



## Pre-Reading Activities

### A: How Much Do You Know?

Your teacher will give you some sentences that have been cut in half. Work in pairs and put the correct beginnings with the correct endings.

The sentences introduce you to some of the words and ideas that are found in today's articles about waste management.

### B: Listening For Information

One of the countries having problems with waste management is Japan.

Imagine you work for Japan's Environment Ministry. Below is a chart that describes the problems Japan is facing with trash, but there is some information missing. Listen to your teacher read a short article and fill the gaps in the chart with information from the article.

#### Chart - Waste Management Plan for Japan

**Environment Ministry's Aim:** To decrease the amount of waste that is buried in Japan.

2002: 56 million  of waste buried. 2010:  million tons of waste buried.

#### How will this be done?

By recycling more waste and encouraging .

#### Why does this need to be done?

Japan doesn't have many places to bury trash.

People do not want to live near a  site.

#### How will Japan make room for more trash?

By creating islands off the coast of Japan from trash.

By digging up old   and  the trash in them.

#### Problems with these steps?

There will still not be enough space.

trash can lead to the emission of carcinogenic dioxins.

#### Other ways of encouraging conservation?

Putting a  on plastic supermarket .

## Reading Activities

### A: True or False

Your teacher will give you a copy of the article you listened to about Japan. Read the statements below and decide if they are **true** **T** or **false** **F** according to the article.

1. There is little room in Japan to bury trash.
2. People in Japan do not want to live near a landfill site.
3. Burning trash produces dangerous gases.
4. It is possible to build new land out of trash.
5. The government wants to encourage Japanese to use fewer bags made of plastic.



## B: What Do You Think?

Work in pairs and answer these questions about the article on Japan, using your own ideas.

1. How else do you think the Japanese government could encourage people to recycle more and use less?
2. Why do people not want to live near a landfill site?
3. Do you think it is a good idea to make new land out of trash? What would be the advantages? Can you think of any disadvantages?

## C: Choose the Best Answer

Read **Part One** of the next article and choose the best answer for each of these questions.

1. The name '**Emerald Isle**' is used for... 
  - a. Dublin.
  - b. Wicklow.
  - c. Ireland.
2. The two diggers are... 
  - a. looking for an illegal rubbish dump.
  - b. digging a new landfill site.
  - c. burying lots of trash.
3. Experts believe that... 
  - a. there are a few landfill sites that could contaminate Wicklow's water supply.
  - b. people are hiding their rubbish in the fields around Wicklow.
  - c. there may be many other illegal rubbish dumps in the countryside around Wicklow.

### Part One

## Emerald Isle struggles to maintain green image

BY KEVIN SMITH

WICKLOW, Ireland Tue Feb 4 (Reuters) - Against the skyline in the heart of Ireland's lush Wicklow Mountains near Dublin, two mechanical diggers make an **incongruous** sight as they dig in the earth.

They are searching for an illegal dump where thousands of tons of commercial and domestic waste may have been buried, which could **contaminate** the nearby **reservoir** that supplies

most of the homes in the Irish capital.

The latest search follows the discovery of a large dump in the same area in December, which experts believe could be just one of up to 100 such sites hidden among the woodlands and fields of Wicklow. (Continued/...)

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**Glossary:** **incongruous** - strange because it doesn't look as if it should be there **contaminate** - to pollute something  
**reservoir** - a lake used to store water for a town or city

Now do the same with these questions for **Part Two** of the article:

4. Ireland's economic boom of the 1990s meant that... 
  - a. there was a lot more waste.
  - b. household waste decreased.
  - c. businesses had higher profits.
5. Most of Ireland's waste is... 
  - a. dumped illegally.
  - b. burned in an incinerator.
  - c. put into landfill.
6. Ireland... 
  - a. has been good at looking at waste management problems and thinking of how to solve the problems.
  - b. has been very slow to set up a waste disposal system for the whole country.
  - c. is worried about the waste management problem and has asked for help from the European Union.
7. A tax on plastic bags has been very successful in... 
  - a. decreasing the number that people use.
  - b. lowering the number that are thrown away.
  - c. encouraging people not to use them.

## Cleaning up after the Celtic Tiger

(.../Continued) Much of the blame for this problem is due to Ireland's "Celtic Tiger" economic boom of the 1990s when **consumption** increased the amount of commercial and household waste by 60 percent.

