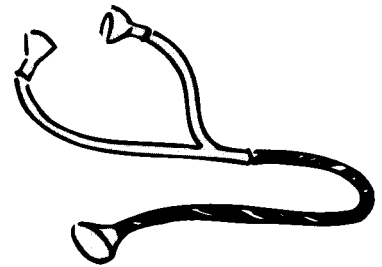


# SCIENCE A C R O S S EUR\*O\*PE

**BP Amoco**



Keeping Healthy  
Gesund bleiben  
Mantenerse en forma y Saluda  
Vivre en bonne sante  
Mantenersi sani  
Haja Saude!



# Keeping healthy

*This unit will fit in the biology curriculum and links closely with the study of health and disease.*

*In Part 1 students survey health problems: some of which they treat at home and some of which need expert attention.*

*In Parts 2 and 3 the students look at conventional and alternative forms of health care. The activities include surveys, interviews and a fitness test.*

*The students exchange findings with students in other countries. Then they discuss similarities and differences in the patterns of health and diseases.*

*The work is also suitable for lessons in health education, home economics and general science.*

## This unit is in six parts

### Part 1 Causes of diseases and common health problems

Gathering of information and discussion.

### Part 2 What we do to cure sickness

Survey of medicines and treatments found in the home.

### Part 3 Caring for our health

Finding out ways to keep healthy through interview, fitness test and gathering of information.

### Part 4 Exchanging information

Collation of information and exchange with other schools.

### Part 5 Comparing information from other countries

Comparisons and discussion of responses from different countries.

### Part 6 Information section

## The aims of the unit are:

- To increase students' awareness of the importance of the way they live in determining good health.
- To compare aspects of health care and health awareness in different countries.
- To increase students' awareness of common diseases, and diseases caused by people's way of life.

## Prior knowledge and skills

The unit is intended for use with students ages 12-16. It is assumed they will have the following prior knowledge and skills.

## Concepts and knowledge

Before the students use this unit, they should have received basic health education, studied diseases caused by micro-organisms and learnt about immunisation.

## Skills

### Students should be able to:

- measure distance and time for the fitness tests
- chart the results
- plan a survey
- conduct an interview
- extract information from tables

## Instructions for teachers

One way to use this unit requires students to research and investigate health problems or solutions individually. Then to bring their ideas and produce a class agreement as to the most important issues. A way to approach this is to put small groups of students together to write agreed answers to the questions. Then to take the outcomes of this and amalgamate the groups to agree answers using what the groups have written for the Exchange Form.

### Requirements

Before the beginning of the unit provide photocopies of the students' pages for each group of students.

### Part 1

For the discussion activity each group of students may need a sheet of paper for listing health issues. They will also need access to reference books, textbooks and other sources of information to research the causes of health problems.

### Part 2

Access to attendance records may be helpful.

### Part 3

Fitness test – a large open space, a whistle and stopwatch will be needed.

Healthy lifestyles – access to health education resources such as magazines, leaflets and telephone health lines will be needed.

### Part 4

Students will need a few copies of the Exchange Form to send their findings to other schools. If you have INTERNET access, (<http://www.bp.com/saw>) your students can complete the form on-screen and then send it to other schools by e-mail or fax.

## Teachers' Notes

### Part 1 Causes of poor health.

Brainstorming and questions about illness will require large sheets of paper and felt tip pens. Collect information about the three commonest illnesses. Writing about infectious organisms and causes of illness (question 3) may need textbooks and teacher input.

1. The reason we have asked students to omit AIDS, drugs and smoking is that these could dominate responses in all countries.

2. In order to facilitate discussion you may need to do some preliminary teaching of the biological aspects of the problem e.g. difference between bacteria and viruses.

To facilitate debate the class may be divided into groups each discussing and writing about one topic. The student notes mention region because some countries might have interesting regional differences in health.

On stress you may suggest examination, personal relationships, pressures of modern

Students should consider the causes of asthma, diabetes, allergies and eye strain. This may be done under the heading "other". Social causes e.g. poverty can also be mentioned. There are statistics available giving regional differences on infant mortality.

Under pollution consider both low and high level ozone and seasonal pollutants.

