सत्यमेव जयते
Government of India

Ministry of Health and Family Welfare

Health Advisory on Air Pollution

National Programme on Climate Change & Human Health
National centre for Disease Control
Directorate General of Health Services
MoHFW

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Purpose P

Purpose of the Document

The present document of health advisory on air pollution is updated and meant for providing guidelines to the state health department including the programme officials to enable them in developing certain appropriate mechanisms to address health issues arising due to exposure to air pollution in their respective areas. This includes a background understanding of the present burden of diseases attributed to air pollution, major sources of pollution, vulnerable groups, its health effects and main symptoms and understanding of air quality information in their respective areas.

The document also provides suggestions to the state health department on ways to obtain air quality forecasts for Delhi NCR and certain key Indian cities from IMD at present, the air quality information particularly daily city AQI level from pollution control board for making people aware of the potential health issues and informed them of protective and preventive health measures. The addressing mechanisms also mention on ways to focus on strengthening of health care service provisions in the health facilities, its preparedness and response actions during higher air pollution level. It further mentions of health sector strengthening measures like health action plan development, considerations of air pollution and COVID infections and few action points for health sector in Delhi NCR. It also suggested IEC messages for widespread public health communication on Do's and Don'ts to protect, prevent and control health issues of the general population and also, for those having medically underlying diseases. Some of the social media messages are also added for reference purposes.

The document has provided important links to access relevant documents on air pollution and health issues like the technical documents, IEC materials, training modules etc. developed under NPCCHH and others for references of the state officials.

Acknowledgement

The present document on Health Advisory on Air Pollution, 2022 under NPCCHH (MoHFW) is developed and updated from the previous public health advisory on air pollution. Under the guidance of Prof. Atul Goel, DG, DGHS, Shri Lav Agarwal, Additional Secretary, MoHFW, Dr. Sujeet K. Singh, Advisor, NCDC and Dr Aakash Shrivastava, Head and Addl. Director, NPCCHH (HQ) at NCDC, the contents in the previous document were revised and edited with inclusion of certain new areas and relevant messages on air pollution related health issues by the undersigned.

The updated advisory contents were then shared with the members of the Technical Expert Group (TEG) on air pollution and health including some of the special invitees working in the subject areas for their suggestions/ inputs. Inputs from some expert members were received and during the TEG meeting, the contents of the document were presented. Inputs suggested were considered and the final document got developed. New inclusions in the document are the burden of diseases attributed to air pollution from recent ICMR report, CPCB's inputs in Air quality information, diagrams on Health Effects and Vulnerables attributable to air pollution, recommendations specially for the programme officials, considerations during the time of high AQI levels, CPCB's Delhi NCR Graded Response Plans and its recommendations to programme officials, Social media message templates, important links and references.

The TEG members on Air pollution and Human Health under NPCCHH along with special invitees from relevant stakeholders working on air pollution and health concerns provided inputs for update of the advisory document are as follows-

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The programme is very grateful to all those who have provided valuable inputs in the document to help address the health issues of the people impacted due to exposure to air pollution in the country.

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Health Advisory on Air Pollution (NPCCHH)

1. **What is Air Pollution and its key pollutants?**

   Air pollution is the contamination of the indoor or outdoor environment by any chemical, physical or biological agent that modifies the natural characteristics of the atmosphere (WHO).

   Key health harmful air pollutants include following-

   - Particulate Matters ($PM_{2.5}$ and PM_{10}), Carbon Monoxide (CO), ground level Ozone (O_3), Volatile Organic Compounds, metals,[A1] Sulphur dioxide (SO_2) and Nitrogen dioxide (NO_2).

