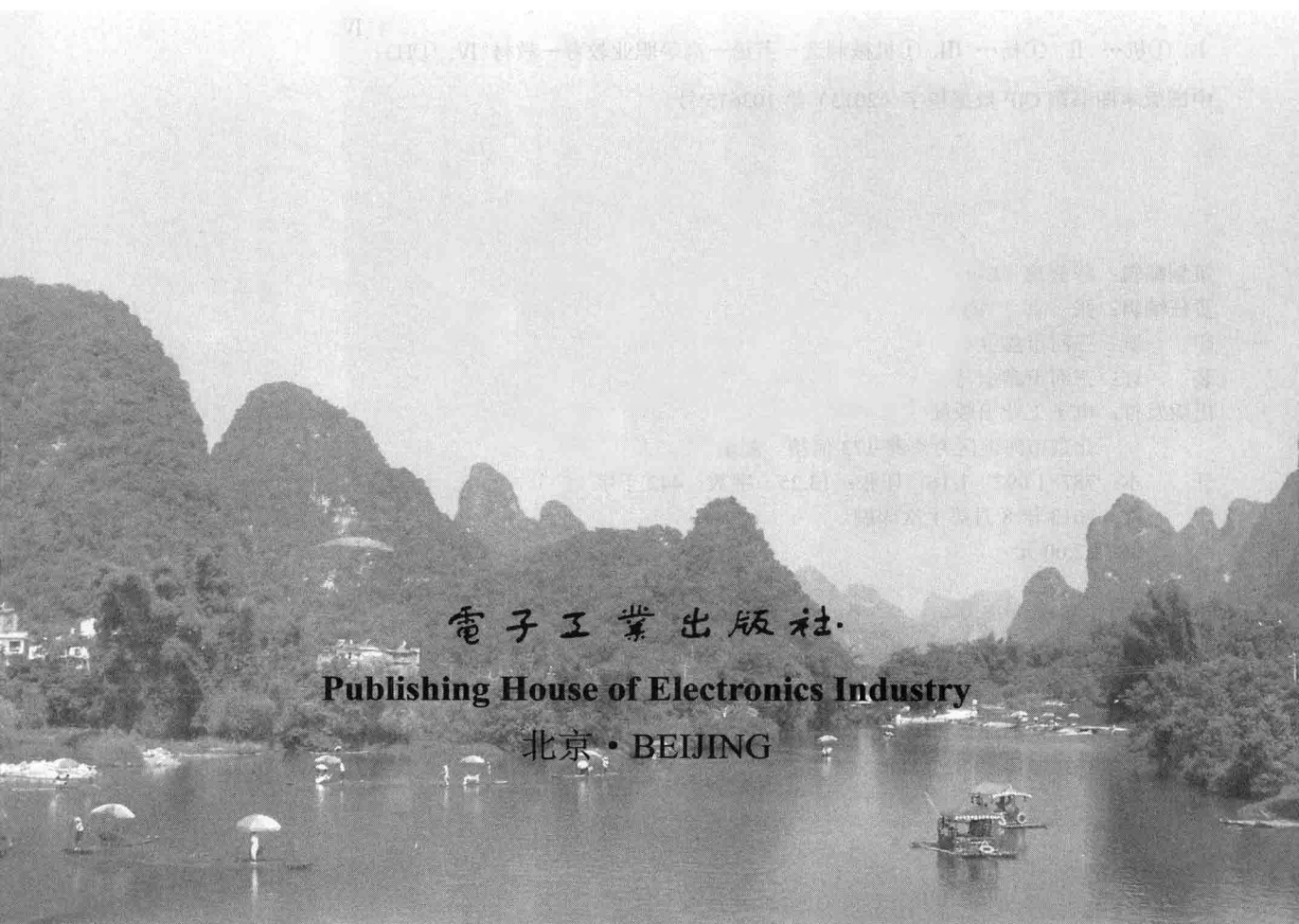
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Publishing House of Electronics Industry

