



# Objectives

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- To measure air pollutants levels in different parts of Latur city
- To find out emission of  $\text{SO}_2$  and  $\text{NO}_x$  by projection analysis
- To find out emission of Suspended Particulate Matter (SPM)  
( $\text{SPM} = \text{R.S.P.M.} + \text{N.R.S.P.M.}$ )



## Ambient air

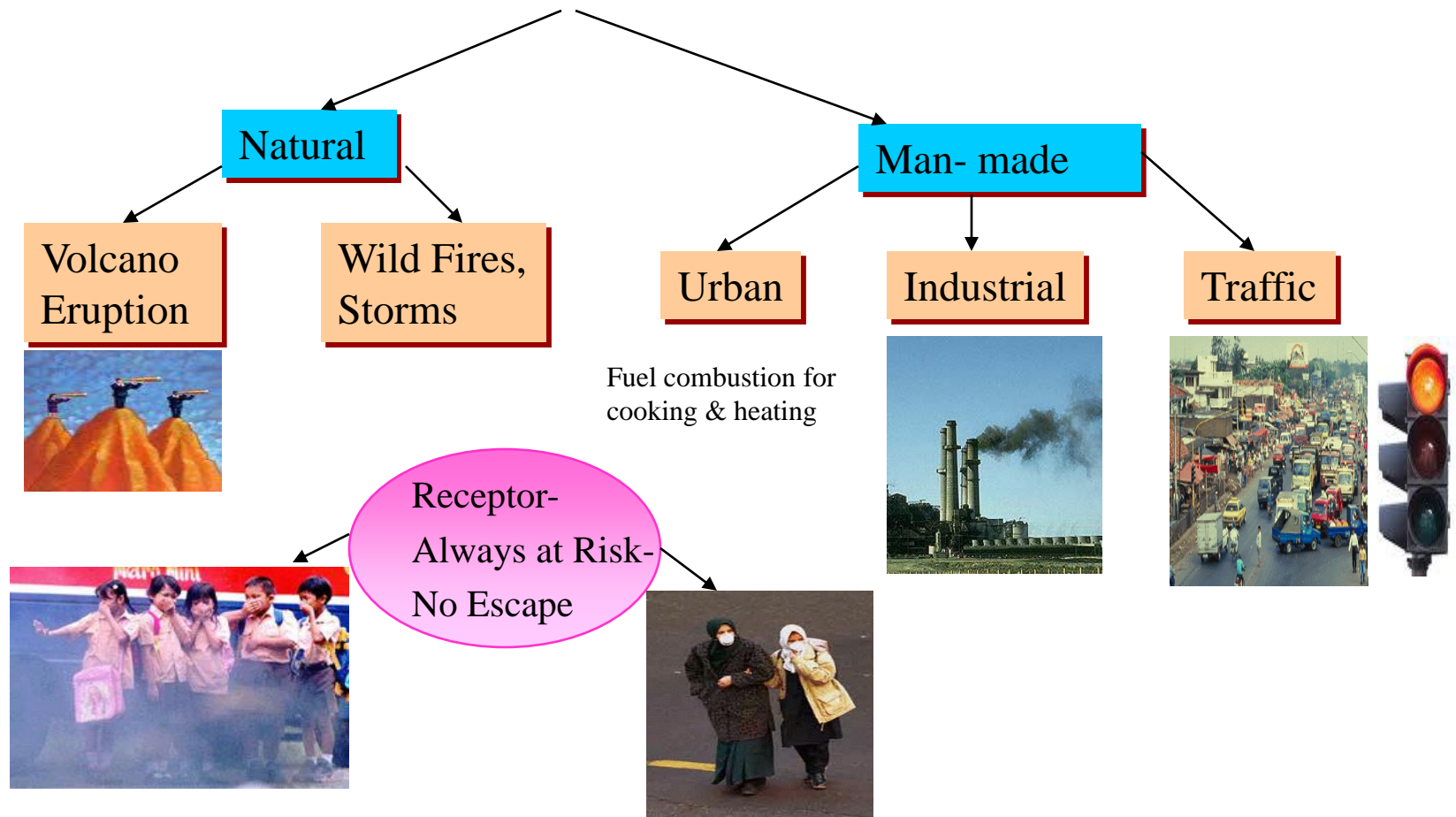
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“Ambient air is the outdoor air in which humans and other organisms live and breathe”

- Air normally has no color, odor, or taste. It is a mixture of gases, primarily nitrogen, at about 78%, and oxygen, at about 21%, with the remaining 1% composed of carbon dioxide, methane, hydrogen, argon, and helium.