2. Air pollution, considered as the single largest environmental health threat globally, is known to have association with health impacts. A recent ICMR study reported on disease burden, deaths etc. attributed to air pollution among the Indians showed the following findings –

   i. **1.7 million Deaths (18% of the total deaths) in India (2019) were attributable to air pollution**

      a) Chronic Obstructive Pulmonary Disease (32·5%)

      b) Ischaemic heart disease (29·2%)

      c) Stroke (16·2%)

      d) Lower respiratory infections (11·2%)

   ii. **11·5% of the total DALYs (Disability-Adjusted Life Year) in India (2019) attributable to air pollution are as shown below-**

      a) 39·5% from lung diseases

         - COPD (22·7%)
         - Lower respiratory infections (15·5%)
         - Lung cancer (1·3%);

      b) Other DALYs

         - Ischaemic heart disease (24·9%)
         - Stroke (13·7%)
         - Diabetes (5·5%)
         - Neonatal disorders (14·5%)
         - Cataract (1·5%)

3. **Major sources of air pollution in the country** are –

   i. **Ambient (outdoor) air pollution** is from both anthropogenic and natural.

      a) Industrial emissions (through fossil fuel burning/ process and fugitive emission)

      b) vehicular exhaust

      c) re-suspension of road dust, construction and demolition activities,

      d) refuge burning (garbage, horticulture wastes, crop residues etc.)

      e) use of solid fuels for cooking and burning of firecrackers etc.

ii. **Household (Indoor) air pollution** is caused by burning biomass such as

a) wood, coal, dung, kerosene in chulhas or fireplaces for cooking and heating purposes.

b) Others such as

- by burning mosquito coils, incense sticks, cigarettes, bidis,
- use of sprays, solvents, and fumes from chemicals used in building interiors etc.

iii. **Sick Building Syndrome (SBS)**: Building occupants experience acute health and comfort effects which appear to be linked to time spent in a building, but no specific illness or cause can be identified is called Sick Building Syndrome (SBS).

a) The complaints may be localized in a particular room or zone, or may be widespread throughout the building.

b) The major sources are inadequate ventilation, chemical and biological contaminants (molds and fungi) from indoor sources or outdoor sources, dust, smoke, fumes, fabric fibres, bright or flickering lights and problems with cleaning and layout

4. **Understanding air quality/AQI levels and its health significance**:

To avoid complexities in understanding the data and for its effective communication and to educate public on status of air pollution and its related health perspectives, Central Pollution Control Board has launched the mechanism of publishing Air Quality Index (AQI) depicted in easily understandable six (6) colour code categories with their likely health impacts as

i. Good
ii. Satisfactory
iii. Moderately polluted
iv. Poor
v. Very Poor
vi. Severe

AQI Considerations and its significance

- Air pollutants measured by real time analysers at Continuous Ambient Air Quality Monitoring Stations (CAAQMS)
  - First calculate moving averages of last 24 hours for individual pollutant
  - Then, the AQI sub-index for a particular pollutant is calculated and finally, the highest sub-index is declared as AQI of that day of the area or location.
- AQI value never indicates synergistic status of air pollution or impact of air pollution on health; rather it indicates about most problematic air pollutant

Worsening of Air Quality Index (higher AQI value) especially of 'poor to severe' in an area may result in increase in morbidity and mortality among those who are exposed to it particularly vulnerable populations like children, elderly, underlying medical conditions etc.

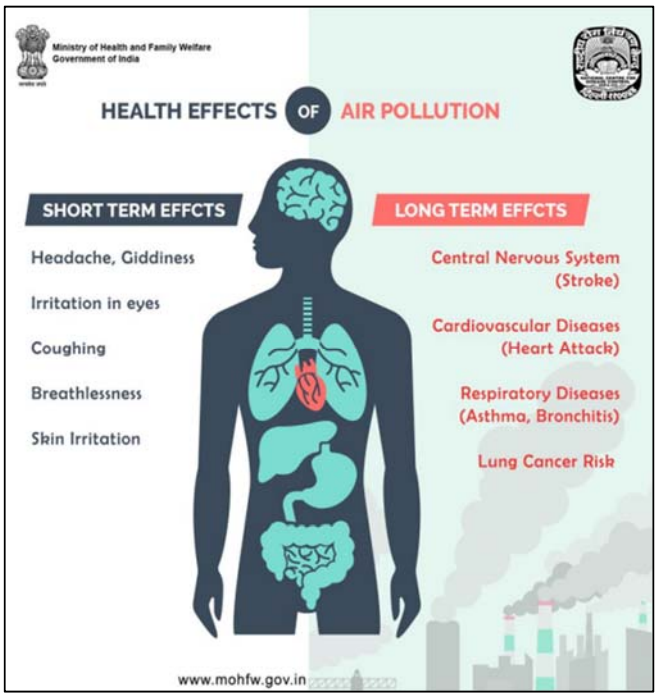
Therefore, a general health advisory related to AQI is issued by CPCB with AQI bulletin as in table below-