北京·BEIJING



内 容 简 介

本书按照教育部最新的职业教育改革要求,结合国家示范性院校专业建设成果及中澳职业教育合作项目成果,充分听取专业教师和行业专家意见进行编写。本书主要介绍机械设计与制造、数控技术、模具设计与制造等专业有关的职场英语知识。全书内容均选自英、美等国专业教材和专业刊物中的原文。为力求用语地道,对内容只做删减不做修改。

本书融汇了最新的相关专业知识,图文并茂,浅显易懂;以工作任务为驱动,通过仿真化的学习情景来完成知识模块的学习,充分体现“实用为主,够用为度”的原则。本书由教学指导、学习材料、项目活动与任务、单词、词组和对话练习专业英语相关语法知识等组成。

本书为高职高专院校机械类专业英语教材,也可作为应用型本科、成人教育、自学考试、电视大学、中职学校、培训班的教材,以及企业工程技术人员的参考书。

本教材配有免费的电子教学课件和练习题参考答案,详见前言。

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图书在版编目(CIP)数据

机械制造类专业英语 / 杨成主编. —北京: 电子工业出版社, 2013.8

全国高职高专院校规划教材·精品与示范系列

ISBN 978-7-121-20445-6

I. ①机… II. ①杨… III. ①机械制造—英语—高等职业教育—教材 IV. ①H31

中国版本图书馆 CIP 数据核字(2013)第 103675 号

策划编辑: 陈健德 (E-mail: chenjd@phei.com.cn)

责任编辑: 张 京 文字编辑: 张岩雨

印 刷: 三河市鑫金马印装有限公司

装 订: 三河市鑫金马印装有限公司

出版发行: 电子工业出版社

北京市海淀区万寿路 173 信箱 邮编 100036

开 本: 787×1 092 1/16 印张: 13.25 字数: 442 千字

印 次: 2013 年 8 月第 1 次印刷

定 价: 32.00 元

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前言



随着经济的全球化,中国已经成为“世界工厂”,对外交流的不断深入使社会对机械类外向型人才的需求日益迫切,因此《机械制造类专业英语》的出版是社会之所需。本教材根据行业技术发展新需求,按照目前最新的职业教育改革要求,结合示范专业课程建设经验和中澳职业教育合作项目成果,充分听取专业教师和行业专家意见进行编写。本书对传统的教学模式和课程设计进行了颠覆性的改革,具有一定的超前性,因此一定会发挥其应有的作用。

本教材注重英语通识能力和外向型人文思维能力的培养,如听、说、读、写、译等,尤其贯彻听说领先、读写跟进的原则,重点培养学生职场英语沟通与交流的能力,为机械行业输送用得上、下得去、留得住的实用型人才。本教材选取真实、典型的工作场景作为学习材料,充分落实以就业为导向、能力为本位、行业需求为目标,传授机械相关专业领域所需的职场英语知识和应用技能。本教材的教学采用教室(理论教学)+实作场(实践操作)的方式。

本书根据机械制造类专业教学的相应内容分为4大知识模块,并设计了大量的项目活动与任务。本书针对各个知识模块中的学习情景提供了大量的反馈练习,不同院校可根据实际情况对本教材内容做适当调整。

本书由重庆工业职业技术学院杨成编著,由机械工程学院副院长钟富平主审,机械工程学院的黄晓敏教授、姜秀华教授和赵平高级工程师给予了无私的指导,在此一并表示感谢。

本书的顺利出版,要感谢重庆工业职业技术学院中澳项目办、澳大利亚职业教育与培训鉴定服务中心(VETASSESS)、职业教育与监督服务中心(VETASSESS);感谢 Allen Medley, Bruce Shearer 和 Vivien Carroll 等专家的大力支持;感谢电子工业出版社高职分社的领导给予的大力支持和帮助,并提出了许多宝贵的修改意见;本书曾参考并引用了有关文献资料、插图等,作者在此对相关作者表示由衷的感谢。

由于作者水平有限,时间仓促,写作中难免挂一漏万,不妥之处,恳请读者批评指正,并提出宝贵意见。

为了方便教师教学,本书还配有免费的电子教学课件、练习题参考答案,请有此需要的教师登录华信教育资源网(<http://www.hxedu.com.cn>)免费注册后再进行下载,若有问题请在网站留言或与电子工业出版社联系(E-mail: gaozhi@phei.com.cn)。

