

Air Pollution

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0303-037. Agrawal M, Singh B, Rajput M, Marshall F, Bell JNB (Dept Bot, Banaras Hindu Univ, Varanasi 221005). **Effect of air pollution on peri-urban agriculture: a case study.** *Environ Polln*, **126**(3)(2003), 323-329 [25 Ref].

Six hour mean concentrations were monitored for SO₂, NO₂ and O₃ and plant responses were measured in terms of physiological characteristics, pigment, biomass and yield. Parameter reductions in mung bean (*Vigna radiata*), palak (*Beta vulgaris*), wheat (*Triticum aestivum*) and mustard (*Brassica campestris*) grown within the urban fringes of Varanasi, India correlated directly with the gaseous pollutants levels. The magnitude of response involved all three gaseous pollutants at peri-urban sites; O₃ had more influence at a rural site.

0303-038. Das SK, Tripathy JK, Nayak MM (Dept Computer Sci, Berhampur Univ, Bhanja Bihar, Berhampur 760007). **Ambient air quality at a mine site in Joda-Barbil mineral belt in Orissa: a case study.** *Polln Res*, **22**(2)(2003), 265-267 [4 Ref].

Study deals with the ambient air quality of Tantra-Raikela-Bandhal iron ore mines with respect to suspended particulate matter, sulphur dioxide (SO₂) and oxides of nitrogen (NO_x) and their level of concentration in different seasons of the year. Though the concentration of SO₂ and NO_x remained below the prescribed limits, it exceeded the limit at few places of the study area.

0303-039. Ghose Mrinal K, Majee SR (Cent Mining Env, Indian Sch Mines, Dhanbad 826004). **Status of air pollution due to opencast coal mining and its control in Indian context.** *J Scient Indl Res*, **62**(9)(2003), 892-902 [21 Ref].

Paper discusses the justification of selecting air-monitoring stations and focuses on the methodology adopted for sampling and analysis to evaluate status of air pollution due to OC mines. Four seasons monitoring data revealed that SPM, RPM, SO₂ and NO_x concentrations at different locations (industrial, residential and sensitive exceeded the permissible limit. The study reveals that high coal production associated with heavy mechanization led to more air pollution problem in areas. Methodologies for the control of air pollution are also discussed.

0303-040. Gokhale S, Khare M (Dept Civil Engng, Indian Inst Techno, New Delhi 110016). **Statistical methodologies and modelling in air pollution.** *J Inst Engrs India (Environ Engng Div)*, **83**(March)(2003), 46-53 [10 Ref].

The procedure and methodologies to deal with statistical modeling in predicting the distribution of air pollutant concentrations have been reviewed. There are distributional model, namely, exponential, lognormal, gamma and Weibull, which could be fitted to the air quality data. The procedure to the identification of best model from the available parametric range of model and their parameter estimation which have been developed by Taylor and Jakeman is reviewed.

0303-041. Goyal SK (Natl Environ Engng Res Inst, Nehru Marg, Nagpur). **Comparison of two manual methods of nitrogen dioxide determination in ambient air.** *Environ Monit Assess*, **89**(3)(2003), 305-314 [13 Ref].

Sodium arsenite (SA) method for determination of nitrogen dioxide (NO₂) in ambient air, has been evaluated and compared with US EPA recommended equivalent method of TGS-ANSA (ANSA). Laboratory evaluations showed that SA method was high sensitivity to different sampling conditions, which normally vary during actual field monitoring. Absorption efficiency of NO₂ in SA method was found to be much lower (64%) as against the reported value of 82% at the method recommended sampling conditions, whereas for ANSA method, it was found 1.0 as against the reported value of 0.93.

0303-042. Joseph AE, Sawant AD, Srivastava A, Gawane AG, Joshi SD, Phadke KM (Natl Environ Engng Res Inst, 89-B, Dr. AB Rd, Worli, Mumbai 400018). **Anions in PM₁₀ aerosol in a commercial area of Mumbai city.** *Cheml Env Res*, **12**(1&2)(2003), 25-29 [4 Ref].

Anionic composition of ambient aerosols of size = 10 microns (PM₁₀) in the commercial area of Mumbai city is reported. It was observed that sulphate concentration was higher compared to the concentrations of chlorides and nitrates. The percentage of chlorides was between 5-15%. The correlation coefficient of sulphate was 0.6276 which shows the variation in the sulphate content in the ambient air is large and the correlation coefficient of chloride was 0.9763 which shows the good correlation as Mumbai being a coastal city.