Table: AQI levels, Health effects and Certain Protective Health Measures			
Air Quality Index (AQI)# (Pollution level)	Possible Health Consequences	Advice for	
		General Population	Vulnerable Population*
Good (0-50)	Low risk	No special precautions	No special precautions
Satisfactory (51-100)	Minor breathing discomfort in vulnerable population*	No special precautions	Do less prolonged or strenuous outdoor physical exertion
Moderate (101-200)	Breathing or other health related discomfort in vulnerable population*	Do less prolonged or strenuous outdoor physical exertion	Avoid prolonged or strenuous outdoor physical exertion
Poor (201-300)	Breathing discomfort in healthy people on prolonged exposure Breathing or other health related discomfort in vulnerable population*on short exposure	Avoid outdoor physical exertion	Avoid outdoor physical activities
Very Poor (301-400)	Respiratory illness in healthy people on prolonged exposure Pronounced respiratory or other illnesses in vulnerable population* on short exposure	Avoid outdoor physical activities, especially during morning and late evening hours	Remain indoors and keep activity levels low
Severe (401- 500)	Respiratory illness in healthy people on prolonged exposure Serious respiratory or other illnesses in vulnerable population* on short exposure	Avoid outdoor physical activities	Remain indoors and keep activity levels low

Sameer app from CPCB is a mobile app which can provide the city level hourly update of the National Air Quality Index (AQI) published by Central Pollution Control Board. Health Officials and general public may download it for use to get information of the air quality level in their respective areas.

5. Health consequences of air pollution:

The health impacts of air pollution depend on the level of pollution and exposure duration. The individuals' vulnerability to the health impacts of pollution can also differ based on demographic factors and predisposing health conditions.



i. Short-term high-level exposures can result in acute health reactions with involvement of various human organs and patients may present with certain suggestive symptoms like irritation of eyes, nose, throat and skin, cough, breathing difficulty, wheezing, chest discomfort, chest pain, headache, giddiness, limb weakness, facial deviation etc. Vulnerable groups can experience more severe effects such as lower respiratory tract inflammation and infection, exacerbation of asthma, bronchitis or exacerbation of chronic illnesses such as chronic obstructive pulmonary disease (Respiratory System), ischaemic heart diseases (CVS), and cerebrovascular strokes (CNS) etc. The Figure 1 (in the right) shows various health effects attributed due to air pollution.

ii. Long term exposures to even lower level of air pollution can result in chronic illnesses of respiratory and cardiovascular systems, lung cancer and premature deaths.

6. Vulnerable Population to health effects of air pollution:

i. **Age group:** Children particularly under 5 years and old age groups

ii. **Pregnant women:** Exposure during pregnancy may have consequences for child in womb.

iii. **Predisposed health conditions:** Those with pre-existing illnesses of respiratory cardiovascular and cerebrovascular systems are at higher risk

iv. **Low socio-economic conditions:** Those with poor nutritional status; those living in poor housing, using fossil fuels for cooking, heating/ lighting purposes are at risk.

v. **Outdoor working groups:** Those with possibility of prolonged exposures such as traffic policemen, traffic volunteers, construction workers, road sweepers, rickshaw pullers, auto-rickshaw drivers, roadside vendors, and others working outdoors in air polluted settings, labours working near boilers or furnace smelters, miners etc. are at higher risk.

vi. Besides, women with burning biomass for cooking, and sweeping dust are vulnerable on account of their household work.