编者



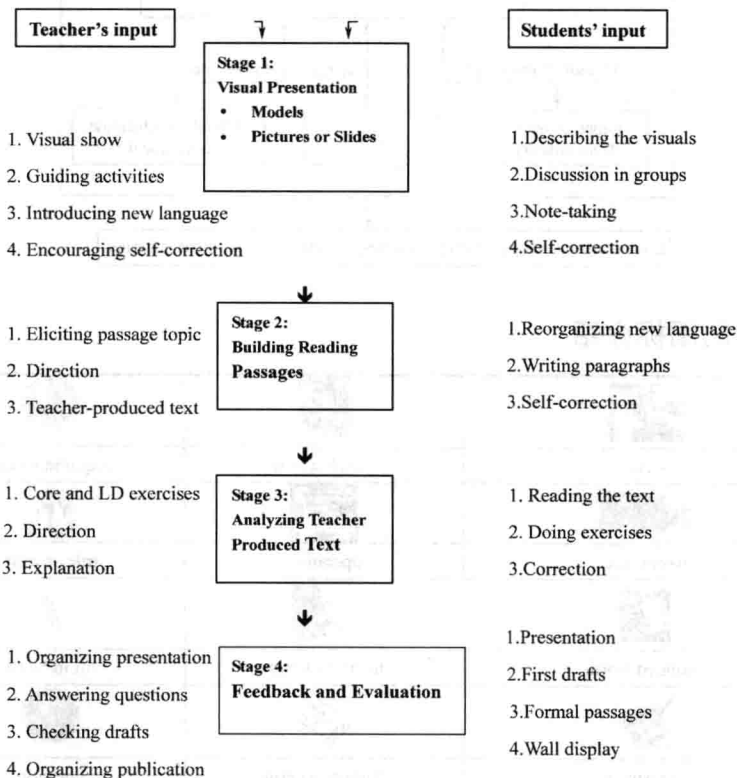
教学指导

1. 教学方法建议

1) 教学活动

知识模块 活动名称	Module I~IV	活动操作程序	建议时间
小组讨论	√	1. 教师把设计好的问题(如是非判断, 阅读理解等)用小纸条装在信封里, 分发给各小组 2. 各小组讨论 5 分钟后派代表发言 3. 教师总结归纳	10~15 分钟
词汇游戏	√	根据图示识别单词、零部件	10 分钟
职场实地学习	√	实训场地, 根据具体部件识别单词	20 分钟

2) Suggested Workplace Teaching Procedure



3) Teaching Equipments and Needs

(1) Multi-media equipments including projector, computer, screen, tape-recorder, microphones, etc.

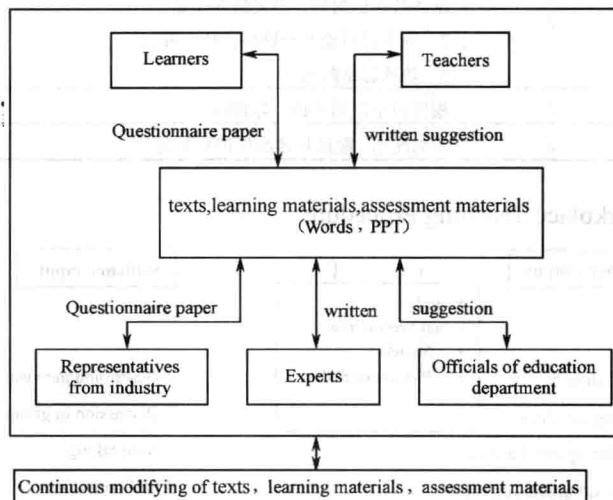
(2) T&L materials (for teachers and students), teaching plan, lectures, teaching scheme, teaching reference books, etc.

(3) Teaching models, pictures, charts, course wares, etc.