0303-043. Kulshrestha Monika J, Kulshrestha Umesh C, Parashar DC, Vairamani M (Regl Res Lab, Jorhat 785006, Assam). **Estimation of SO₄ contribution by dry deposition of SO₂ onto the dust particles in India.** *Atmos Env*, **37**(22)(2003), 3057-3063 [31 Ref].

Dustfall deposition fluxes of major water-soluble components were estimated at five different sites of Delhi. The high values of pH of dustfall deposition suggest the dominance of crustal components that add higher alkalinity due to presence of components like Ca, Mg, etc. Dustfall fluxes were observed highest for Ca.

considering the importance of alkaline nature of dust particles; the fraction of SO_4 contributed by dry deposition of SO_2 on the dust particles was estimated.

0303-044. Kumar AV, Singh B, Bhalke S, Suseela B, Tripathi RM (Environ Assess Div, Bhabha Atom Res Cent, Trombay, Mumbai 400085). **Trace metal levels in ambient air of a residential township in Mumbai, India.** *J Inst Engrs India (Environ Engng Div)*, **83**(March)(2003), 54-59 [7 Ref].

Levels of fifteen trace metals in suspended air particulates monitored at a residential township in Mumbai are studied. Percentage distribution of the measured elements showed a dominant fraction of Na (47.1%) and Ca (27.8%) followed by Fe (8.1%), Zn (7.7%), Mg (5.8%) and K (2.8%). The remaining nine metals (As, Cd, Li, Co, Ni, Cr, Cu, Mn and Pb) altogether formed less than 1% in this distribution. Analysis of monthly average concentrations showed a higher concentration of trace metals in the winter month of December.

0303-045. Mahendra SP, Krishnamurthy (Cent Transportation Engng, Fac Civil Engng, Bangalore Univ, Bangalore 560056, Karnataka). **Vehicular air pollution at some intersections in Bangalore city : a case study.** *Nature Env Polln Techno*, **2**(2)(2003), 187-191 [10 Ref].

Paper assesses the air pollution concentration from road traffic in Bangalore. Traffic flows and air pollution concentrations of CO, NO_x, SO₂ and SPM were measured simultaneously. It is evident that the traffic generated CO concentrations in the study intersections were high and exceeding the permissible standards prescribed by the CPCB. This may be attributed to the interrupted flow of traffic near the intersection due to frequent 'stop' and 'go' situations. Measures to reduce vehicular pollution are also discussed.

0303-046. Mehta UK (Env Safety Dept, SIEL Cheml Complex, P.B. No. 52, P.O. Rajpura 140401, Dist Patiala, Punjab). **Study on ambient air quality around SIEL chemical complex near Rajpura, District Patiala, Punjab.** *Environ Polln Contl J*, **5**(5)(2002), 19-25 [13 Ref].

The impact zone for ambient air quality around SIEL chemical complex were studied by selecting five ambient air-monitoring stations in this area. On the basis of manufacturing process and type of fuel used, sulphur dioxide is identified as significant pollutant within the study region. Methodology adopted for the collection of sample and analysis has been described. The results obtained at different seasons have been discussed to assess the impact on air environment.

0303-047. Naja M, Lal S, Chand D (Phyl Res Lab, Navarangpura, Ahmedabad 380009). **Diurnal and seasonal variabilities in surface ozone at a high altitude site Mt Abu (24.6°N, 72.7°E, 1680m asl) in India.** *Atmos Env*, **37**(30)(2003), 4205-4215 [41 Ref].

The unique meteorology over this region seems to play an important role in seasonal as well as in diurnal variations in ozone. Background and continental ozone levels estimated to be 33.4 ± 13.3 and 48.1 ± 9 ppbv, respectively, over this region of India. A correlation study between ozone and CO indicates possibility of incomplete photochemical processes over Asia.

0303-048. Pathak H, Prasad S, Bhatia Arti, Singh Shalini, Kumar S, Singh J, Jain MC (Div Environ Sci, Nuclear Res Lab Bldg, Indian Agricul Res Inst, New Delhi 110012). **Methane emission from rice-wheat cropping system in the Indo-Gangetic plain in relation to irrigation, farmyard manure and dicyandiamide application.** *Agricul Ecosyst Env*. **97**(1-3)(2003), 309-316 [26 Ref].