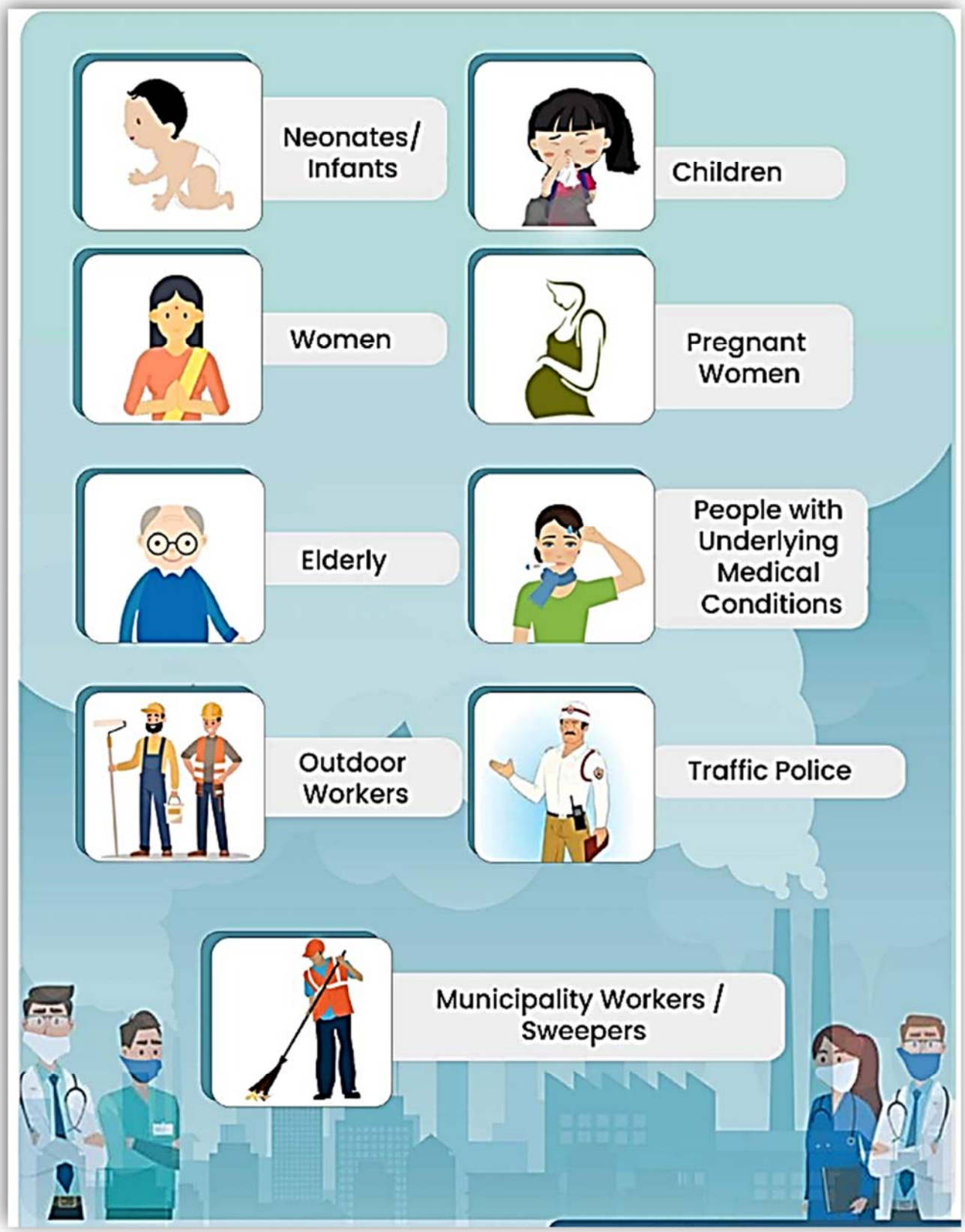


Figure 2.Vulnerable populations to air pollution exposure

7. Air Quality Early Warning System (AQEWS) for Delhi and India (Advanced High Resolution)

Under the auspices of Ministry of Earth Sciences, India Meteorological Department (IMD) and Indian Institute of Tropical Meteorology (IITM) have commissioned Air Quality Early Warning System (AQEWS) for India. The advanced high-resolution Air Quality Early Warning System is operational specifically for Delhi-NCR. It is also available for some specific Indian cities (Pune, Mumbai, Bengaluru, Kolkata, Varanasi, Lucknow, Kanpur, Ludhiana, Ahmedabad, Hyderabad, Visakhapatnam, Chennai, Coimbatore, Bhubaneswar, Ranchi, Patna, Raipur etc.). The final forecast is made available in terms of Air Quality Index (AQI) so that appropriate health advisories can be issued depending on severity of the pollution levels.