At the same time, landfill **capacity** - in which 90 percent of Ireland's rubbish is used - **dwindled** and years of chronic under-funding mean the country lacks alternative facilities.

There has also been strong public resistance around the country to the building of an incinerator to dispose of rubbish.

Ireland passed its Waste Management Act only in 1996, despite a European Union instruction requiring a network of waste disposal facilities in every member state in the early

1970s.

"We're lagging badly behind, and there is still significant catch-up to be done," Gerry Carty of the Environmental Protection Agency (EPA) said.

Ireland currently faces five legal cases over illegal waste brought against it by the European Commission.

On the Commission's **roll of shame** this places it ahead of Greece, Spain and Italy, but behind Britain, France and Germany.

Ireland is also at the bottom of the EU's league for waste recycling, with just eight percent being recycled compared for instance with 60 percent in Denmark.

## Where the streets have no shame

Many Irish cities and towns face a severe litter problem, with Dublin a prime example.

Again, the boom-time **proliferation** of restaurants and fast food joints, combined with a swelling population, has added to the tide of garbage.

Last year the government introduced a tax on plastic bags. The tax of 15 euro cents per bag has so far raised more than seven million euros - to be spent on the environment - and has sharply cut the estimated 1.2 billion plastic bags previously thrown away each year, many of them ending up tangled in

trees and hedgerows the length and breadth of the country.

"The attitude in Ireland is changing - the response to the plastic bag **levy** is a visible example of that. People are facing the fact that we have a problem and that they can't bury their heads in the sand," an environment ministry spokesman said.

"But litter and disposal of waste are still big issues and it does damage us - it doesn't help the lovely green image we try to portray at times."

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**Glossary:** **consumption** - the using up of something **capacity** - the maximum amount that can be contained **dwindled** - gradually became smaller **roll of shame** - a list of names of people, countries, etc. who are not respected because they have failed or done something wrong **proliferation** - the sudden increase in the number of something **levy** - an extra amount of money paid as a tax to the government

### D: Complete The Table

You are now going to read **Part One** of a Question and Answer text (on the next page) looking at one company working in the waste disposal industry. Read it and complete the table of information.

**Name of company:**

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**Name of system:**

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**Developed in 1995 by:**

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**What the system does:**

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**Examples of the materials that the system can recycle:**

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**Places in Europe where the system is being used:**

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## - What is VCU Technology?

The VCU system was developed in 1995 by Paul Brown and Graham Willson, two New Zealanders with a passion for the value of composting. They wanted to create a system that could turn organic waste into a compost product for reuse on the soil in a way that was practically and economically **viable**. VCU Technology Limited developed a unique composting system called the Vertical Composting Unit (VCU) to recycle a wide range of organic wastes, such as food scraps and food processing waste, into a nutrient-rich compost.

## - What materials can the VCU system recycle?

The VCU recycles organic (i.e. something of animal or plant origin) waste, including:

- Food scraps (for example, from homes and restaurants or food processing plants).
- Animal byproduct wastes (for example, certain body parts left over from meat or poultry food processing facilities).
- Some types of waste need to be treated before composting to aid handling and accelerate composting. For example, green waste must be shredded into smaller pieces, paper and cardboard must be chopped and wet to make a slurry, and very wet sludges and sewage go through a process called dewatering to remove some of the water.

## - Where around the world is the system being used?

There are VCU systems in operation in:

- Australia - Sydney, rural New South Wales, Lord Howe Island
- Ireland - County Kilkenny, County Kildare
- New Zealand - Auckland, Twizel and Matamata
- United Kingdom - Lincolnshire, Manchester and London (Continued/...)

**Glossary:** **viable** - successful, able to exist

## E: Comprehension

Below is **Part Two** of the Question and Answer text which describes how the VCU system operates. Read the questions and then find the answers in the text. (You do not have to understand every word of the text to answer the questions.)

1. How big is a VCU?
2. What happens before the waste is put into the VCU?
3. What takes the waste up to the top of the vertical chamber?
4. What does organic matter produce when it is breaking down?
5. What is removed from the bottom of the chamber?
6. Why does the waste need to reach 70°C inside the VCU?
7. Would it be smelly to live near a VCU?

### Part Two

(.../Continued) - Can you explain very simply how the VCU composting system works?

The VCU is an insulated vertical chamber about 13 meters tall and three meters wide.

