

# Air pollution from world war ii production assignment

[History](#)



Schematic drawing, causes and effects of air pollution: (1) greenhouse effect, (2) particulate contamination, (3) increased UV radiation, (4) acid rain, (5) increased ozone concentration, (6) increased levels of nitrogen oxides An air pollutant is known as a substance in the air that can cause harm to humans and the environment. Pollutants can be in the form of solid particles, liquid droplets, or gases. In addition, they may be natural or man-made. [J]

Pollutants can be classified as either primary or secondary.

Usually, primary pollutants are substances directly emitted from a process, such as ash from a volcanic eruption, the carbon monoxide gas from a motor vehicle exhaust or sulfur dioxide released from factories. Secondary pollutants are not emitted directly. Rather, they form in the air when primary pollutants react or interact. An important example of a secondary pollutant is ground level ozone -?? one of the many secondary pollutants that make up photochemical smog. Note that some pollutants may be both primary and secondary: that is, they are both emitted directly and formed from other primary pollutants.

About 4 percent of deaths in the United States can be attributed to air pollution, according to the Environmental Science Engineering Program at the Harvard School of Public Health. Major primary pollutants produced by human activity include: \* Sulfur oxides (SOX) - especially sulfur dioxide, a chemical compound with the formula  $\text{SO}_2$ .  $\text{SO}_2$  is produced by volcanoes and in various industrial processes. Since coal and petroleum often contain sulfur compounds, their combustion generates sulfur dioxide. Further oxidation of  $\text{SO}_2$ , usually in the presence of a catalyst such as  $\text{NO}_x$ , forms  $\text{H}_2\text{SO}_4$ , and thus acid rain. 2] This is one of the causes for concern over the <https://assignbuster.com/air-pollution-from-world-war-ii-production-assignment/>

environmental impact of the use of these fuels as power sources. \* Nitrogen oxides (NOx) especially nitrogen dioxide are emitted from high temperature combustion. Can be seen as the brown haze dome above or plume downwind of cities. Nitrogen dioxide is the chemical compound with the formula  $\text{NO}_2$ . It is one of the several nitrogen oxides. This reddish-brown toxic gas has a characteristic sharp, biting odor.  $\text{NO}_2$  is one of the most prominent air pollutants. \* Carbon monoxide – is a colorless, odorless, non-irritating but very poisonous gas.

It is a product by incomplete combustion of fuel such as natural gas, coal or wood. Vehicular exhaust is a major source of carbon monoxide. \* Carbon dioxide ( $\text{CO}_2$ ) – a greenhouse gas emitted from combustion but is also a gas vital to living organisms. It is a natural gas in the atmosphere. \* Volatile organic compounds – VOCs are an important outdoor air pollutant. In this field they are often divided into the separate categories of methane ( $\text{CH}_4$ ) and non-methane (NMHC). Methane is an extremely efficient greenhouse gas which contributes to enhanced global warming.

Other hydrocarbon VOCs are also significant greenhouse gases via their role in creating ozone and in prolonging the life of methane in the atmosphere, although the effect varies depending on local air quality. Within the NMHCs, the aromatic compounds benzene, toluene and xylene are suspected carcinogens and may lead to leukemia through prolonged exposure. 1, 3-benzene is another dangerous compound which is often associated with industrial uses. \* Particulate matter – Particulates, alternatively referred to as

particulate matter (PM) or fine particles, are tiny particles of solid or liquid suspended in a gas.

In contrast, aerosol refers to particles and the gas together. Sources of particulate matter can be man made or natural. Some particulates occur naturally, originating from volcanoes, dust storms, forest and grassland fires, living vegetation, and sea spray. Human activities, such as the burning of fossil fuels in vehicles, power plants and various industrial recesses also generate significant amounts of aerosols. Averaged over the globe, anthropogenic aerosols-?? those made by human activities-?? currently account for about 10 percent of the total amount of aerosols in our atmosphere.

Increased levels of fine particles in the air are linked to health hazards such as heart disease, [3[3]ltered lung function and lung cancer. \* Persistent free radicals connected to airborne fine particles could cause cardiopulmonary \* Toxic metals, such as lead, cadmium and copper. \* Chlorofluorocarbons (CIFS) - harmful to the ozone layer emitted from products currently banned from use. Ammonia (NH) - emitted from agricultural processes. Ammonia is a compound with the formula NH. It is normally encountered as a gas with a characteristic pungent odor.