### Part 2 What do you do to cure sickness?

3 and 4. Survey of home medicines. This needs to be set as a homework task and then collated at a future date.

5. Students may need to consult registers or class records to remind themselves of how many absences they have had over the last 3 months/ 6 months/ year.

6 and 7. Research is required by the students and this will need to be done out of class time. The results are then collated.

In this part of the unit students will discuss the importance and effectiveness of traditional and modern forms of health care. The activities are so designed to avoid the assumption that one form of health care is superior to any other.

### Part 3 Care for your health

This part is best approached as two activities.

#### Fitness testing

For this activity you will need an open space. A school running track is ideal as it is easy to record the distances. Two markers a set distance e.g. 100 metres apart is an alternative to a running track.

Teachers may use their own method to measure fitness as an alternative to this simple example. Teachers may also use this opportunity to measure heart rate recovery.

Students should not take part in the fitness test if they are ill or injured.

#### Sports Activities and exercises

9-11. Require a class survey to be carried out. A simple tally chart of class results should be produced.

#### Healthy Lifestyles and improving health

12. This can be tackled by discussion groups, either by one group tackling each section, or by collating the results from each small group (using the groups of 3 method as outlined previously).

Brainstorming activities require a large sheet of paper. Interviews of adults need permission and arrangement. Local research and information sources are also needed. Collate the information to provide answers to question 12.

### Part 4 Exchanging information

When the students have completed parts 1,2 and 3, the class has to agree on what to write on the Exchange Form. Send copies of the form to the schools with which you have arranged to exchange information.

### Part 5 Comparing information from other countries

When you have received the Exchange Forms from other schools, copy the Exchange Forms that you have received and the classes' own Exchange Forms for comparison and analysis. After receiving Exchange Forms from other schools, compare and discuss the responses with the help of the questions.

### Further activities

Here are some suggestions.

1. Interview a grandparent or person of similar age to find out what have been the major changes in health care over the last fifty years.
2. Do some research on plants with medicinal values. Make a wallchart and take photographs of the plants.
3. Contact a local hospital or a local doctor to find out what they regard as the major health problems in your region.
4. What simple scientific equipment is there that doctors use to help them make diagnoses? Investigate the scientific principles of how it works.
5. What modern diagnostic equipment is there in your area to help the doctors? Is the expense of the equipment a major factor?

### Acknowledgements

The statistics in the tables for the information section have been supplied by:

- *Population Concern, 1996 World Population Data Sheet*
- *1997 World Development Indicators, The World Bank, Washington*
- *Population Reference Bureaus 1996 The World's Youth*
- *Progress of Nations 1996, UNICEF*



# Science Across the World

## Keeping Healthy

Date

To  
(teacher's name)

School

Address

Tel: (with international  
dialling code)

Fax

E-mail

Web address of school

We understand that your class is studying the subject of keeping healthy. We would like to exchange information on attitudes towards health care and the type of health problems with their treatment. Our students are looking forward to hearing from your class

From  
(teacher's name)

School

Address

Tel: (with international  
dialling code)

Fax

E-mail

Web address of school

### Part 1 Causes of diseases and common health problems

1. These are three common health issues that concern people our age.  
(Excluding AIDS, drugs and smoking.)

.....  
.....  
.....

2 In our region, the following causes of health problems are among the most frequent, or the most difficult to cure:

- Infectious organisms. ....
- Hereditary diseases. ....
- Stress. ....
- Lifestyle. ....
- Sports injuries. ....
- Environmental factors that cause health problems. ....

Accidents:

- at home. ....
- at school. ....
- travelling. ....

### Part 2 What we do to cure sickness

3. Survey of home medicines.

Problem	Medicine	Active ingredients (if possible to identify)

4. Sometimes we use the following alternatives.

Problem	Medicine	Active ingredients (if possible to identify)

5. There are . . . . . students in our class.

The number of students who have been ill and taken time off school in the last . . . . . months is . . . . .

On average, the students who were sick in our class, in the last . . . . . months, took . . . . . days off school when ill.

The range was from . . . . . days (shortest) to . . . . . days (longest).

Here are two examples to show what we do to get better when we are ill and absent from school.

6. If there is a serious accident near our home, on average it takes us . . . . . hours and minutes to get to a hospital emergency department from home.