The waste is collected beside the VCU and put through any necessary treatments, such as chopping or mixing, before it goes into a feed system. The feed system carries the waste up to the top of the chamber and feeds it into the opening. Because the composting process is continuous, the fresh waste drops on top of waste that is already starting to compost.

When organic matter starts to break down, or compost, it naturally produces heat. The VCU chamber is designed to

encourage the heat flow down the chamber and airflow up. Gravity will naturally move the composting waste down the chamber over a 7 - 14 day period. Compost is removed at the bottom of the chamber each day.

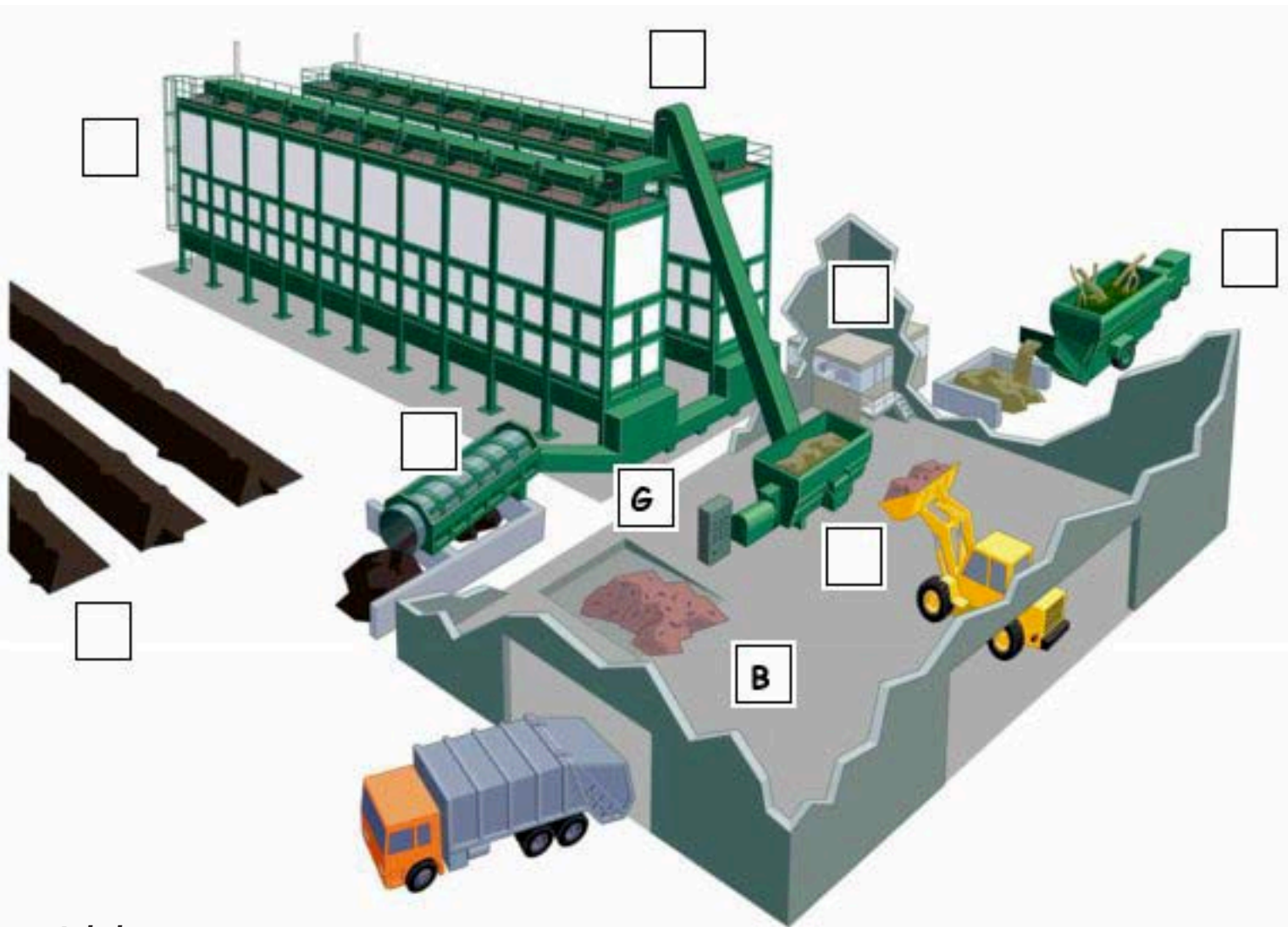
It is important that the composting waste reaches a temperature of over 70°C during the process in order to kill pathogens (bacteria, etc.) and weed seeds. The airflow up through the composting waste acts as a filter to remove odors, which is important from a practical point of view of where the VCU can be located. One VCU is located within meters of houses in central London - not all composting systems could be established in such a position. (Continued/...)