2. Teaching and Learning Assessment Methods

modules \ methods	writing	spoken	observe	role-play	operation
Module I	✓	✓	✓	✓	
Module II~IV			✓	✓	✓
words and expressions	✓	✓	✓	✓	

3. Teaching Assessments Methods



4. 教材中的图标介绍

scene	match words	required words
workplace	operation	true or false
compiled words	learning action	fill in blank
assessment	reading material	question
exercises	translation	group work
allocated time	exercises	

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Module One

Basics in Mechanical Workplace



Scene One Health and Safety in Workshop



Identifying hazards

What is a hazard?

A hazard is any situation with the potential to cause injury or illness. For example, situations that could pose hazards include: a system of work, a piece of machinery, a chemical that is used. To assist you in thinking about hazards, the following materials will break hazards into five major groups.

- Physical (e.g. plant/machine, noise, electrical, lighting, radiation, working at heights, housekeeping)
- Chemical (e.g. hazardous substances, dangerous goods)
- Ergonomic (e.g. manual handling)
- Psychological (e.g. work stressors)
- Biological



Make a survey about hazards in your workplace.

Sample hazard inspection checklist

Date of inspection: _____

Area to be inspected: _____

Checked by: _____



Floors

Safety issue	OK	Not OK	Plan to improve?
Even surface – no holes.			
Dropped objects picked up.			
Stock material out of way.			

Aisles

Safety issue	OK	Not OK	Plan to improve?
Wide enough for goods traffic.			
Adequately lit.			
Surface free from defects.			
Clear of cases, materials and rubbish.			

Fire

Safety issue	OK	Not OK	Plan to improve?
Extinguishers in place, recently serviced and clearly marked for type of fire.			
Adequate directions to fire exits.			
Exit doors easily opened from inside.			
Exits clear of obstructions.			
Fire alarms functioning correctly.			

General lighting

Safety issue	OK	Not OK	Plan to improve?
Adequate illumination.			
Good natural lighting.			
Good light reflection from walls and ceilings.			

Windows

Safety issue	OK	Not OK	Plan to improve?
Safety or reinforced glass where appropriate.			
Clean, admitting plenty of daylight.			
No broken panes.			
Ledge free of dust, tins or rubbish.			

Storage

Safety issue	OK	Not OK	Plan to improve?
Storage designed to minimize lifting.			
Materials stored in racks and bins wherever possible.			
Shelves free of dust and rubbish.			
Stacks stable with good foundations.			
Floors around racks clear of rubbish.			
Non-skid gratings in good condition.			



Electrical

Safety issue	OK	Not OK	Plan to improve?
Gear not in use properly stored.			
No broken plugs, sockets or switches.			
Portable power tools in good condition.			

First aid

Safety issue	OK	Not OK	Plan to improve?
Cabinets and contents clean and orderly.			
Stretchers in position.			
Emergency numbers displayed.			

Chemical hazards

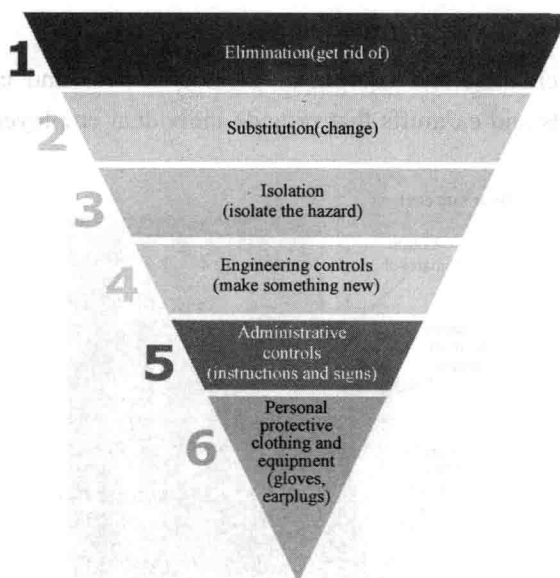
Safety issue	OK	Not OK	Plan to improve?
Are metal parts, paint brushes, etc. cleaned with turpentine, petrol or other solvents in uncovered buckets?			
Do people ever clean their hands with solvents of any type?			
Are there any hazardous chemicals in use on site?			

Ergonomics lifting/carrying

Safety issue	OK	Not OK	Plan to improve?
Do people have to lift heavy or awkward loads?			
Does the lifting involve high or low lifts?			