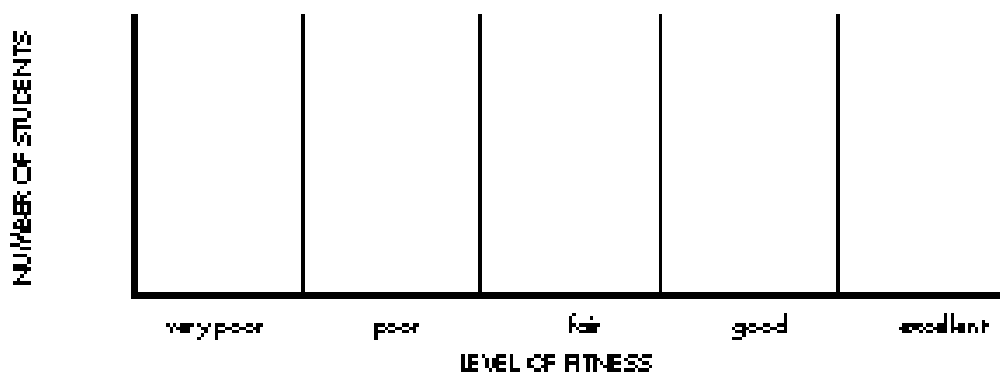
7. In our country, or region, the costs of prescribed medicine are . . . . .

Of this our family pays . . . . .

The groups of people who pay lower costs are: . . . . .

### Part 3 Caring for our health

8. This bar chart shows the level of fitness of our class. (Add a scale to the vertical axis.)



9. In our class timetable we have lessons where we exercise . . . . . times a week for a total of . . . . . minutes

10. Out of school the number of students and the type and frequency of exercise are as follows:

Frequency of exercise	No. of students	Type of exercise
never		
once a week		
several times a week		

11. The most common form of exercise our class does out of school is:

i . . . . .

ii . . . . .

iii . . . . .

12. Things we can do to improve our health:

at home . . . . .

at school . . . . .

in the local community . . . . .

nationally . . . . .

# Keeping Healthy

You are going to contact students in other European countries about keeping healthy. You may also exchange ideas and information with students studying this topic in other parts of the world.

In parts 1, 2 and 3 you will find activities which will help you collect information you need to fill in the Exchange Form.

The activities are numbered to match the numbering of the Exchange Form.

## Part 1 Causes of disease and common health problems

In this part of the unit you will gather information about the causes of poor health.

1. On your own, write down on a piece of paper the three health issues which you think most concern young people. (Leave out the topics of AIDS, drugs and smoking.) Do not write your name on the paper.

Now collect the papers from all the students in your class. Identify the three most common issues.

2. Look at the topics below. Write a paragraph about each saying how they cause health problems in your region. Pay particular attention to the problems that are common or difficult to cure. Divide up the task between the groups in your class.
  - Infectious organisms: viruses, bacteria, fungi, parasites
  - Hereditary (genetic) disease
  - Stress
  - Lifestyle (for example the effects on health of loud music, diet, lack of exercise, excessive sunbathing, watching TV, using computers and so on)
  - Sports injuries
  - Accidents: at home, at school or when travelling
  - Environment  
(consider such things as air and water pollution, allergens, radiation, agricultural chemicals)

Compare notes with the findings of others in your class, and agree on a list of the causes of health problems which are common or difficult to cure.

## Part 2 What we do to cure sickness

### Medicines in the home

- Check with your parents/guardians the types of modern medicines you have in your home. Categorise the types of medicines – for example painkillers, anti-diarrhoea, antiseptic, decongestant.

As a class discuss your findings and fill in the table below to show what medicines are commonly found in the homes of the majority of students.

Problem	Medicine	Active ingredients (if possible to identify)

- Identify any alternative medicines used by people in your class or their families. Record your findings in a table. What alternative medicines are used by the class. Fill in the table below.

Problem	Medicine	Active ingredients (if possible to identify)

- Conduct a class survey. Fill in the questionnaire below and collate the results.

No. of times I have been ill . . . . . in the last . . . . . months.

When I was ill I was absent from school for . . . . . days.