## Post-Reading Activities

You may do one or more of these.

### A: Understanding A Diagram

Look at this picture showing the VCU system in action. Below the picture are some labels. Work in pairs and read the labels. Then decide where the labels (A, B, C, etc.) go in the picture. (Two are done for you as examples.)



#### Labels

**A. SHREDDING:** Green waste and / or wood chips are needed for bulk to mix with the organic wastes. They must be shredded and mixed to a consistent size.

**B. ORGANIC WASTES:** The organic waste, such as food scraps or animal processing byproducts are delivered into an enclosed building or special storage area.

**C. CHOPPER / MIXER:** The shredded green waste is mixed with the chopped organic waste before going into the feed system.

**D. FEED SYSTEM:** Conveyors carry the mixed waste from the chopper / mixer to the top of VCU chambers, where each chamber is automatically fed individually.

**E. CONTROL STATION:** A single operator controls and monitors the whole system from an office with remote control cameras and computer systems.

**F. COMPOSTING:** The waste is composted as it moves from the top to the bottom of the chambers, over a cycle time of 7 - 28 days.

**G. HARVESTING:** The compost is removed from the chambers and carried to the end of each row before going through a screening process.

**H. SCREENING:** The screening system removes the oversized particles which are put through the composting process again. The rest is taken out to be rested / matured on a static heap.

**I. MATURATION:** Before the compost can be used, it needs to mature or rest in an outdoor pile for 2 - 8 weeks, depending on end-use requirements.



## B: Extra Reading

Here is **Part Three** of the Question and Answer text. Some words have been removed from the text. Read **Part Three** and fill the gaps with words from the list.

**animal; bacteria; buried; easier; fertilizer; fruit; garden; mess; produces; unpleasant**

### Part Three

(.../Continued) - **What is compost used for?**

Compost can be used in growing plants, from the home **1.** \_\_\_\_\_ to commercial cropping and farming operations.

Compost acts as a soil **2.** \_\_\_\_\_, returning nutrients from the organic matter used to make it into the soil it is applied to.

Compost also adds fiber and structure to almost all soil types. Clay soils become less water-logged and **3.** \_\_\_\_\_ to dig with the addition of compost. Sandy soils become able to hold water and nutrients better, thus meaning the plants produce more flowers, **4.** \_\_\_\_\_ or vegetables.

- **Why can't household and commercial waste just be burned or 5.** \_\_\_\_\_?

The organic component of waste - such as **6.** \_\_\_\_\_ or plant matter - is not normally suitable to be burned as it has a high water content and the smell would be very **7.** \_\_\_\_\_. When organic waste is buried in a landfill rubbish dump, the plant and animal material will rot or decompose, becoming a smelly wet **8.** \_\_\_\_\_ that leaches out of the landfill into the surrounding soil.

Composting is basically rotting too, but in a controlled environment that **9.** \_\_\_\_\_ a pleasant smelling, soil-like result free of **10.** \_\_\_\_\_.

## C: Language

**Part One: Also** is an adverb. It is used to...

- i. give more information about someone or something.

*'A tax on the plastic bags handed out free at supermarkets is **also** under consideration.'*

- ii. show that the same fact is true for someone or something else.

*Japan is trying to solve its waste management problems. Ireland **is also** working on its trash problems.*

Also usually comes before the main verb:

*Supermarkets are encouraging shoppers to bring their own bags. They **also sell** bags rather than give them away now.*

However, **also** comes after **be** verbs:

*'Ireland **is also** at the bottom of the EU's league for waste recycling...'*

Read the text below and circle the 'also' that is correctly placed in each sentence. When you are finished, compare your answers with someone else.

