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A Comparative Study on Air Pollution and Transient Emissions.

Dr. D. Vijaya kumar

Adjunct Professor

Department of Environmental Studies

Andhra University

ABSTRACT

The annual welfare costs of air pollution exceed $5 trillion for the entire world economy. Because a significant portion of air pollution is caused by the combustion of fossil fuels like coal and oil, reducing these fuels will have a significant impact on reducing air pollution. Air pollution occurs when harmful or excessive quantities of substances, including gas particles and biological molecules, are introduced into the earth's atmosphere. The yields of staple crops are predicted to decline by 26% by 2030 as a result of ground level ozone pollution, which is present in 92 percent of the world's population.

INTRODUCTION

The risk of air pollution is determined by the pollutant's hazard and the amount of exposure to that pollutant. Exposure to air pollution can be represented for an individual, for certain groups, or for entire communities. For example, we might want to assess the geographic exposure to a harmful air contaminant. This can be computed as a metalation exposure because it encompasses multiple microenvironments and age groups. Furfuryl alcohol aldehyde is utilized as a solvent for phenol formaldehyde resin, and the resultant mass is employed as a binder with petroleum coke in the fabrication of arc carbon electrodes and dry cell electrodes. Pitch is burned to remove volatile components, and the residue is used with ethylene dichloride, with some amount of these pollutants are emitted into the air environment. The amount of these toxic pollutants should be within permissible limits for the operators around the reactive zone.

At the other hand, it is also essential to checkup the efficiency of the antipollution arrangement taken for the purpose 92% of people worldwide do not breathe clean air. Air pollution costs the global economy $5 trillion in every year in welfare costs. Air pollution occurs when harmful or excessive quantities of substances including gas particles and biological molecules are introduced into earth’s atmosphere because a large share of air pollution is caused by combustion of fossil fuels such as coal and oil, the reduction of these fuels reduce air pollution drastically. 92 percent of people worldwide do not breathe clean air, ground level ozone pollution is expected to reduce staple crop yields by 26% by 2030. In the present study, a fact find survey has been made from environmental point of view to assess the concentration of these pollutants in various air pollution

control technologies and strategies are available to reduce air pollution. Land use planning is likely to involve zoning and transport infrastructure planning. In most developed countries, land use planning is an important part of social policy ensuring that land is used effectively for the benefit of wider economy and population as well as to protect the environment.

EXPERIMENTAL

Titanium dioxide has been researched for its ability to reduce air pollution. Ultraviolet light will release free electrons from material ,thereby creating free radicals. Which break up VOCs and NOx gases .one form is super hydrophobic.

The following items are commonly used as pollution control devices in industry and transportation they can either destroy contaminants or remove them from an exhaust stream before it is emitted into the atmosphere.

Particulate control

1. Mechanical collectors (dust cyclones, multi-cyclones)
2. Electro static precipitators (ESP)

3. **Particulate scrubbers**

a.vaffle spray scrubber

b.cyclonic spary scrubber

c.ejector venture srubbers

d.mechanically aided scrubber,spray tower,wet scrubber

4 .NOX control

a. low NOX burners
b. selective catalyte reduction [SCR]
c. selective non-catalytic reduction [SNCR]

5 .NOX scrubbers

a.exhaust gas recirculation,catalytic converter(also for VOC control)

6.VOC abatement

adsorption systems using activated carbons,such fluidized wet concentrator flares,bio filters,absorbing(scrubbing),cryogenic condensers,dry scrubbers,

7.acid gas or so2 control wet scrubbers, dry scrubbers, fine u-gas desulphurization **7 . mercury control**

adsorbent injection technology, electro-catalytic oxidation (eco) k,fuel

8. Dioxin and furan control

9. Miscellaneous associated equipment

a. floors capturing systems, Continuous Emissionary Monitoring Systems(CEMS)

AIR QUALITY STANDARDS

Natural ambient air quality standards:

Pollutant	**Time Weighted Average**	**Concentration in Ambient Air**		**Methods of measurements**
		Industrial, Residential, Rural and Other Areas	**Ecologically Sensitive Area (notified by Central Government)**	
Sulphur Dioxide (SO_2), µg/m^3	Annual* 24 hours**	60 70	20 70	1. Improved West and Gaeke 2. Ultraviolet Fluorescence
Nitrogen Dioxide (NO_2), µg/m^3	Annual* 24 hours**	40 80	30 80	1. Modified Jacob & Hochheiser (NaArsenite) 2. Chemiluminescence
Particulate Matter (size less than 10 µm) or PM_{10} µg/m^3	Annual* 24 hours**	60 100	60 100	1. Gravimetric 2. TEOM 3. Beta attenuation
		40	40	1. Gravimetric

Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$ µg/m^3	Annual* 24 hours**	60	60	2. TEOM 3. Beta attenuation
Ozone (O_3) µg/m^3	8 hours* 1 hour**	100 180	100 180	1. UV photometric 2. Chemiluminescence
				3. Chemical Method
Lead (Pb) µg/m^3	Annual* 24 hours**	0.50 1.0	0.50 1.0	1. AAS/ICP Method after sampling using EPM 2000 or equivalent filter paper 2. ED-XRF using Teflon filter
Carbon Monoxide (CO) mg/m^3	8 hours* 1 hour**	02 04	02 04	Non dispersive Infra Red (NDIR) Spectroscopy
Ammonia (NH_3) µg/m^3	Annual* 24 hours**	100 400	100 400	1. Chemiluminescence 2. Indophernol blue method
Benzene (C_6H_6) µg/m^3	Annual*	5	5	1. Gas chromatography based continuous analyzer 2. Adsorption and Desorption followed by GC analysis
Benzo(a)Pyrene (BaP)- particulate phase only, ng/m^3	Annual*	1	1	Solvent extraction followed by HPLC/GC analysis
Arsenic(As), ng/m^3	Annual*	6	60	AAS/ICP method after sampling on EPM 2000 or equivalent filter paper
Nickel (Ni), ng/m^3	Annual*	20	20	AAS/ICP method after sampling on EPM 2000 or equivalent filter paper

Air pollution risk is a function of the hazard of the pollutant and the exposure to that pollutant. Air pollution exposure can be expressed from an individual for certain groups for entire population for example we may want to calculate the exposure to a hazardous air pollutant for a geographic area which includes the various miro environments and age groups. This can be calculated as an inhalation exposure Results and discussion:

In 2012, air pollution cause premature deaths on average of one year in Europe , and was a significant risk factor for a number of pollution related diseases, including respiratory infections, heart disease , COPD, stroke and lung cancer, the health effects caused by air pollution may include difficulty in breathing , wheezing , coughing , asthma and worsening of existing respiratory and cardiac conditions . These effects can result in increased medication use, increased doctor or emergency department visits, more hospital admissions and premature deaths .

Most effective is to switch to clean power sources such as wind power, solar power, hydro power which doesn't cause air pollution . Efforts to reduce pollution from mobile sources includes primary regulation, (Many developing countries have permitting regulations) expanding regulation to new sources to clean fuels or conversion to electric vehicles. Titanium dioxide has few researched fuels ability to reduce air pollution. Ultra violet light will release free electrons from material, free radicals which breakup VOCs and NOX gases, form is super hydrophilic .

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