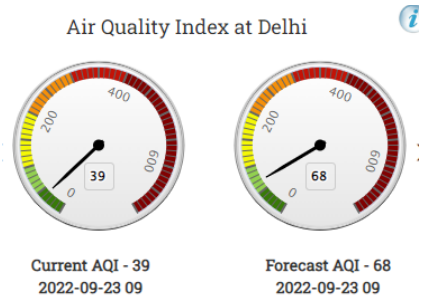
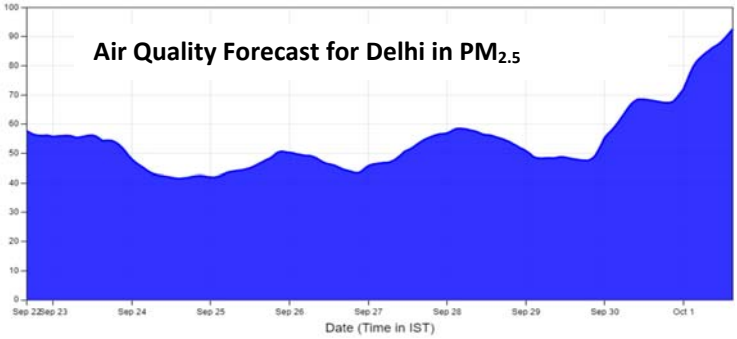
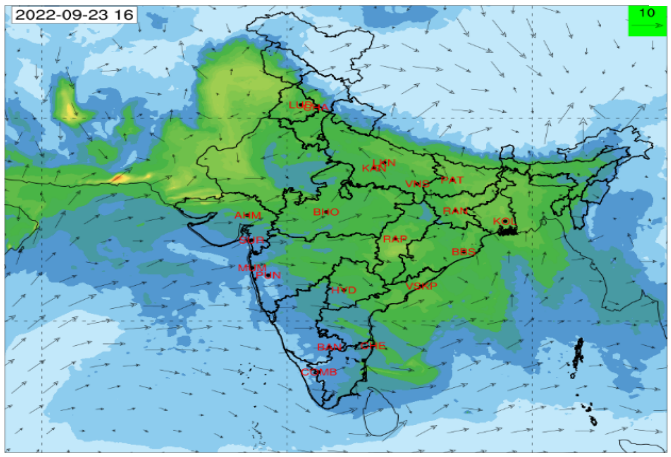


Figure showing AQ forecast and AQ current (IAQI in Delhi



Graph showing Air Quality Forecasts for Delhi



Map of India showing AQ Forecasts for Indian cities

The objective is: "to enable and provide air quality forecasting and information services in a harmonized and standardized way tailored to the needs of society and pollution control authorities". Climate and weather factors like wind, temperature,precipitation and other meteorological factors play a key role in the poor air quality that populations face.

How to access the Air Quality Forecast: The Air Quality forecast spatial plots are available for the Indian region. The air quality forecasts products are available at the following links https://ews.tropmet.res.in and https://mausam.imd.gov.in .

State programme officials are to monitor the AQ forecasts regularly which are available for the respective areas at present. Depending on severity of the pollution levels in their respective areas, the officers are to take up appropriate health related actions including issuance of health advisory to increase the awareness level of the public on the Do's and Don'ts IEC messages in the social media and other media channels. These are the acts required to protect, prevent and control the health issues which may arise when people are exposed to air pollution.

8. Recommendations to the States (4 main action points) –

(NPCCHH Nodal Officers at State and District levels to supervise, monitor and coordinate activities)

i. Getting Air Quality information in Health Sector:

State health authorities to keep a check on the daily air quality data in the cities particularly NCAP cities and these are available at CPCB website or State Pollution Control Board. As mentioned above, Sameer App. can also be used for obtaining the information.