The hierarchy of control of hazards in workshop.





1. Elimination

Controlling risks through elimination may include, for example, eliminating toxic substances, hazardous machinery or processes that are not necessary to the way work is performed.

2. Substitution

Substitution may include, for example, substituting a toxic substance, hazardous machinery or process with one known to be less harmful to health or safety.

3. Isolation

Isolation may include, for example, enclosing or isolating a hazard such as a toxic substance by using a fume cupboard or using sound enclosure booths to control noisy machinery.

4. Engineering controls

Engineering controls may include changing processes, equipment or tools, for example:

- Installation of machine guards and machine operation controls.
- Ventilation to remove chemical fumes and dusts, and using wetting down techniques to minimize dust levels.
- Changing layout of work levels to minimize bending and twisting during manual handling.

5. Administrative controls

Administrative controls may include changing work procedures to reduce exposure to existing hazards. For example:

- Reducing exposure to hazards by job rotation.
- Limiting the number of people exposed to the hazard by limiting access to hazardous areas.

6. Personal protective clothing and equipment

Personal protective clothing and equipment include devices and clothing, such as safety clothing, footwear, helmets and earmuffs that provide individual employees with some protection from hazards.





Tick the correct response in the relevant box.

True False

- (1) A hazard is any situation with the potential to cause injury or illness. ☐ True ☐ False
- (2) Personal protective clothing and equipment are clothing and devices that provide employees with some protection from hazards. ☐ True ☐ False
- (3) Administrative controls may include changing work procedures to reduce exposure to existing hazards. ☐ True ☐ False



First aid

First aid is the provision of emergency treatment and life support for people suffering injury or illness.

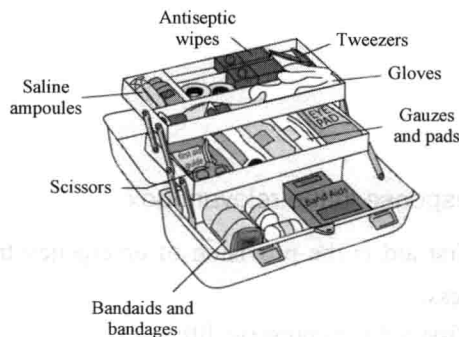
First aid aims to:

- Promote a safe environment.
- Preserve life.
- Prevent injury or illness from becoming worse.
- Help promote recovery.
- Protect the unconscious.
- Reassure the ill or injured.



Group discussion: contents list for a first aid kit.

Suggested contents for a first aid kit include:



Sample contents list for a first aid kit

While the specific contents of a first aid kit will be determined from a risk assessment, the following contents list provides a basic outline.

- Emergency services telephone numbers and addresses, including local doctors and hospitals.
- Name and telephone number for workplace first aid.
- Basic first aid notes.
- Individually wrapped sterile adhesive dressings.
- Sterile eye pads.



- Sterile coverings for serious wounds.
- Triangular bandages.
- Safety pins.
- Small, medium and large sterile un-medicated wound dressings.
- Adhesive tape.
- Crepe bandages.
- Disposable gloves.
- Scissors.



Group discussion: What should we have in a first aid room?

First aid rooms

Following are the types of contents that may be needed in a first aid room.

- Resuscitation mask.
- Sink and wash basin with hot and cold water supplied.
- Work bench or dressing trolley.
- Cupboards for storage of medical supplies, dressings and linen.
- Soiled dressing containers.
- Electrical power points.
- Medical examination couch with blankets and pillows.
- Upright chairs.
- Removable screens.
- Desk and a telephone.
- Stretchers.
- First aid kit.



Tick the correct response in the relevant box.

