

Unit 1 AIR POLLUTION

Text A Particles

Part 1

It is only within the last decade that we have realized how dangerous airborne particles actually are. It has long been known that soot, particles and sulfur dioxide contribute to coughing and respiratory disease.

There have been two main problems. For one thing, it has been extremely difficult to differentiate between the effects of the various forms of pollution.

The second problem is that we do not know *how and why* particles cause people to die. It is thought that particles enter the lungs and gain a foothold.

Until the middle of the 1980s all particles were measured and classified as soot or smoke.

The smallest particles come from combustion in motor vehicle engines, power stations and industry as well as from fire-places and wood burning stoves. The slightly larger particles come from dust and mechanical wear and tear. Although only 10 percent of all particles are man-made they are the most common in our urban environment.

The emission of SO₂ causing much of the particle pollution has fallen dramatically - in the EU by about 50 percent since 1980 and in the US by about 37 percent since 1970. This has been achieved: 1) by reducing consumption of fossil fuels, especially high-sulfur coal; 2) by using smoke scrubbing equipment on power plant smokestacks; 3) by increasing energy efficiency.

The political decision to limit sulfur emissions is closely linked to the question of acid rain. The fear of acid rain proved to be grossly exaggerated. The SO reduction efforts turned out to be reasonable because they helped to reduce the particle pollution.

Part 2

However, reductions in urban areas have several other causes. Historically, a move away from sitting power plants in urban areas and the use of taller smokestacks were two of the primary causes of pollution reduction. At the same time we no longer use coke ovens and we have reduced our dependence on oil central heating, having instead changed to natural gas and district heating. Finally, cars pollute much less because of catalytic converters. The diesel vehicles now use low-sulfur diesel oil. However, compared to gasoline cars, diesel cars pollute much more. Although diesel cars make up only 6 percent of the total car park, they

contribute 92 percent of all vehicle emissions. Thus, a marked increase in the use of diesel cars could slow the decline in particulate emissions.

Specialist literature has contained a lot of discussion about the degree to which legislation has been crucial to the reduction of air pollution. Many studies have not been able to document any noteworthy effect.

In a study of three US cities, it was found that the mandated pollution control had an effect, but that the effects of regulatory control “generally have been overshadowed by the effects of economic changes, weather and other factors.” Generally it is probably fair to say that regulation is one of the reasons for the reduction of pollution but that other, technological factors also play a major role.

In conclusion, it is worth emphasizing that particle pollution is the most important air pollutant, and consequently the most important pollutant of all.

VOCABULARY 1:

Airborne	Воздушный	Urban	Городской
Particle	Частица	Partly	Частично
Sulfur	Сера	Dramatically	Совершенно
Contribute	Способствовать	Consumption	Потребление
Coughing	Кашель	Fossil	Ископаемое
Respiratory	Дыхательный	Fuel	Топливо
Lang	Легкие	High-sulfur	Высокосернистый
To enter	Проникать	Coal	Уголь
Combustion	Горение	Smokestack	Дымовая труба
Stove	Печь	Decision	Решение
dust	Пыль	Fear	Опасения
although	Хотя	Grossly	Чрезвычайно
Man-made	Искусственный	To exaggerate	Преувеличивать
Reasonable	Разумный	To gain a foothold	Укрепить
Mechanical wear and tear	Износ	Smoke scrubbing	Воздухоочистительные

EXERCISE 1

Найдите эквиваленты в тексте: различать оказываемое влияние, различные формы загрязнения, предполагается, весьма распространенные, значительное уменьшение, увеличение эффективности потребления энергии,

полностью овладеть умами людей, ограничить выброс серы, рассмотреть позднее, оказаться разумными, намного больше.

EXERCISE 2

Составьте список мер, принятых в защиту окружающей среды. Подтвердите словами из текста, насколько они оказались эффективными.

EXERCISE 3

Составьте список источников загрязнения воздуха.

EXERCISE 4

Ответьте на вопросы: 1. When have we understood how dangerous air pollution is? 2. What two main problems do we have today? 3. Where do air particles come from? 4. What measures have been taken recently to reduce particle levels? 5. Did these reduction efforts turn out to be efficient?

EXERCISE 5

Согласны ли вы с кратким выводом по содержанию предыдущего текста: Air pollution is not a new problem getting worse, but an old problem getting ever better.