These are the things that were done to help me to recover from illness:

- If there is a serious accident near your home, estimate how long it takes to get to a hospital accident and emergency department? Work out an average time for your class and note the range of values.

. . . . . hours . . . . . minutes.

7. Find out from adults, such as pharmacists, teachers, doctors or people in the media who pays the cost of the medicines you are given.

How much of the cost does your family pay?

Are there different charges for different groups of people (such as children, old people, chronically sick people)?

In your groups discuss your answers and use them to fill in the Exchange Form.



*Getting a prescription made up*

### Part 3 Caring for our health

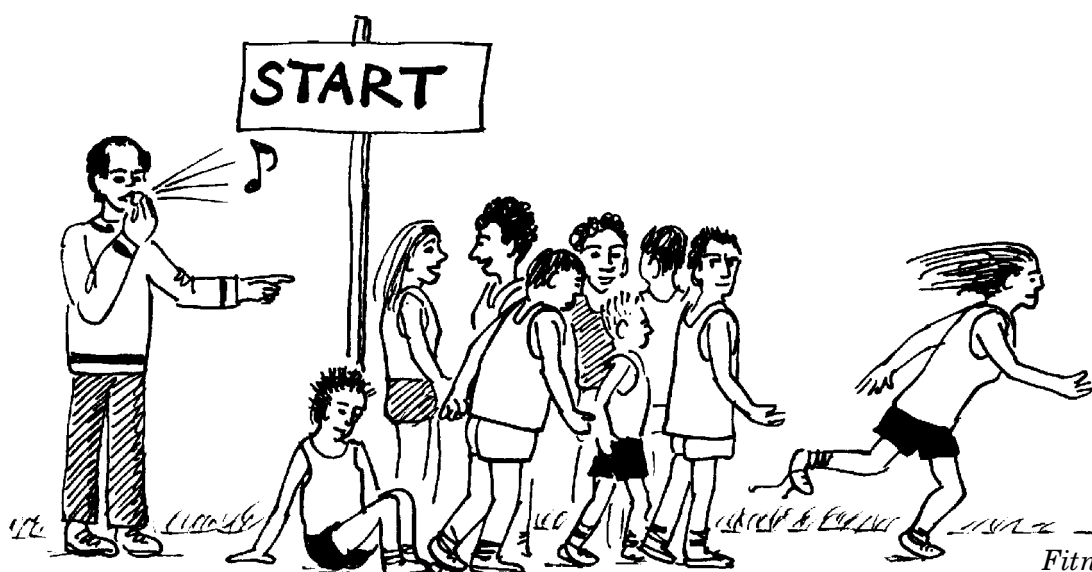
#### Fitness testing

8. Determine the level of fitness of the class. You can either use a method selected by your teacher or the 12-minute test described here.

The 12-minute fitness test was designed by Dr Kenneth H. Cooper of San Antonio, Texas, USA. The test provides a practical method of measuring and comparing the fitness of large numbers of people. The procedure for the test is shown below, followed by the standard values for the various levels of fitness.

#### Procedure

- Divide yourselves into two groups. One group will do the activity while the other will help to conduct it. Then the two groups will switch roles.
- The group doing the activity will stand behind the starting line on a track.
- When the whistle is blown, start running or walking as far as possible.
- When the whistle is blown after 12 minutes, the runners must stop where they are.
- The helper must note the distance covered in 12 minutes.
- Determine the fitness level of each student, based on this standard fitness table.