Ammonia contributes significantly to the nutritional needs of terrestrial organisms by serving as a precursor to foodstuffs and fertilizers. Ammonia, either directly or indirectly, is also a building block for the synthesis of many pharmaceuticals. Although in wide use, ammonia is both caustic and hazardous. \* Odors -?? such as from garbage, sewage, and industrial \*

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Radioactive pollutants - produced by nuclear explosions, war processes explosives, and natural processes such as the radioactive decay of radon.

Secondary pollutants include: \* Particulate matter formed from gaseous primary pollutants and compounds in photochemical smog. Smog is a kind of air pollution; the word " smog" is a portmanteau of smoke and fog. Classic smog results from large amounts of coal burning in an area caused by a mixture of smoke and sulfur dioxide. Modern smog does not usually come from coal but from vehicular and industrial emissions that are acted on in the atmosphere by sunlight to form secondary pollutants that also combine with the primary emissions to form photochemical smog. Ground level ozone (O<sub>3</sub>) formed from NO<sub>x</sub> and VOCs. Ozone (O<sub>3</sub>) is a key constituent of the troposphere (it is also an important constituent of certain regions of the stratosphere commonly known as the Ozone layer). Photochemical and chemical reactions involving it drive many of the chemical processes that occur in the atmosphere by day and by night. At abnormally high concentrations brought about by human activities (largely the combustion of fossil fuel), it is a pollutant, and a constituent of smog. Peroxyacetyl nitrate (PAN) - similarly formed from NO<sub>x</sub> and VOCs. Minor air pollutants include: \* A large number of minor hazardous air pollutants. Some of these are regulated in USA under the Clean Air Act and in Europe under the Air Framework Directive. \* A variety of persistent organic pollutants, which can attach to particulate matter. Persistent organic pollutants (POPs) are organic compounds that are resistant to environmental degradation through chemical, biological, and photolytic processes.

Because of this, they have been observed to persist in the environment, to be capable of long-range transport, fasciculate in human and animal tissue, abominating in food Haines, and to have potential significant impacts on human health and the environment. [e[edit]ources Main article: AP 42  
Compilation of Air Pollutant Emission Factors Dust storm approaching Stratford, Texas Controlled burning of a field outside of Stateroom, Georgia in preparation for spring planting Sources of air pollution refer to the various locations, activities or factors which are responsible for the releasing of pollutants in the atmosphere.

These sources can be classified into two major categories which are:  
Anthropogenic sources (human activity) mostly related to burning efferent kinds of fuel \* “ Stationary Sources” include smoke stacks of power plants, manufacturing facilities (factories) and waste incinerators, as well as furnaces and other types of fuel-burning heating devices \* “ Mobile Sources’ include motor vehicles, marine vessels, aircraft and the effect of sound etc. \*  
Chemicals, dust and controlled burn practices in agriculture and forestry management.

Controlled or prescribed burning is a technique sometimes used in forest management, farming, prairie restoration or greenhouse gas abatement. Fire is a natural part of both forest and grassland ecology and enthroned fire can be a tool for foresters. Controlled burning stimulates the germination of some desirable forest trees, thus renewing the forest. \* Fumes from paint, hair spray, varnish, aerosol sprays and other solvents \* Waste deposition in

landfills, which generate methane. Methane is not toxic; however, it is highly flammable and may form explosive mixtures with air.

Methane is also an asphyxiant and may displace oxygen in an enclosed space. Asphyxia or suffocation may result if the oxygen concentration is reduced to below 19.5% by displacement \* Military, such as nuclear weapons, toxic assets, germ warfare and rocketry Natural sources \* Dust from natural sources, usually large areas of land with little or no vegetation. \* Methane, emitted by the digestion of food by animals, for example cattle. \*

Radon gas from radioactive decay within the Earth's crust. Radon is a colorless, odorless, naturally occurring, radioactive noble gas that is formed from the decay of radium.

It is considered to be a health hazard. Radon gas from natural sources can accumulate in buildings, especially in confined areas such as the basement and it is the second most frequent cause of lung cancer, after cigarette smoking. Smoke and carbon monoxide from wildfires. \* Volcanic activity, which produce sulfur, chlorine, and ash particulates. [edit]mission factors Main article: AP 42 Compilation of Air Pollutant Emission Factors Air pollutant emission factors are representative values that attempt to relate the quantity of a pollutant released to the ambient air with an activity associated with the release of that pollutant.

