# Evaluation Air Pollution Due to Transient Emissions

D. Vijaya kumar[1], P. Sai Pradeep[2], K. Chandra Mouli[3], B.Sreenu[4]

[1]Principal &professor, Kodada institute of technology and science
[2] Assistant Professor, Geethanjali institute of science and technology, Nellore
[3]HOD & professor, NRI Guntur
[4]Assistant professor, Nalanda institute of Engineering & technology, Guntur

**Abstract- 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.**
**Keywords: Excessive, Biological Molecules, Fossil fuels, Breathe clean air**

## I. INTRODUCTION

Air pollution risk is a function of the hazard of the pollutant and the exposure to that pollutant. Air pollution exposure can be expressed for an individual for certain groups, for entire populations. For example, we may want to calculate the exposure to a hazardous air pollutant for geographic area. Which includes various micro environments and age groups, this can be calculated as a milalation exposure. Furfuryl alchohol aldehyde are being used as solvents for phenol formaldehyde resin and the resulting mass is used as binder with petroleum coke in the process of manufacturing arc carbon electrodes and dry cell electrodes. Pitch is burnt for the removal of volatile ingredients and the residue is used with ethylene dichloride and during the process 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 donot 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.

## II. 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 superhydrophobic.
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.

*2.1 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
   a) adsorption systems using activated carbons, such fluidized wet concentrator flares, bio filters, absorbing(scrubbing),cryogenic condensers, dry scrubbers,
7. Acid gas or so2 control
   a) wet scrubbers, dry scrubbers, fine u-gas desulphurization
8. Mercury control
   a) adsorbent injection technology, electro-catalytic oxidation (eco) k, fuel
9. Dioxin and furan control
10. Miscellaneous associated equipment
    a) floors capturing systems, Continuous Emissionary Monitoring Systems(CEMS)

## III. 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 (SO2), μg/m3 | Annual* | 50 | 20 | 1. Improved West and Gaeke |
| | 24 hours** | 80 | 80 | 2. Ultraviolet Fluorescence |
| Nitrogen Dioxide (NO2), μg/m3 | Annual* | 40 | 30 | 1. Modified Jacob & Hochheiser (Na-Arsenite) |
| | 24 hours** | 80 | 80 | 2. Chemiluminescence |
| Particulate Matter (size less than 10 μm) or PM10 μg/m3 | Annual* | 60 | 60 | 1. Gravimetric |
| | 24 hours** | 100 | 100 | 2. TEOM 3. Beta attenuation |
| Particulate Matter (size less than 2.5 μm) or PM2.5 μg/m3 | Annual* | 40 | 40 | 1. Gravimetric |
| | 24 hours** | 60 | 60 | 2. TEOM 3. Beta attenuation |
| Ozone (O3) μg/m3 | 8 hours* | 100 | 100 | 1. UV photometric |
| | 1 hour** | 180 | 180 | 2. Chemiluminescence 3. Chemical Method |
| Lead (Pb) μg/m3 | Annual* | 0.50 | 0.50 | 1. AAS/ICP Method after sampling using EPM 2000 or equivalent filter paper |
| | 24 hours** | 1.0 | 1.0 | 2. ED-XRF using Teflon filter |
| Carbon Monoxide (CO) mg/m3 | 8 hours* | 02 | 02 | Non dispersive Infra Red (NDIR) Spectroscopy |
| | 1 hour** | 04 | 04 | |
| Ammonia (NH3) μg/m3 | Annual* | 100 | 100 | 1. Chemiluminescence |
| | 24 hours** | 400 | 400 | 2. Indophernol blue method |
| Benzene (C6H6) μg/m3 | 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/m3 | Annual* | 1 | 1 | Solvent extraction followed by HPLC/GC analysis |
| Arsenic(As), ng/m3 | Annual* | 6 | 60 | AAS/ICP method after sampling on EPM 2000 or equivalent filter paper |
| Nickel (Ni), ng/m3 | 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

## IV. 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 .

## V. REFERENCES

[1]   Yanagisawa.y and Nishimura.H , environmental international 8 , 235 -242 (1982)
[2]   Sickles II ,J.E and Michie , RM; 80 MOS emissions , 21 , 1385 -1391 (1987)
[3]   Employment news vol XLIV no.9 ; New Delhi-7 june 2019