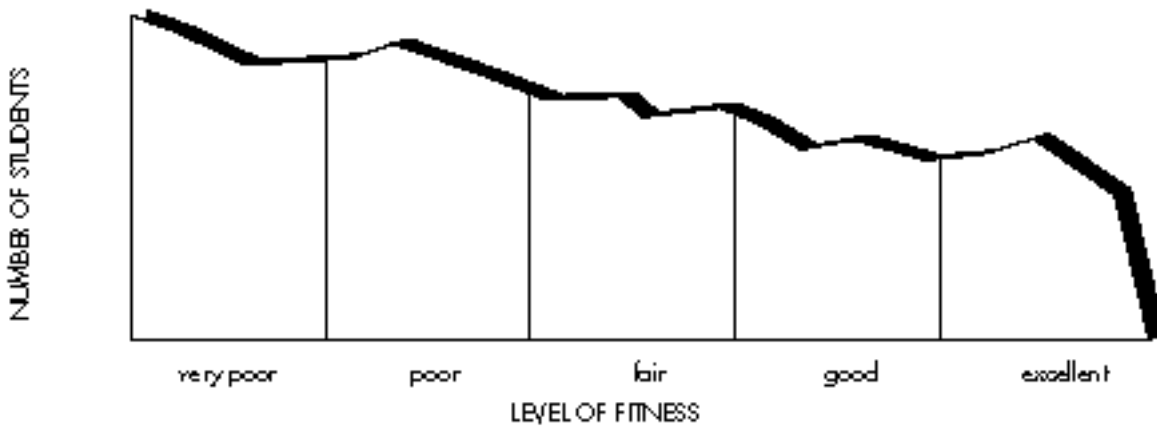


*Fitness test*

Level	Distance (km)	
	Male	Female
Excellent	greater than 2.81	greater than 2.65
Good	2.41 - 2.80	2.17 - 2.64
Fair	2.01 - 2.40	1.85 - 2.16
Poor	1.60 - 2.00	1.53 - 1.84
Very poor	less than 1.60	less than 1.53

Credit: This activity is taken from *KBSM Biologi Tingkatan 4 1991, Perniagaan Harap, p 207*

Plot a bar chart to show the level of fitness of students in your class.

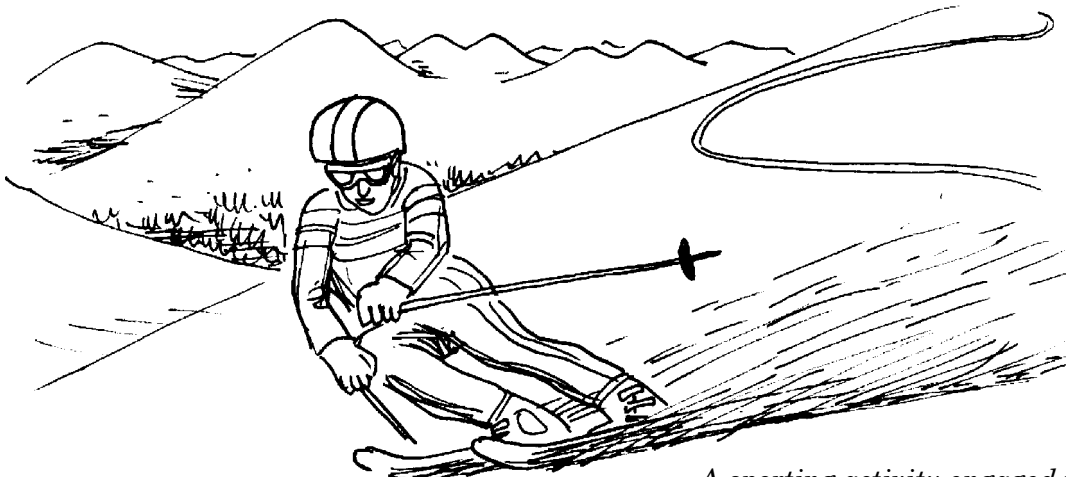


### Sports activities and exercises

- Note the number of times your class has timetabled lessons for sports or physical activities/exercises in a school week.

What is the total time given to those activities/exercises?

- Investigate other forms of sports activities/exercises that are done outside school hours.



*A sporting activity engaged in outside the school*

Record the figures for your class in a table.

Frequency of exercise	No. of students	Type of exercise
never		
once a week		
several times a week		