- State may coordinate with pollution control board for developing a system of availing such air quality information in health sector regularly.
- The same air quality data may preferably be made available to health facilities (WCs, PHCs, CHCs, SDHs and DHs and others) for health-related actions
- Based on the air quality data, healthcare facilities may strengthen appropriate healthcare service provisions to address health issues arising in their respective area and also, for the outreach activities at the community level.
- This information is also for use in surveillance on air pollution related illnesses

ii. Strengthening of Healthcare services to address the air pollution related health issues

a) Public Awareness Generation

IEC materials

- Posters, GIFs, Audio-Video Spots, Social media messages (Prototypes at NCDC website)
- Locally translated/ created IEC materials
- IEC messages (Annexure 1)
- Social Media Messages (Annexure 2)

IEC dissemination plans

- Timing: For example-
  - Winter months (Sept.-Oct to Feb.-March)
  - Pre and Post Diwali
  - Stubble Burning Days
  - SMOG (Smoke + Fog)- Fog admix with polluted air (Hazardous to health)
  - International Day of Clean Air for blue skies (7th September) every year
  - International Days related to Environment and Health
- Channels for disseminations-
  - Social media - Twitter, Facebook, Instagram, You Tube, Whatsapp
  - Posters, Wall paintings, Street plays/ Nukkad Natak
  - Radio Television channels (AIR, Doordarshan, FM channels)
  - Public means of transport vehicles- Bus etc.

- Competitions (Painting, Quiz, Debates, Symposium)
- Key Public Officials and Senior officials
- Experts and Panel discussion

b) <u>Capacity building of the health sector</u> including healthcare facilities –

- Development of an action plan in health sector (District level, city level etc.)
- Training calendar- Programme officials, Surveillance Nodal officers, Community level workers etc.
- Training modules development and its conduction of the ToTs, Programme officials, MOs, Paramedics, CHOs, Community Health Workers, Surveillance Nodal Officers etc.

c) <u>Surveillance Strengthening</u> and Monitoring in the State: NPCCHH programme officials at the State (SNO-CC) and District (DNO-CC) roles are –

- To establish and expand sentinel surveillance on air pollution related illnesses in the state particularly NCAP cities.
- About (3-4) sentinel hospitals/ city including hospital nodal officers to identify
- Each sentinel hospital to report regarding daily air pollution related illness cases attending the emergency department to DNO-CC regularly/ timely.
- Each DNO to monitor reports from sentinel sites; analyse statistics of illnesses related to air pollution and share to the State and Central level for timely actions.

(Details in the SOP of Surveillance on air pollution related illnesses)

d) <u>Health sector response mechanisms</u> - Healthcare facilities strengthening

Doctors/ Staffs orientation on the issues

Strengthening support to manage cases attributed to air pollution

- Patient care service areas preferably may be focussed are as follows-
  - OPD services (mainly General OPDs, Medicine, Paediatrics, Respiratory Medicine, Cardiology and Neurology etc.)
  - Emergency services
  - Referral Services
  - Ambulance services
  - Outreach services
- Medications - acute respiratory/ cardiovascular/ cerebrovascular etc.
- Diagnostic/Laboratory Services to support the illnesses
- Medical equipments like oxygen supply, nebulizers, ventilators
- Hospital beds, Stretchers, Wheelchairs, Ambulances to support the cases
- Referral mechanisms to identify

iii. **Health Sector Response Action Plans** during high level of air pollution (particularly post-Diwali, Stubble burning and Winter days/ months (SMOG) in State/ District/ City)

Certain considerations (7 points) for Health Sector Responses –

- Health Department to activate the action plan during higher AQI levels
- Health Department may increase to coordinate with concerned departments for IEC Campaigns (Environment, Pollution Board, Transport, Urban development, Coal, Power, PWD (construction related works), Municipality/ Panchayat, Traffic Department, WCD, Labour department etc.)
- Health Departments including healthcare facilities to strictly monitor daily AQI levels during such high air pollution days/ months as reported from pollution control boards. Health Facilities may provide daily AQI value to inform people and measures to protect, prevent and control themselves from air pollution.
- Strengthening further of public awareness campaigns in health sector (increasing frequency/ channels of dissemination to reach the target populations who are likely to have more health issues due to exposure to air pollution - School children, College students, Elderly, Women, Patients with underlying medical conditions of respiratory, cardiovascular, cerebrovascular diseases, outdoor exposures; vulnerable hot spot areas).
- Strengthening of healthcare services provisions- Patient care services at the Emergency departments; Outdoor departments etc.; Availability of medications/ equipments in the ED/ OPDs to treat the illnesses; Human resources to attend patient care in departments; Logistics; Enhancement of beds if required in (ED). These may be appropriately taken up at different levels of healthcare facilities at WCs, PHCs, CHCs, SDHs, DHs and others tertiary cares
- Strict Monitoring of the sentinel surveillance reports; types of increasing cases reporting in the health care facilities (Respiratory cases, Cardiovascular, cerebrovascular cases). This information to share with concerned departments and Hospitals/ Healthcare Facilities for actions to take.
- Engagements of Civil Societies/ Private facilities to support in addressing the issue.