# Sources of air pollution

## Air Pollution Sources





# Stations

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- We operate High Volume Respirable Dust Sampler machine (RDS machine) at different locations of city
- These station are classified according to the rule.
- At three different station RDS machine works.

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- Station A- Sensitive area

Site is at Keshawraj school, Shyam nagar, Latur

- Station B- Residential area

Site is at Boy's Hostel Ganjgolai, Latur

- Station C- Industrial area

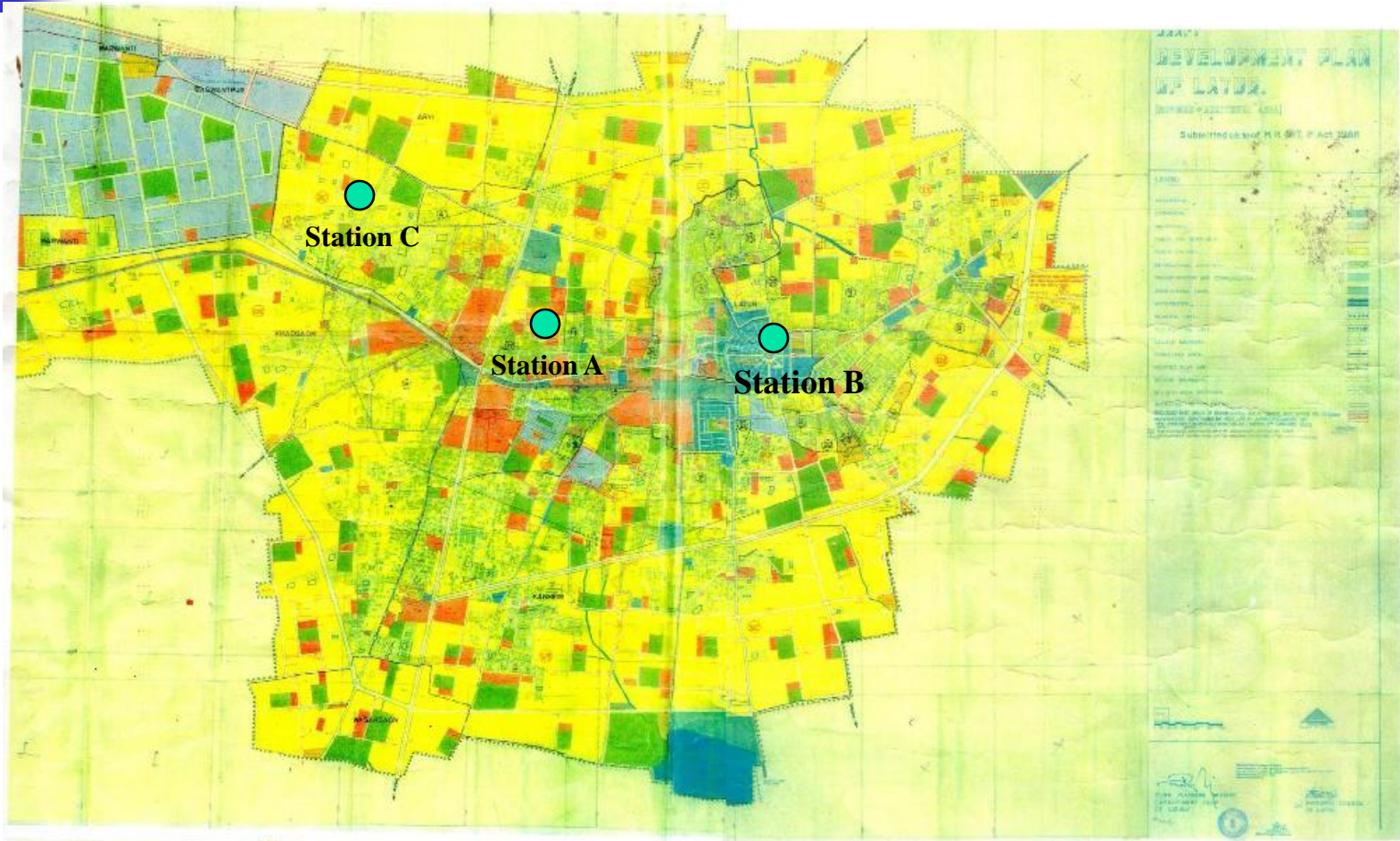
Site is at M.I.D.C. Water works, Latur

# Respirable dust Sampler ( RDS)





# Ambient Air Quality Monitoring Stations





## Estimation of SO<sub>2</sub> and NO<sub>x</sub>

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- Sampling is needed to find out the concentration of SO<sub>2</sub> and NO<sub>x</sub> in the atmosphere
- It is done with the help of “ Thermo-electrically cooled gases attachment to the Respirable dust sampler”
- Sampling is carried out in different stations-station A (Keshwraj school), station B (Ganj golai) & station C (industrial area)