True False

- | | | |
|--|--------------------------|--------------------------|
| (1) The definition of first aid is the provision of emergency treatment and life support for people suffering injury or illness. | <input type="checkbox"/> | <input type="checkbox"/> |
| (2) One of the aims of first aid is to preserve life. | <input type="checkbox"/> | <input type="checkbox"/> |
| (3) First aid can be an effective alternative to medical treatment by a doctor. | <input type="checkbox"/> | <input type="checkbox"/> |



Suggested contents for a first aid kit include:



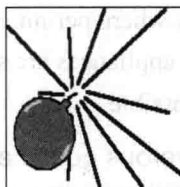
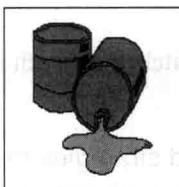
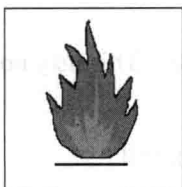
Emergency management and fire safety

The types of emergencies that could occur at a workplace depend on factors such as the type of workplace and the location of the workplace.



The types of emergencies that could occur include:

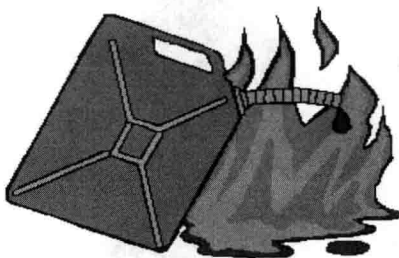
- Fire.
- Chemical spills or chemical release.
- Bomb threats.
- Structural faults in the building.
- Flooding or severe water damage.
- Threats of violence or robbery.



Examples of some of the emergencies

Fuel + heat/source of ignition + oxygen + chemical reaction = fire

Solvent + a spark + air + chemical reaction = fire



To prevent or extinguish a fire, you need to act on one of the four elements of fire:

- Source of ignition/heat.
- Fuel.
- Oxygen.
- Chemical reaction.

Examples of how to prevent fires include:

- Smoking only where permitted. Large, non-tip ashtrays should be used and everything in them should be cold before they are emptied.
- Keeping passageways and exits free from storage and waste in order to minimize combustible material.
- Promptly removing waste paper, packaging, old rags and other fire hazards.
- Ensuring that appliances (stoves, kettles. etc) are switched off each night. This should include computers and computer monitors if possible.
- Making sure that any broken electrical cords or plugs are replaced immediately. If an appliance or item of equipment smells or gives off smoke, turn it off, unplug it and do not use it again until it has been checked by a qualified technician.



● Ensuring there is plenty of air circulation space around heat-producing equipment (such as photocopiers and computers).



Tick the correct response in the relevant box.

True False

- | | | |
|---|--------------------------|--------------------------|
| (1) Only about 6% of oxygen needs to be present in the air for a fire to burn. | <input type="checkbox"/> | <input type="checkbox"/> |
| (2) If an appliance or item of equipment smells or gives off smoke, turn it off, unplug it and do not use it. | <input type="checkbox"/> | <input type="checkbox"/> |
| (3) Smoking only where permitted. | <input type="checkbox"/> | <input type="checkbox"/> |
| (4) Ensuring that appliances are switched off each night. This may not include computers and computer monitors if possible. | <input type="checkbox"/> | <input type="checkbox"/> |



Workshop dangerous goods and strategies to control

Symbols for the different classes of dangerous goods.

What do these symbols mean?





Dangerous goods are substances that may be corrosive, flammable, explosive, spontaneously combustible, toxic, oxidizing or water-reactive.

Effects on health and safety

The health and safety effects of dangerous goods are often immediate and severe.

Strategies to control dangerous goods

The preferred option to control risks arising from the use of dangerous goods is elimination.

Personal Protective Equipment (PPE) that includes overalls, aprons, gloves, dust masks, respirators, safety footwear, and goggles or face shields.



Tick the correct response in the relevant box.

True False

(1) The preferred method of controlling risks arising from the use of dangerous goods is isolation. ☐ ☐

(2) PPE stands for personal protective equipment. ☐ ☐



Look at this picture, what forms of personal protective equipment does the man use?

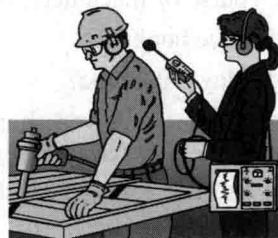
Tick the correct response in the relevant box.

☐ gloves ☐ overalls ☐ face shields ☐ goggles ☐ respirators



Noise

A sound level meter being used to test noise levels.



Strategies to control Noise hazards

Personal Protective Equipment.

Examples of personal protective equipment for noise.