iv. **Health Adaptation Plan on air pollution and health (State/ District level):**

- State/ Districts to finalize action plan to address on air pollution related illnesses
- State and District Task Force on Climate Change and Health may coordinate with concerned departments to finalize action plan on air pollution related illnesses
- The Health Action Plan for state/ district/ cities may include actions to achieve programme objectives
- Air pollution issues in the State including non-attainment cities identified
  - Name of the non-attainment cities
  - System to avail daily air quality data in health sector from pollution control board and sharing the same to the healthcare facilities
  - May refer ICMR-MoHFW documents on burden of health due to air pollution

- Awareness Generation and its dissemination planning (IECs, public health advisories, translated IECs, dissemination channels and areas identified)
- Capacity building activities (Modules and Training of DNO-CCs, Medical Officers, Paramedics, Community level health workers) – HCFs in the State
- Surveillance strengthening on air pollution related illnesses (cities, hospitals, nodal officers, training, surveillance data, its analysis and actions
- Health-sector preparedness and response action plans
- Details of Roles/ Responsibilities of healthcare personnel
- Inter-sectoral coordination mechanisms (Health and Non-Health)

9. Air Pollution and COVID-19 (5 main points)

State health officials must take due precautionary measures during the times of high air pollution levels with COVID infections –

i. Air pollution can influence COVID-19 infection and its outcome, although the data is as yet not conclusive.

ii. Particulate matter (PM) may potentially serve as a vehicle for airborne transmission of SARS-COV-2 virus.

iii. Short-term and long-term exposures to PM2.5, and long-term exposures of NO2, appear to be correlated with increased susceptibility to COVID-19 infection, and higher mortality among those infected.

iv. Strict COVID-19 guidelines including wearing mask, social distancing, hand washing, crowd avoidance etc. must be in place in more air polluted areas/cities.

v. Priority health action plans and measures must be in place to protect, prevent and control air pollution considering COVID-19 cases in the area.

10. Health sector's response in context of CPCB's "Graded Response Action Plan"

In view of the serious concern and urgent action requirements to address the high level of air pollution in Delhi & NCR, a Graded Response Action Plan and appropriate measures based on air pollution levels was notified in 2017 under the MoEF&CC. It has an added new category of "Severe+ or Emergency" in the previous 6 AQI categories. It defined various mitigating and adapting activities as graded response actions to address the higher level of air pollution and identified the respective implementing agencies from concerned Ministries and Departments. Its detail is available at *https://cpcb.nic.in/uploads/final_graded_table.pdf*

Health sector in Delhi NCR region (Delhi, Haryana, Punjab, Rajasthan and Uttar Pradesh) may do -

i. State NPCCHH programme officials may coordinate with implementing agencies as mentioned in the action plan for the purpose of awareness generation of health issues associated with air pollution among the people.

ii. These concerned departments may be considered as members for State/ District level Task Force under NPCCHH programme for taking support/ inter-sectoral coordination in addressing the issues in the State/Districts of these region.

Annexure I:

IEC messages for Public Awareness on
Air Pollution and Health Concerns under NPCCHH

- **Target Population-**
  - General population and
  - Those having underlying medical conditions

I. General Population:

Reduce risk from exposure to air pollutants by taking up the following measures –

Avoid preferably places with high air pollution like roads with slow & heavy traffic, areas near polluting industries, construction-demolition sites.