1. Last year the Irish government introduced a tax on plastic bags. The Japanese A. also government B. also is C. also thinking about a plastic bag tax.
2. Many people in Japan are very reluctant to live near a landfill site. The Irish A. also have B. also opposed the establishment C. also of new landfill sites near cities.
3. Although A. also there were the benefits of high employment and a strong economy, the boom time B. also of the 90s C. also created problems for Ireland. Consumption during that period increased household and business waste by 60%.
4. Ireland is trying to deal with the problem of illegal rubbish dumps. These are a health hazard and A. also threaten B. also Ireland's image as C. also a clean, green country.
5. Ireland is ahead of Greece and Spain on the European Commission's roll of shame. It A. also is B. also ahead C. also of Italy.
6. There are a number of health problems with landfill sites, offering, for example, a home to different pests. However, large incinerators are not the answer to waste disposal. They A. also can B. also be a health risk, C. also emitting dangerous substances.

**Part Two:** Now write your own sentences about waste management and use 'also' to give more information about something or say that something is true for someone or something else.

## D: Personal Response

Work in pairs and take turns to complete the sentences below. You may then like to write your answers so that you can share them with other pairs.

1. One thing that I have learned from today's readings is...                      2. I was surprised to learn that...
3. I think that my country has / doesn't have a problem with waste management because...
4. I think I could produce less waste by...
5. We all need to try to produce less waste so that...

# TEACHERS' NOTES AND ANSWER KEY

## Pre-Reading Activities

### A: How Much Do You Know? - Notes

Students are presented with some of the vocabulary and concepts from today's lesson. They work in pairs or groups of three to match the sentence beginnings with the correct endings. (Please note: the sentences are not in any particular order.) You will need to make copies of the sentence beginnings and endings and then cut them into strips so that every beginning and ending has been separated. (It would be a good idea to copy the texts onto colored cards for ease of sorting.) Give each group a complete set of sentence beginning and ending strips that have been shuffled and tell students to put the strips face down on a desk. When you give the signal, each group turns the strips over and begins trying to match them. When you feel everyone has had enough time to match at least some of the strips, ask everyone to stop. Students now take it in turns to read out a correct combination (i.e. a correct beginning with a correct ending). If they are right, the group gets a point. If they are wrong, the group next to them has a chance to correct their mistake. Go clockwise round all the groups until all of the sentence combinations have been read out correctly. The winners are the group to have read out the highest number of sentence combinations correctly. (If you have a small class, they can work in pairs for this activity. Otherwise, groups of three students are a successful combination for a larger class.)

### A: How Much Do You Know? - Sentence Halves To Be Cut Up and Given To Students

These are on the next page.

### A: How Much Do You Know? - Answers

An **incinerator** is an enclosed container for burning rubbish.

**Compost** is a mixture of plant matter, etc. which is added to the soil to help plants grow.

To **recycle** something means to use the thing or the materials it is made from again.

**Waste** means material that isn't needed anymore, and is thrown away.

Burning trash can be dangerous because the smoke can contain **carcinogenic** (cancer-causing) substances.

Countries often get rid of waste by burning it or **burying** it in the ground.

**Trash** is another word for rubbish.

**Landfill** is an area of land where trash is buried under layers of earth.

A **dump** is a place where large amounts of rubbish are taken and left.

**Waste disposal** means getting rid of waste.

**Litter** is paper rubbish, bottles, cans, etc. that are left lying around.

### B: Listening For Information - Notes

Give students a chance to read the chart first and think about what information might go in the gaps. Then read the text below two or three times to your students at a normal speed. Students listen and fill the gaps in the chart. They should then compare their answers in pairs or small groups.

### B: Listening For Information - Text To Be Read Aloud To Students

With its landfill sites almost full, Japan has introduced a plan to halve the amount of trash it buries by 2010.

The idea is to reduce the amount of waste buried from 56 million tons in 2002 to 28 million tons by 2010 by recycling more and promoting conservation, the Environment Ministry said.

"We are running out of places to bury our trash," said an official at the Environment Ministry, adding that objections from local people made it difficult to develop new waste disposal sites.

Several offshore islands have been created from excess landfill and the ministry's latest ideas include digging up old landfill sites and burning their contents to make room for more waste.

But even this will not provide nearly enough space, while burning trash can lead to the emission of carcinogenic dioxins.

"If we are going to deal with this problem, society itself must change," the official said.

A tax on the plastic bags handed out free at supermarkets is also under consideration.

### B: Listening For Information - Answers

Chart - Waste Management Plan for Japan

Environment Ministry's Aim: *To decrease the amount of waste that is buried in Japan.*

2002: *56 million tons of waste buried.*

2010: *28 million tons of waste buried.*

How will this be done? *By recycling more waste and encouraging conservation.*

Why does this need to be done?