VOCABULARY 2:

Area	Район	Crucial	Ключевой
Reduction	Уменьшение	Noteworthy effect	Заслуживающий внимания эффект
Cause	Причина	Mandate control	Полномочный контроль
A move away	Перемещение	To overshadow	Омрачать
Coke oven	Коксовая печь	To emphasize	Подчеркивать

Dependence	Зависимость	Consequently	Вследствие
Catalytic converter	Каталитический дожигатель	Benefit	Преимущество, польза
Diesel vehicle	Дизельные машины	Stem	Происходить
Gasoline car	Машины, использующие бензин	Unambiguously	Недвусмысленно
Emission	Выделение	Substantial	Основной, главный
Decline	Упадок	Drastically	Радикально
legislation	Законодательство	conclusion	Заключение

EXECISE 1

Найдите эквиваленты в тексте: быть вызванным рядом других причин, исторически сложиться, отказ от дальнейшего использования, система местного отопления, не быть больше зависимым настолько, система централизованного отопления, дизельное топливо с низким содержанием серы, отмеченный рост, замедлить снижение выброса частиц, специальная литература, изобиловать спорами, степень значительности законодательства, не быть в состоянии зафиксировать, было бы справедливо отметить.

EXECISE 2

Перечислите другие меры, повлекшие снижение уровня частиц в атмосфере.

EXECISE 3

Изложите свое мнение об эффективности роли законодательства и правительства, используя слова текста. Насколько эффективно внедрение и осуществление полномочного обязательного регулярного контроля за уровнем загрязнения окружающей среды? Что же является решающим фактором в борьбе за экологию ?

EXECISE 4

Составьте фразы, соответствующие содержанию текста.

	three	
1. There are have been	two	main problems of air pollution.
	one	

	small	
2.The	large	air pollution comes from dust, mechanical wear and tear.
	slightly large	

	lower	
3. The use of	taller	smokestacks was the cause of pollution reduction.
	medium-size	

		natural gas heating.
4. The cleanest type of heating is		oil central heating.
		district heating.

		gasoline cars.
5.The cleanest cars are		diesel cars.
		low-sulfur diesel cars.

The technological factor	
6. The mandated pollution control	plays a major role in pollution reduction.
The legislation	

Text B Lead

Lead was widely used even in antiquity because it was so easy to shape or mould into vessels and pipes. The Romans used a lot of lead in their water supply systems, and women used pulverized lead as makeup. Throughout the Middle Ages, lead was also widely used, mostly as an additive to make sour wine drinkable - often with painful, sometimes even fatal after-effects. In modern times, lead has proven an extremely useful metal in crystal glass, ceramic glazing, white paints, ammunition and printer's type. When the motor car came on to the scene, lead batteries provided electrical power, and lead was added to petrol to increase its octane rating.

Unfortunately, lead is also extremely toxic. Several scientists believe that the Roman upper class suffered from permanent lead poisoning because they drank water from lead pipes and used lead-based mugs, vessels and beauty creams. This

have led to birth defects and widespread physical impairment and consequently have contributed to the fall of the Roman Empire.

It has been known for a long time that high concentrations of lead in the bloodstream can cause cramps, coma and death.

Globally about 90 percent of lead emissions comes from lead added to petrol. The leaded petrol now represents 2.2 percent of total lead consumption. The US started phasing out lead in gasoline in 1973 and they essentially completed the task in 1986. In the UK, a reduction was started in 1981 and in 1985 the allowed lead contents in gasoline had been reduced by two-thirds. Today, all US gasoline is unleaded, and 75 percent of the gasoline sold in the UK is unleaded too. The consequence for lead concentrations has been enormous.

The US Environmental Protection Authority estimates considerable benefits from this dramatic decline in lead pollution. It is estimated that about 22,000 deaths are avoided every year, which is about 1 percent of all deaths.

These figures are surprisingly large and demonstrate the amazing air pollution improvement. For the second worst air pollutant, the last 15-20 years have seen lead concentration levels falling dramatically by 80-97 percent.