11. Survey the class to find out the three common types of exercise, sports or physical activities out of school.

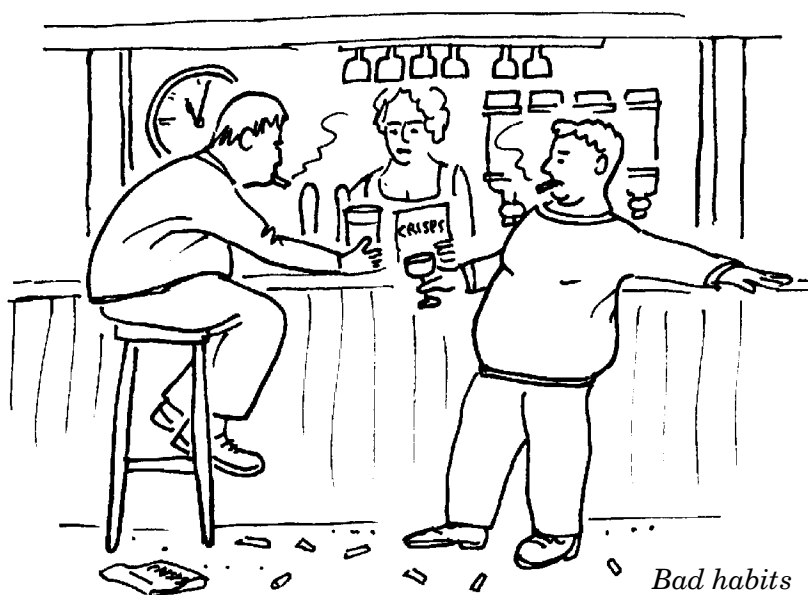
### Healthy lifestyles

12. It is important to consider healthy living. Investigate ways to improve your health. Write a paragraph for each of the sections below.

Use these methods:

- Look at health magazines, leaflets and books.
- Recall suggestions made on the TV and radio.
- Brainstorm words associated with health in small groups and share with the class.
- Find out common beliefs in your region/community about staying healthy.
- What are the common beliefs in your region. Do you agree/disagree with these beliefs? Explain your answer.
- What bad habits are you told to avoid by parents, teachers, public health campaigns and others?

- \* at hor
- \* at sch
- \* in the
- \* natio



## Part 4 Exchanging information

In this part of the unit you will exchange information with students in different countries. Your teacher has an Exchange Form which contains questions similar to those you answered in parts 1, 2 and 3. As a class decide what information to write on it.

Send the form to students in other countries by post, fax or e-mail. Your teacher has a list of schools in other countries that are studying the same unit of work. You can access the database of schools on the INTERNET.

*An electronic igloo*



If you have INTERNET access, you can complete and send the Exchange Form on line at this World Wide Web site: <http://www.bp.com/saw>

Your class will receive Exchange Forms from other schools in return.

## Part 5 Comparing information from other countries

When you have received the Exchange Forms, discuss the following.

1. Are there any similarities or differences between other countries and your own regarding:

- health problems for people your age
- common infectious diseases in that country
- how diseases are passed to other people
- what hereditary diseases are common
- the effect of stress on health
- the effect of lifestyle on health
- common sporting ailments
- common accidents

2. What similarities are there between the medicines used to treat the same ailments in different countries?

What alternative medicines are used in other countries?

Are more alternative medicines used in other countries than where you live?



3. Make bar charts comparing reasons for school absence in different countries.

4. Choose several categories for health care such as:

- time taken to get to hospital
- use of homeopathy and alternative medicine
- cost of medicines

*A doctor's visit among the Dai people of Yunnan province - how does this compare to a "typical" European visit by the doctor?*

Make up a system to produce a score out of ten marks for each category, where ten marks indicate the best health care. Use this system to compare the replies from other countries.

5. Use the information you receive to compare these factors:

- level of fitness of students
- frequency and duration of exercise in school
- number of students doing exercise, including type and frequency, out of school

6. Have you become aware of any other harmful habits which people in other areas/regions/countries avoid?

How do the main health issues compare from country to country?