These factors are usually expressed as the weight of pollutant divided by a unit weight, volume, distance, or duration Of the activity emitting the pollutant (e. G. , kilograms of particulate emitted per anagram of AOL burned). Such factors facilitate estimation of emissions from various sources

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of air pollution. In most cases, these factors are simply averages of all available data of acceptable quality, and are generally assumed to be representative of long-term averages. The United States Environmental Protection Agency has published a compilation of air pollutant emission factors for a multitude of industrial sources. 6] The United Kingdom, Australia, Canada and many other countries have published similar compilations, as well as the European Environment 1] [e[edit]ndoor air quality (IAC) Main article: Indoor air quality A lack of ventilation indoors concentrates air pollution where people often spend the majority of their time. Radon (Urn) gas, a carcinogen, is exuded from the Earth in certain locations and trapped inside houses. Building materials including carpeting and Pl. N. Rood emit formaldehyde (HOC) gas. Paint and solvents give off volatile organic compounds (Voss) as they dry.

Lead paint can degenerate into dust and be inhaled. Intentional air pollution is introduced with the use of air fresheners, incense, and other scented items. Controlled wood fires in Stoves and fireplaces can add significant amounts Of make particulates into the air, inside and out. [1[12]ndoor pollution fatalities may be caused by using pesticides and other chemical sprays indoors without proper ventilation. Carbon monoxide (CO) poisoning and fatalities are often caused by faulty vents and chimneys, or by the burning of charcoal indoors. Chronic carbon monoxide poisoning can result even from poorly adjusted pilot lights.

Traps are built into all domestic plumbing to keep sewer gas, hydrogen sulfide, out of interiors. Clothing emits transcontinental, or other dry cleaning



fluids, for days after dry cleaning. Though its use has now been banned in many countries, the extensive use of asbestos in industrial and domestic environments in the past has left a potentially very dangerous material in many localities. Asbestosis is a chronic inflammatory medical condition affecting the tissue of the lungs. It occurs after long-term, heavy exposure to asbestos from asbestos-containing materials in structures.

Sufferers have severe dyspnea (shortness of breath) and are at an increased risk regarding several different types of lung cancer. As clear explanations are not always stressed in non-technical literature, care should be taken to distinguish between several forms of relevant diseases.

According to the World Health Organization (WHO) [Cited link], these may be defined as; asbestosis, lung cancer, and Mesothelioma (generally a very rare form of cancer, when more widespread it is almost always associated with prolonged exposure to asbestos).

Biological sources of air pollution are also found indoors, as gases and airborne particulates. Pets produce dander, people produce dust from minute skin flakes and decomposed hair, dust mites in bedding, carpeting and furniture produce enzymes and micrometer-sized fecal droppings, inhabitants emit methane, mold forms in walls and enravates mycologists and spores, air conditioning systems can incubate questionnaires' disease and mold, and houseplants, soil and surrounding gardens can produce pollen, dust, and mold.

Indoors, the lack of air circulation allows these airborne pollutants to accumulate more than they would otherwise occur in nature. [e[edit]health

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effects The World Health Organization states that 2.4 million people die each year from causes directly attributable to air pollution, with 1.5 million of these deaths attributable to indoor air pollution. [1]

3] Epidemiological studies suggest that more than 500,000 Americans die each year from rudimentary disease linked to breathing fine particle air pollution... A study by the University of Birmingham has shown a strong correlation between pneumonia related deaths and air pollution from motor vehicles. [1] Worldwide more deaths per year are linked to air pollution than to automobile accidents. [citation needed] Published in 2005 suggests that 310,000 Europeans die from air pollution annually. [citation needed] Causes of deaths include aggravated asthma, emphysema, lung and heart diseases, and respiratory allergies. [citation needed] The US EPA estimates that a proposed set of changes in diesel engine technology (Tier 2) could result in 12,000 fewer premature mortalities, 15,000 fewer heart attacks, 6,000 fewer emergency room visits by children with asthma, and 8,900 fewer respiratory-related hospital admissions each year in the United States.

[citation needed] The worst short term civilian pollution crisis in India was the 1984 Bhopal Disaster. [1] Leaked industrial vapors from the Union Carbide factory, belonging to Union Carbide, Inc. U. S. A., killed more than 25,000 people outright and injured anywhere from 150,000 to 600,000.