VOCABULARY:

Lead	Свинец	Ammunition	Боеприпасы
To mould	Формовать	Battery	Аккумулятор
Vessel	Сосуд	Mug	Кружка
Pipe	Труба	Permanent	Постоянный
Pulverized	Порошкообразный	Impairment	Ухудшение
Additive	Добавка	Bloodstream	Кровообращение
Sour	Кислое	Cramp	Судорога
Crystal glass	Хрусталь	To phase out	Постепенно свертывать
Ceramic glazing	Гончарный обжиг	Complete	Полный
leaded	Освинцованный	Likewise	Подобно
To avoid	Избегать	Improvement	Улучшение
After-effect	Последствия	Octane rating	Октановое число

EXERCISE 1

Найдите эквиваленты: система водоснабжения, широко используемый, в настоящее время, с появлением автомашин, проявить себя как чрезвычайно необходимый, легко принимающий форму, это привело, допустимое

содержание, значительная польза, что составляет около одного процента, удивительное улучшение состояния воздуха.

EXERCISE 2

Перечислите положительные свойства свинца.

EXERCISE 3

Перечислите области применения свинца в античности, в средние века, в Римской империи, а также в настоящее время.

EXERCISE 4

Найдите предложения в тексте, указывающие на токсичность свинца и степень его влияния на здоровье человека.

EXERCISE 5

Насколько вредно использование свинца в составе бензина?

EXERCISE 6

Найдите в тексте предложения, подтверждающие эффективность мер по снижению загрязнения воздуха частицами свинца.

EXERCISE 7

Ответьте на вопросы: 1. What are advantages of lead as a metal? 2. Where and how is lead used today? 3. Why is it dangerous for our health? 4. Where does 90 % of lead emissions come from? 5. How effective were the efforts made against the second worst air pollutant?

EXERCISE 8

Составьте фразы, соответствующие содержанию текста:

	in water supply system.
1. Pulverized lead is used	as make-up.
	to form vessels.

	to increase its octane rating.
2. Lead is added to petrol	to decrease its octane rating.
	to make it ecologically cleaner.

	coma and death.
3. The high concentration of lead in the bloodstream can cause	respiratory disease.
	heart disease.

	easy	
4. Lead is	difficult	to shape or mould.
	impossible	

Text C SO₂

The regulation of SO₂ emissions was primarily a consequence of the anxiety in the 1980s about acid rain and its effect on forests and lakes. Even though it later proved that the effect on forests was extremely slight or even non-existent, regulation had the positive side-effect that it reduced particle emissions. When SO₂ is emitted during combustion, part of the gas will oxidize and condense around tiny, unburned condensation nuclei to form particles. The greatest advantage of SO₂ emission reductions lies in avoiding these particles.

In addition, SO₂ damages buildings and cultural objects such as statues. Metal corrodes much faster. Marble and sandstone are damaged because SO₂ is converted into sulfuric acid which gradually eats away the stone. In the major US study the overall effect was found to be relatively minor. Sulfur dioxide can also reduce visibility, either as a light mist or as a dense gray smog like the smog familiar to Londoners. The cost of the reduced visibility in 1990 can be estimated at \$12 per person in the US.

Finally, when SO₂ is deposited it actually makes a free contribution to the fertilization of forests and agricultural crops in particular. This contribution is estimated to be worth some \$500 million annually in the US. In Denmark, where sulfur pollution was the highest, crops needing lots of sulfur (such as oilseed rape and cabbage) had their requirements covered through pollution. It is today unnecessary to give these crops extra sulfur.

In 1979 the Long-Range Transboundary Air Pollution convention was adopted in Helsinki, coming into force in 1983. First, in 1985 a strict protocol was signed, obliging European governments to reduce their emissions by 30 percent by 1993. But European emissions had already been on the decrease since 1975. The reduction has been achieved by changing to other sources of energy, using less sulfurous coal and the general use of smoke cleansing. European Union emissions have been declining steadily since 1980. The emissions are expected to decline further, to a total reduction of more than 75 percent by 2010.

VOCABULARY:

Anxiety	Тревога	Sandstone	Песчаник
Exposed	Беззащитный	Sulfuric acid	Серная кислота
Slight	Хрупкий	Sulfur dioxide	Диоксид серы
To oxidize	Окисляться	Visibility	Видимость
To condense	Конденсировать	Mist	Туман
Condensation	Конденсация	Roughly	Небрежно
Side-effect	Побочный эффект	To deposit	Образовывать налет, отлагаться
Nuclei	Ядро	Fertilization	Удобрение
To corrode	Ржаветь	Oilseed rape	Масличный рапс
Marble	Мрамор	Requirement	Требования
Cleansing	Очистительный	Steadily	Постоянно
Amendment	Поправка	Transboundary	Трансграничное

EXERCISE 1

Найдите в тексте ответы на следующие вопросы: 1. Насколько важна роль диоксида серы в образовании кислотных дождей? 2. Как образуются частицы диоксида серы? 3. В результате чего было достигнуто снижение загрязнения диоксидом серы? 4. Назовите положительное последствие от загрязнения диоксидом серы? 5. Перечислите виды отрицательного воздействия диоксида серы на окружающую среду?

