Air Pollution & Public Health Challenges due to Motorization in Kathmandu

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Context

• Number of vehicles and motors very high in Kathmandu they are emitting very high fuel exhaust in atmosphere and air pollution is increasing

• Topography of Kathmandu- surrounded by mountains and wind flow is south westerly or north westerly

• Climate change can further aggravate the air pollution in Kathmandu
## Composition of Atmospheric Air

<table>
<thead>
<tr>
<th>Elements</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen</td>
<td>78.08</td>
</tr>
<tr>
<td>Oxygen</td>
<td>20.95</td>
</tr>
<tr>
<td>Argon</td>
<td>0.93</td>
</tr>
<tr>
<td>Carbon Di Oxide</td>
<td>0.03</td>
</tr>
<tr>
<td>Trace amounts</td>
<td>Water vapor etc</td>
</tr>
</tbody>
</table>
Air Pollutants

• Particulate matter (PM10) is defined as less than 10 micrometer- fine particles either solid or liquid suspended in the air
• They are very small and remain suspended in the air for longer period of time and easily inhaled into the deeper part of the lung
• PM10 is largely produced by automobile exhaust and kerosene burning in Kathmandu
Air Pollution in Different Seasons

• The air monitoring reports showed that PM10 level found very high in between 8-10 AM and 4-6 PM and very low at 4 AM in Putalisadak area of Kathmandu and slightly less in peripheral areas

• PM10 remained high during pre-monsoon, post monsoon and winter

• Total suspended particles (TSP) and PM10 values are higher in Kathmandu than the WHO Air Quality Standards and Guideline
Air Pollutants and Health

• The composition of air pollutants and their associated toxicity don't occur in isolation, but in complex mixtures that create potential for synergic effects

• The associated toxicity vary in different settings age, cultural practices, life styles, climate, season and socio-economic status
Air Pollutants and Health

- Children and elderly more affected – increase in respiratory problems observed during certain seasons and climatic conditions in Kathmandu. Poor communities are also affected more
- Air pollutants either aggravate the existing lung disease or reduce lung function
- Estimated number of deaths due to air pollution in Nepal is 95 deaths per 10,000 pollution every year, but the suffering and disease burden is estimated to be very high
- Leaded gasoline is an important source of lead poisoning in children in Kathmandu valley
Short Term Health Effects

• Irritation of eyes, throat, nose and respiratory tract
• Acute bronchitis and pneumonia
• Headache and vomiting tendency
• Skin allergy- itching or reactions
• Aggravation of existing asthma and other respiratory diseases leading hospitalization or needs additional treatment
• Smog disaster- very serious pollution
Long Term Health Effects

- Chronic respiratory disease-COPD/COAD
- Lung cancer
- Heart disease
- Damage to brain, nerves, and kidneys
- Lead poisoning in children
Summary, of Health Impacts of the Air Pollution

• It is affecting the health of the large number of people and becoming a major public health problem
• It is emerging as an important cause of the death
• It is also the cause of the premature deaths-14 years earlier
• There is growing evidence that it also can affect the baby in womb
Thank you for your kind attention