## Procedure for SO<sub>2</sub> estimation

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- Sample is collected within 24 hr.
- Each day 6 samples get collected after an four hour of duration.
- SO<sub>2</sub> absorbing reagent (TCM) is added into the Impinger tube which is then kept in Thermo-electrically cooled gases attachment for 4hr
- After 4 hr sample is collected into the sampling bottle then the procedure is repeated for number of times
- Collected samples then brings to the Laboratory and analyzed by different methods given as fallows

## Photo of sample collection

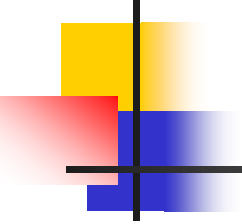




## Estimation of $\text{SO}_2$ by West & Gaeke method

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- Take 10(ml) of Exposed sample
- Add 1(ml) of Sulphamic acid solution  
(Keep the solution for 10 min)
- Add 2(ml) of Formaldehyde solution
- Add 2(ml) of working PRA solution

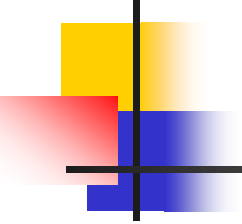
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- Make 25(ml) volume by adding distilled water
  - Measure the absorbance after 45 minutes by using Spectrometer at 560 nm
  - Note- make one reference solution as per above procedure except the addition of Exposed sample



## Procedure for NO<sub>x</sub> estimation

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- Sample is collected within 24 hr.
- Each day 6 samples get collected after an four hour of duration.
- NO<sub>x</sub> absorbing reagent is added into the tube which is then kept in Thermo-electrically cooled gases attachment for 4hr

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- After 4 hr sample is collected into the sampling bottle then the procedure is repeated for number of times
  - Collected samples then brings to the Laboratory and analyzed by different methods given as fallows





## Estimation of No<sub>2</sub> by Jacob & Hochheiser method

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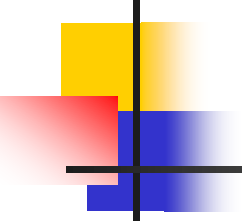
- Take 10(ml) of Exposed sample
- Add 1(ml) of Hydrogen peroxide solution
- Add 10(ml) of Sulphanilamide solution
- Add 1.4(ml) NEDA solution
- Make 50(ml) volume by adding distilled water
- Measure the absorbance after 30 minutes by using Spectrometer at 540 nm
- Note- make one reference solution as per above procedure except the addition of Exposed sample

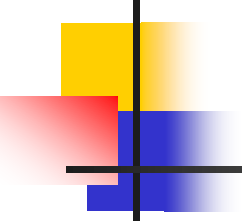


## Procedure for emission of SPM

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- As Suspended Particulate Matter constitute respirable & non-respirable suspended particulate matter both are necessary to calculate ( $SPM = R.S.P.M. + N.R.S.P.M.$ )
- Estimation of the concentration of SPM in to the atmosphere is also done at same station with the help of respirable dust sampler (RDS)
- Glass Micro Fiber Sheets (20.3\*25.4cm) is used to collect RSPM. The filter mounted properly on support screen with rough side upwards.

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- The length of sampling is of 8 hr. Before starting the sampling Initial flow rate should be taken
  - After sampling is completed , final flow rate is recorded
  - After 8 hr duration filter paper changed & the procedure is repeated for number of times.
  - Particles smaller than 10 microgram But larger than 2.5 microgram get collected on filter paper.
  - These particles are called as “ Respirable Suspended Particulate matter (RSPM) ”

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- At the same time cyclone cup is adjusted. Cyclone work on the principal of Centrifugal Force
  - After 8 hr duration cyclone cup changed & the procedure is repeated for number of times
  - Particles larger than 10 microgram are collected into the cyclone cup . These particles are “ Non-Respirable Suspended Particulate Matter (NRSPM)”
  - Filter paper & cyclone cup brings to laboratory then the calculation is done as per the procedure.
  - From that Concentration of Suspended particulate matter (SPM) is calculated

## Photo of labotary work





## Avg. Concentration of all Parameters

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Parameter	A- Sensitive	B-Commercial	C-Industrial
RSPM	82	108	81
SPM	230	419	192
SO <sub>2</sub>	2	3	3
No <sub>x</sub>	13	18	20





# National Ambient Air Quality Standards

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Parameter	A- Sensitive	B-Commercial	C-Industrial
Std. Value RSPM	50	60	120
Std. Value SPM	70	140	360
Std. Value	15	60	80
Std. Value	15	60	80



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THANK YOU