## Part 6 Information section

	Population mid-1996 (millions)	Natural population changes (annual %)	Births per 1,000 population	Deaths per 1,000 population
Albania	3.3	1.7	23	6
Austria	8.1	0.1	11	10
Belarus	10.3	-0.3	10	13
Belgium	10.2	0.1	12	10
Bosnia-Herzegovenia	3.6	0.6	13	7
Bulgaria	8.4	0.4	9	13
Croatia	4.4	0.0	11	11
Czech Republic	10.3	-0.1	10	11
Denmark	5.2	0.2	13	12
Estonia	1.5	-0.5	9	15
Finland	5.1	0.3	13	10
France	58.4	0.3	12	9
Germany	81.7	-0.1	9	11
Greece	10.5	0.1	10	9
Hungary	10.2	-0.3	11	14
Ireland	3.6	0.5	13	9
Italy	57.3	-0.1	9	10
Latvia	2.5	-0.7	9	16
Lithuania	3.7	0.0	12	12
Luxembourg	0.4	0.4	14	9
Macedonia	2.1	0.8	16	8
Moldova	4.3	0.3	14	12
Netherlands	15.5	0.4	13	9
Norway	4.4	0.4	14	10
Poland	38.6	0.2	12	10
Portugal	9.9	0.1	11	10
Romania	22.6	-0.2	10	12
Russia	147.7	-0.5	9	15
Slovakia	5.4	0.3	12	10
Slovenia	2.0	0.0	10	10
Spain	39.3	0.1	9	9
Sweden	8.8	0.1	12	11
Switzerland	7.1	0.3	12	9
Turkey				
Ukraine	51.1	-0.5	10	15
United Kingdom	58.8	0.2	13	11
Yugoslavia	10.2	0.3	13	10

Table a: *General population statistics*

	Number of births per 1,000 women ages 15-19, (1990-1995)	Natural changes (annual %)
Albania	14	1.7
Austria	23	0.1
Belarus	28	-0.3
Belgium	10	0.1
Bosnia-Herzegovenia	33	0.6
Bulgaria	59	0.4
Croatia	32	0.0
Czech Republic	46	-0.1
Denmark	10	0.2
Estonia	34	-0.5
Finland	13	0.3
France	9	0.3
Germany	13	-0.1
Greece	22	0.1
Hungary	40	-0.3
Ireland	16	0.5
Italy	9	0.0
Latvia	35	-0.7
Lithuania	32	0.0
Luxembourg	13	0.4
Macedonia	42	0.8
Moldova	38	0.3
Netherlands	7	0.4
Norway	19	0.4
Poland	28	0.2
Portugal	25	0.1
Romania	41	-0.2
Russia	37	-0.5
Slovakia	44	0.3
Slovenia	30	0.0
Spain	12	0.1
Sweden	13	0.1
Switzerland	5	0.3
Turkey		
Ukraine	43	-0.5
United Kingdom	33	0.2
Yugoslavia	43	0.3

Table b: *Births*

	Injury deaths per 100,000 children aged 5-14 years 1991-1993		
	Boys	Girls	% caused by motor vehicles
Albania			
Austria	10.0	7.3	51
Belarus	22.4	8.6	29
Belgium			
Bosnia-Herzegovina			
Bulgaria	19.4	7.9	32
Croatia			
Czech Republic	11.9	5.7	48
Denmark	8.4	6.9	58
Estonia	28.1	12.7	35
Finland	10.9	3.2	43
France	7.9	4.7	58
Germany	7.5	3.8	57
Greece	8.2	6.1	66
Hungary	12.0	6.2	55
Ireland	10.3	2.8	52
Italy	9.0	3.4	61
Latvia	38.6	15.7	37
Lithuania	27.0	13.8	36
Luxembourg			
Macedonia			
Moldova			
Netherlands	6.9	4.6	67
Norway	9.7	4.3	32
Poland	13.0	6.4	53
Portugal	12.5	6.2	74
Romania			
Russia	39.6	16.4	30
Slovakia			
Slovenia	7.9	3.8	63
Spain	11.0	5.6	56
Sweden	4.9	3.7	58
Switzerland	8.6	4.9	56
Turkey			
Ukraine	28.6	13.0	27
United Kingdom	7.2	3.4	62
Yugoslavia			