EXERCISE 2

Найдите эквиваленты: вступить в силу, быть подписанным, другие источники энергии, иметь побочный эффект, образование частиц, бесплатное удобрение, быть оцененным стоимостью в, относительно маленький, удовлетворить потребности, незащищенные регионы, знакомый лондонцам, повсеместное использование оборудования по очистке дыма.

EXERCISE 3

Найдите и переведите названия трех основных международных документов, принятых в защиту от данного загрязнителя?

EXERCISE 4

Составьте фразы, соответствующие содержанию текста.

	the fertilization.
1. Sulfur dioxide makes a free contribution to	industry development.
	emission reduction.

	combustion.
2. Sulfur dioxide is emitted during	condensation.
	oxidization.

	sulfuric dioxide.
3. Sulfur dioxide is converted into	particles.
	gas.

	pollution.
4. Sulfur dioxide can reduce	visibility.
	fertilization.

Text D OZONE

Ozone forms a vital layer in the stratosphere, which protects us against ultraviolet rays from the sun. However close to the earth ozone is harmful to humans and affects plant growth. Ozone irritates the respiratory organs, causes

rubber to disintegrate and negatively affects plant growth. Ozone is a secondary pollutant, because it is primarily created in a complex interplay between NO_x and hydrocarbons. Ozone and the NO_x are the major players in the formation of brown (photochemical) smog of the kind familiar in Los Angeles. This brown smog is seen today in many cities in the developing world.

Ozone is not believed to have any actual life-threatening effect. The UK experts on Air Quality Standards “found no evidence that exposure to the levels of ozone are likely to lead to long term damage to the respiratory system.” On the other hand, it has a substantial impact on agriculture and horticulture. It is believed that the most significant economic damage from pollution is experienced by these industries. Ozone can, however, also reduce the risk and effect of fungal attacks.

Ozone pollution is generally measured in peak concentrations the most dangerous for health and vegetation effects. In the US, maximal ozone concentrations have declined since 1977 by almost 30 percent. Ozone levels have not been consistently monitored at the national level in the UK. In the 1997 UK ozone review, it was concluded that there was clear evidence of a reduction in peak concentrations.

For agriculture, it is estimated that all 15 countries in the EU will experience a decrease in crop ozone exposure. On average, the exposure level will have decreased from 1990 to 2010 by about 25 percent.

VOCABULARY:

SO ₂ sulfur dioxide	Двуокись серы	Evidence	Доказательство
Vital	Жизненный	Exposure	Выставление на солнце
Layer	Слой		
Ultraviolet	Ультрафиолетовый	Fungal attack	Грибковое поражение
Ray	Луч		
Hole	Дыра	Horticulture	Садоводство, огородничество
To irritate	Раздражать		
Rubber	Резина	To monitor	Советовать, рекомендовать
To disintegrate	Расщеплять		
Interplay	Взаимодействие	To encounter	Столкнуться

EXERCISE 1

Найдите в тексте ответы на следующие вопросы: 1. Назовите отрасли экономики, испытывающие негативное влияние озонового загрязнения? 2. Может ли озон оказывать какое-либо воздействие на организм человека?

3. Назовите основные отрицательные последствия от влияния озона на окружающую среду? 4. Что представляет собой озоновый слой? 5. Наряду с двуокисью азота в образовании какого вида загрязнения городов принимает участие озон?

EXERCISE 2

Найдите эквиваленты: значительный ущерб, очевидное доказательство, данные о максимальной концентрации, комплексное взаимодействие, долгосрочное нарушение деятельности, действительно угрожающее жизни воздействие, уменьшение воздействия озона на урожай.

EXERCISE 3

Составьте фразы, соответствующие содержанию текста:

	ultraviolet rays.	
1. Ozone protects against	X-rays.	
	violet rays.	

	will have decreased	from 1990 to 2010 by about 25 percent.
2. On average the ozone exposure level	will have increased	
	will have been constant	

	registered.
3. Ozone levels have been consistently	monitored.
	written.

	agriculture.
4. Ozone has a substantial impact on	textile.
	utility market.

	harmful	
5. Ozone is	good	to humans.
	useful	