Total emission of CH₄ from the rice-wheat systems ranged from 16.2 kg ha⁻¹ in the control treatment to 36.5 kg ha⁻¹ in urea plus FYM treatment with an average emission of 20.8 kg CH₄ ha⁻¹. Continuously saturated soil in rice gave higher CH₄ emission compared to intermittent wetting and drying soil condition but the yields were lowered. Application of DCD with urea reduced emission of CH₄ in rice-wheat system to 70%, while substituting 50% of inorganic N with FYM increased emission to 172% compared to application of entire amount of N through urea.

0303-049. Ravindra Khaiwal, Mor Suman, Ameena, Kamyotra JS, Kaushik CP (Dept Environ Sci Engng, Guru Jambheshwar Univ, Hisar). **Variation in spatial pattern of criteria air pollutants before and during initial rain of monsoon.** *Environ Monit Assess*, **87**(2)(2003), 145-153 [23 Ref].

Spatial patterns of various criteria air pollutants, were studied at Shahdara National Ambient Air Quality Monitoring station in Delhi (India). These spatial patterns were found to be essentially the same before and during rain, however a significant decrease in SO₂, NO₂ and TSP concentrations (40-45%) was observed after initial and subsequent rains of the monsoon, demonstrating the importance of rainfall in the scavenging of these criteria air pollutants.

0303-050. Reddy GS, Ruj Biswajit (Centl Mechanical Engng Res Inst, Mahatma Gandhi Avenue, Durgapur, West Bengal). **Ambient air quality status in Raniganj-Asansol area, India.** *Environ Monit Assess*, **89**(2)(2003), 153-163 [3 Ref].

This investigation presents the assessment of ambient air quality with respect to suspended particulate matter (SPM), sulphur dioxide (SO₂) and oxide of nitrogen (NO_x) at four sites in the Raniganj-Asansol area in West Bengal, India. It has been observed that the concentrations of the pollutants are high in winter in comparison to the summer or the monsoon seasons. Results indicates that industrial activities, indiscriminate open air burning of coal by the local inhabitants for cooking as well as coking purposes, vehicular traffic, etc. are responsible for the high concentration of pollutants in this area.

0303-051. Senthilnathan T, Rajan RD (51, Lakshmi Hayagriva Nagar, Second Layout, 5th Cross Street, Adambakkam, Chennai 600088). **PM-10 concentration in the ambient air in Chennai city.** *J Instn Engrs India (Environ Engng Div)*, **83**(March)(2003), 34-35 [4 Ref].

Particulate matter having size less than 10 microns (PM-10) has been identified as critical pollutants causing potential health hazard for human beings. A study was carried out to assess the concentration of PM-10 present in the ambient air in Chennai city during the summer season of the year 2000. The monthly mean concentration of PM-10 concentration was found to lie above the National Ambient Air Quality Standards values.

0303-052. Sharma Dhruv N, Sawant Aniket A, Uma R, David R Cocker III* (*Bourns Coll Engng, Cent Environ Res Techno, Univ California, Riverside CA 92521, USA). **Preliminary chemical characterization of particle-phase organic compounds in New Delhi, India.** *Atmos Env*, **37**(30)(2003), 4317-4323 [31 Ref].

Work describes a study for the investigation of the chemical composition of organic species present in PM₁₀ collected at a residential site in New Delhi and in TSP emissions from in-use two-stroke vehicles. Preliminary findings suggest that vehicular emissions and biomass and/or refuse burning are significant contributors to the organic fraction of PM₁₀ in the New Delhi atmosphere.

0303-053. Shrivastava KL, Ojha Shrikant (Dept Geo, JNV Univ, Jodhpur 342005). **Commercial and mixed zone's of Jodhpur city - a comprehensive survey of ambient air.** *Oikoassay*, **16**(1)(2003), 23-28 [1 Ref].

The study presents an account of ambient air quality survey in the commercial and mixed zones of the city of Jodhpur, Rajasthan. Respirable Dust High Volume Air Sampler (APM-451, APM-411) was employed for the purpose. SPM concentration along with NO₂ and SO₂ contents in the air were determined and were found to be crossing the permissible limits at some spots.