Table c: Deaths in young people

	Percent, age		Ages 10-24 (millions)		Life expectancy at birth (years)		
	younger than 15	older than 65	1996	predicted for 2025	Total	Male	Female
Albania	33	6	1.0	1.0	72	70	76
Austria	18	15	1.5	1.3	77	73	80
Belarus	22	12	2.3	1.8	69	64	74
Belgium	18	16	1.9	1.7	76	73	80
Bosnia-Herzegovenia	23	7	0.8	0.8	72	70	75
Bulgaria	19	15	1.9	1.3	71	68	75
Croatia	20	12	0.9	0.7	71	66	75
Czech Republic	19	13	2.4	2.0	73	70	77
Denmark	17	15	0.9	0.8	75	73	78
Estonia	20	13	0.3	0.3	70	64	75
Finland	19	14	1.0	1.0	77	73	80
France	20	15	11.9	10.4	78	74	82
Germany	16	15	14.0	10.4	76	72	79
Greece	18	13	2.1	1.4	77	75	80
Hungary	18	14	2.2	1.7	70	65	74
Ireland	25	11	1.0	0.8	76	74	79
Italy	15	16	10.8	7.0	77	74	80
Latvia	21	13	0.5	0.4	67	61	73
Lithuania	22	12	0.8	0.8	69	63	75
Luxembourg	18	14	-	-	76	73	79
Macedonia	24	8	0.5	0.5	72	70	74
Moldova	27	9	1.1	1.1	68	64	72
Netherlands	18	13	2.9	2.5	77	74	80
Norway	19	16	0.8	0.9	78	75	81
Poland	23	11	9.5	8.4	72	68	76
Portugal	18	14	2.2	1.6	75	71	78
Romania	21	12	5.4	3.7	70	66	73
Russia	21	12	33.0	24.4	65	57	71
Slovakia	23	11	1.3	1.2	72	68	77
Slovenia	19	12	0.4	0.3	73	69	77
Spain	17	15	8.7	5.3	77	73	81
Sweden	19	17	1.6	1.7	78	76	81
Switzerland	18	15	1.3	1.2	78	75	82
Turkey							
Ukraine	20	14	11.1	8.8	68	63	73
United Kingdom	19	16	11.2	10.7	77	74	79
Yugoslavia	22	11	2.5	2.3	72	69	74

Table d: Age distribution

	Health expenditure 1990-1995 % of GNP	People per physician 1993	People per nurse 1993
Albania		735	
Austria	9.7	231	
Belarus	6.4	236	89
Belgium	8.2	274	
Bosnia-Herzegovenia			
Bulgaria		306	162
Croatia	10.1		
Czech Republic	9.9	273	
Denmark	6.6	360	153
Estonia		253	127
Finland	8.3	406	101
France	9.7	334	
Germany	9.5	367	
Greece	6.4	312	403
Hungary	7.3	306	321
Ireland	7.9	632	153
Italy	8.3	207	333
Latvia		278	118
Lithuania		235	92
Luxembourg			
Macedonia	7.7	427	
Moldova		250	90
Netherlands	8.8	399	123
Norway	7.3	308	73
Poland		451	189
Portugal	7.6	353	
Romania		538	
Russia	4.8	222	90
Slovakia		287	105
Slovenia			
Spain	7.4	261	262
Sweden	7.7	394	108
Switzerland	9.6	580	
Turkey	4.2	976	1,098
Ukraine		227	87
United Kingdom	6.9		202
Yugoslavia		232	810

Table e: Health care

## Suggested activities

An electronic version of the data section is available. Details are to be found on the web site.  
<http://www.bp.com/saw>

### Table a

1. Produce a bar graph to compare the populations of the European Countries.
2. Group the different areas of Europe together. Can you find any trends in the data set when it is grouped like this?

### Table b

3. Produce a map using different colours to show the birth rate in different countries. Is there a pattern?

### Table c

4. Identify any patterns in the data. Can you produce a theory to explain this pattern?
5. Does the number of road deaths correlate with either the region or the number of deaths per 100,000?
6. Devise a theory about behaviour that can explain the difference in boys' and girls' deaths.

### Table d

7. Select and compare some countries with high populations in the less than fifteen years age range with countries that have high numbers of people over sixty five years of age. Find a way (graphically) to relate these population statistics.

### Tables d and e

8. Does health expenditure have any effect on life expectancy? If so, devise a method to illustrate this and explain how the method works. What pattern if any do you find?
9. Compare life expectancy for males and females. Are there any Europe wide patterns? Are there any regional patterns? Do any of these statistics surprise you? Produce some charts to show interesting variations.

## Acknowledgements

The statistics in the tables for the information section have been supplied by:

- *Population Concern, 1996 World Population Data Sheet*
- *1997 World Development Indicators, The World Bank, Washington*
- *Population Reference Bureaus, 1996 The World's Youth*
- *Progress of Nations 1996, UNICEF*