*Japan doesn't have many places to bury trash.*

*People do not want to live near a landfill site.*

How will Japan make room for more trash?

*By creating islands off the coast of Japan from trash.*

*By digging up old landfill sites and burning the trash in them.*

Problems with these steps?

*There will still not be enough space.*

*Burning trash can lead to the emission of carcinogenic dioxins.*

Other Ways of Encouraging Conservation?

*Putting a tax on plastic supermarket bags.*

### Reading Activities

#### A: True or False - Text To Be Copied And Given To Students

This is on the next page.

#### A: True or False - Answers

1. T, 2. T, 3. T, 4. T, 5. T.

#### B: What Do You Think? - Sample Answers

1. Answers could include public awareness campaigns on television and radio, school education campaigns, taxes on companies who make products with non-recyclable wrapping, some kind of reward system for people and businesses that recycle.

2. The smell and the risk of disease. They are ugly to look at. Value of privately-owned land is lower. The threat of pests like rats that often live near a landfill site.

3. Advantages: creating land in places where land is scarce; using up landfill instead of burning it or just burying it. Disadvantages: the cost; it may not be as safe, especially in an earthquake zone.

#### C: Choose the Best Answer - Notes

Encourage students to read the questions and predict the answers before they read the article. This will prepare them to read and better understand the text.

#### C: Choose the Best Answer - Answers

Parts One and Two

1. c, 2. a, 3. c, 4. a, 5. c, 6. b, 7. b.

#### D: Complete The Table - Answers

Name of Company: *VCU Technology Limited*

Name of system: *Vertical Composting Unit (VCU)*

Developed in 1995 by: *Paul Brown and Graham Willson*

What the system does: *turns organic waste into compost*

Examples of the materials that the system can recycle: *organic waste (Students can use any of the waste items from the list, e.g. food scraps, green waste, paper and cardboard, etc.)*

Places in Europe where the system is being used: *the United Kingdom and Ireland*

#### E: Comprehension - Answers

1. 13 meters tall and three meters wide. 2. It is put through any necessary treatments like chopping or mixing. 3. The feed system. 4. Heat. 5. Compost. 6. To kill pathogens and weed seeds. 7. No.

### Post-Reading Activities

#### A: Understanding A Diagram - Answers

Please see next page.

#### B: Extra Reading - Answers

1. garden, 2. fertilizer, 3. easier, 4. fruit, 5. buried, 6. animal, 7. unpleasant, 8. mess, 9. produces, 10. bacteria.

#### C: Language - Notes

**Part Two:** Look carefully at the sentences to see whether students have put **'also'** in the right positions.

#### C: Language - Answers

Part One

1. (C) Last year the Irish government introduced a tax on plastic bags. The Japanese government is **also** thinking about a plastic bag tax.

2. (B) Many people in Japan are very reluctant to live near a landfill site. The Irish have **also** opposed the establishment of new landfill sites near cities.

3. (C) Although there were the benefits of high employment and a strong economy, the boom time of the 90s **also** created problems for Ireland.

Consumption during that period increased household and business waste by 60%.

4. (A) Ireland is trying to deal with the problem of illegal rubbish dumps. These are a health hazard and **also** threaten Ireland's image as a clean, green country.

5. (B) Ireland is ahead of Greece and Spain on the European Commission's roll of shame. It is **also** ahead of Italy.

6. (B) There are a number of health problems with landfill sites, offering, for example, a home to different pests. However, large incinerators are not the answer to waste disposal. They can **also** be a health risk, emitting dangerous substances.

**Part Two:** Answers will vary.

**A: How Much Do You Know? - Sentence Halves To Be Cut Up and Given To Students**

An <b>incinerator</b> is...	...another word for rubbish.
<b>Waste</b> means...	...burning it or <b>burying</b> it in the ground.
<b>Compost</b> is...	...is a place where large amounts of rubbish are taken and left.
To <b>recycle</b> something means...	...the smoke can contain <b>carcinogenic</b> (cancer-causing) substances.
Countries often get rid of <b>waste</b> by...	...an enclosed container for burning rubbish.
Burning trash can be dangerous because...	...to use the thing or the materials it is made from again.
Trash is...	...a mixture of plant matter, etc. which is added to the soil to help plants grow.
<b>Landfill</b> is...	...an area of land where trash is buried under layers of earth.
A <b>dump</b> ...	...that are left lying around.
<b>Litter</b> is paper rubbish, bottles, cans, etc...	...getting rid of waste.
<b>Waste disposal</b> means...	...material that isn't needed anymore, and is thrown away.