The United Kingdom suffered its worst air pollution event when the December 4 Great Smog of 1952 formed over London. In six days more than 4,000 died, and 8,000 more died within the following months. [citation needed] An accidental leak of anthrax spores from a biological warfare laboratory in the former USSR in 1979 near Spillover is believed to have been the cause of

hundreds of civilian deaths. Citation needed] The worst single incident of air pollution to occur in the United States of America occurred in Donors, Pennsylvania in late October, 1948, when 20 people died and over 7, 000 were injured. [1[1 7]he lath effects caused by air pollutants may include difficulty in breathing, wheezing, coughing and aggravation of existing respiratory and cardiac conditions. These effects can result in increased medication use, increased doctor or emergency room visits, more hospital admissions and premature death.

The human health effects of poor air quality are far reaching, but principally affect the body's respiratory' system and the cardiovascular system.

Individual reactions to air pollutants depend on the type of pollutant a person is exposed to, the degree of exposure, the individual's health status ND genetics. [c[citation needed] new economic study Of the health impacts and associated costs of air pollution in the Los Angeles Basin and San Joaquin Valley of Southern California shows that more than 3800 people die prematurely (approximately 14 years earlier than normal) each year because air pollution levels violate federal standards.

The number of annual premature deaths is considerably higher than the fatalities related to auto collisions in the same area, which average fewer than 2, 000 per year. [1[1 8]iesel exhaust (DE) is a major contributor to combustion derived particulate tater air pollution. In several human experimental studies, using a well validated exposure chamber setup, DE has been linked to acute vascular dysfunction and increased thrombus formation. [1[19][20]his serves as a plausible mechanistic link between the

previously described association between particulate matter air pollution and increased cardiovascular morbidity and mortality. Edit] Effects on cystic fibrosis Main article: Cystic fibrosis A study from around the years of 1999 to 2000, by the University of Washington, showed that patients near and around particulate matter air elution had an increased risk of pulmonary exacerbations and decrease in lung function. [2[21]atients were examined before the study for amounts of specific pollutants like Pseudonymous arousing or Freeholder canopies as well as their socioeconomic standing. Participants involved in the study were located in the United States in close proximity to an Environmental Protection Agency. Clarification needed] During the time of the study 1 17 deaths were associated with air pollution. Many patients in the study lived in or near large metropolitan areas in order to be close to medical help. These name patients had higher level of pollutants found in their system because of more emissions in larger cities. As cystic fibrosis patients already suffer from decreased lung function, everyday pollutants such as smoke, emissions from automobiles, tobacco smoke and improper use of indoor heating devices could further compromise lung function. 22] [e[edit]ffects on COOP Main article: Chronic obstructive pulmonary disease Chronic obstructive pulmonary disease (COOP) include diseases such as chronic bronchitis, emphysema, and some forms of asthma. [2[23] study conducted in 1960-1961 in the wake of the Great Smog of 1 952 compared 93 London residents with 477 residents of Gloucester, Petrography, and Noon/ICC, three towns with low reported death rates from chronic bronchitis. All subjects were male postal truck drivers aged 40 to 59.

Compared to the subjects from the outlying towns, the London subjects exhibited more severe respiratory symptoms (including cough, phlegm, and dyspepsia), reduced lung function (FIVE and peak flow rate), and increased sputum production and purulence. The differences were more pronounced for subjects aged 50 to 59. The study controlled for age and smoking habits, so concluded that air elution was the most likely cause of the observed differences. [2[24]t is believed that much like cystic fibrosis, by living in a more urban environment serious health hazards become more apparent.

Studies have shown that in urban areas patients suffer mucus hypertension, lower levels of lung function, and more self diagnosis of chronic bronchitis and emphysema. [2[25]e[edit]ffects on children Cities around the world with high exposure to air pollutants have the possibility of children living within them to develop asthma, pneumonia and other lower respiratory infections as well as a low initial birth rate. Protective measures to ensure the youths' health are being taken in cities such as New Delhi, India where buses now use compressed natural gas to help eliminate the " pea-soup" smog. 26]

Research by the World Health Organization shows there is the greatest concentration of particulate matter particles in countries with low economic world power and high poverty and population rates. Examples of these countries include Egypt, Sudan, Mongolia, and Indonesia. The Clean Air Act was passed in 1 970, however in 2002 at least 146 million Americans were living in areas that did not meet at least one of the " criteria Laotians" laid out in the 1997 National Ambient Air Quality Standards. [2[27]hose pollutants included: ozone, particulate matter, sulfur dioxide, nitrogen dioxide, carbon monoxide, and lead.

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