**A: True or False - Text To Be Copied And Given To Students**

**Overflowing Japan tries to put a lid on trash.**

TOKYO Fri March 14 (Reuters) - With its landfill sites almost full, Japan has launched a plan to halve the amount of trash it buries by 2010.

The idea is to reduce the amount of waste buried from 56 million tons in 2002 to 28 million tons by 2010 by recycling more and promoting conservation, the Environment Ministry said.

"We are running out of places to bury our trash," said an official at the Environment Ministry, adding that objections from local people made it difficult to develop new waste disposal sites.

Several offshore islands have been created from excess landfill and the ministry's latest ideas include digging up old landfill sites and burning their contents to make room for more waste.

But even this will not provide nearly enough space, while burning trash can lead to the emission of carcinogenic dioxins.

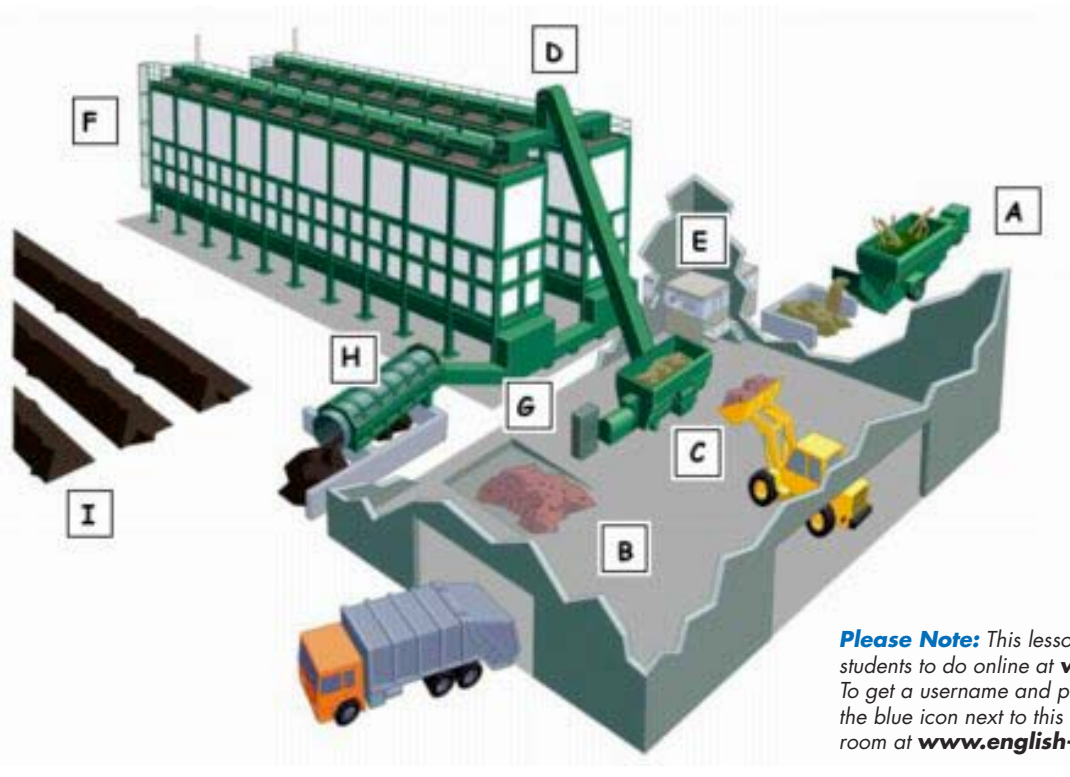
"If we are going to deal with this problem, society itself must change," the official said.

A tax on the plastic bags handed out free at supermarkets is also under consideration.

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**Post-Reading Activities**

**A: Understanding A Diagram - Answers**



**Please Note:** This lesson also has further exercises for your students to do online at [www.instantworkbook.com](http://www.instantworkbook.com). To get a username and password for your students, click on the blue icon next to this lesson description in the teachers' room at [www.english-to-go.com](http://www.english-to-go.com).