1. Avoid outdoor morning and late evening walk, run, jog and physical exercise. Do not open external doors and windows during morning and late evening hours, may ventilate if necessary between 12 p.m. to 4 p.m. in afternoon (Days with poor to severe AQI)
2. Avoid burning biomass such as wood, coal, animal dung, kerosene. Use clean smokeless fuels (gas or electricity) for cooking and heating purposes. If using biomass, use clean cook stoves.
3. Avoid burning of wood/ charcoal in 'Anghiti' during winters, in closed and confined condition which may be fatal due to CO and built up CO_2
4. Avoid use of room fresheners, it has ill effects as it consume O_2 in vicinity very fast.
5. Avoid burning firecrackers.
6. Avoid burning in open any form of wood, leaves, crop residues, & waste.
7. Do not smoke cigarettes, bidis and related tobacco products.
8. Avoid burning mosquito coils and incense sticks in closed premises.
9. Reschedule outdoor activities as per AQI, and remain indoors on days with poor to severe AQI.
10. Practice wet mopping instead of sweeping or vacuum cleaning inside homes. If you choose to use vacuum cleaner, use those having High Efficiency Particulate Air (HEPA) filter
11. Keep washing your eyes with running water regularly and do regular gargles with warm water
12. Consult the nearest doctor in case of breathlessness, giddiness, cough, chest discomfort or pain, irritation in eyes (red or watery)
13. As a "no-regret" strategy, healthy diet, with fruit and vegetables rich in antioxidants, and adequate amount of hydration by drinking water is advocated.

II. **Those with underlying medical conditions particularly chronic pulmonary or cardiovascular problems** should have following additional measures

1. Be more careful to avoid exposure to air pollution
2. Avoid any strenuous activity and stay indoor during higher AQI levels
3. Keep a check on exacerbations of suggestive symptoms
4. Properly follow doctor's instructions on healthcare
5. Keep the prescribed medications readily available
6. Seek immediate medical advice if symptoms worsen.

III. Optional choices (**Face Mask, Air Purifiers, Air Conditioners**)

1. If you choose to use face mask, the disposable N95 or N99 is useful provided user instructions are followed. These masks may help provided the period of exposure is short. Masks should have proper fitting on users' mouth and nose. Ensure to replace the masks after usage as instructed. Paper masks, handkerchiefs, scarves and cloth are not effective.
2. If you choose to use air purifier, follow manufacturers' guidelines, however it may be advised to have expert's consultation on suitability, positioning, technology selection and cleaning capacity (area coverage). Ensure to replace and clean filters as instructed. Avoid using an air purifier that works by generating ozone, as it increases pollution inside rooms.
3. When operating air conditioners in buildings or vehicle, use in "re-circulate" mode to avoid contact with outside air.

IV. IEC materials (Posters, GIFs, Audio Spots and Video Spots) are available at NCDC website

1. Link to find them- https://ncdc.gov.in/index1.php?lang=1&level=2&sublinkid=887&lid=430

Annexure II:
Social Media Messages under NPCCHH

1. Check the daily Air Quality Index (AQI) of your area before planning your day out.
2. Avoid places with high air pollution like roads with slow & heavy traffic areas near polluting areas to minimize exposure to air pollution.
3. Avoid construction-demolition sites, coal-based power plants, brick kilns etc. to minimize exposure to air pollution
4. On days of poor to severe plus air pollution (AQI>200)
    a) avoid outdoor morning & late evening walk
    b) avoid jogging, running or other exertional physical activities
    c) avoid opening external doors and windows during morning and late evening hours.
    d) ventilate rooms if necessary between 12 p.m. to 4 p.m. in afternoon
    e) remains indoors, and reschedule outdoor activities as per AQI levels
    f) if person experiences breathlessness, cough, chest discomfort or pain, giddiness, irritation in eyes (red or watery) – consult the nearest doctor immediately.
    g) high risk people like pregnant women, young children and elderly should restrict outdoor movements as far as possible.

5. Avoid burning in the open environment of any form of wood, leaves, crop residues, and waste which can further worsen air pollution
6. Practice wet mopping instead of sweeping or vacuum inside homes to reduce exposure to air pollution.
7. Avoid burning firecrackers
8. To reduce the harmful effects of air pollution, eat seasonal fruits and vegetables rich in antioxidants and drink adequate water to maintain hydration.
9. Patients with chronic pulmonary or cardiovascular problems, pregnant women, young children and elderly people should be more careful and avoid exposure to air pollution.
10. On days of poor to severe plus air pollution avoid any strenuous activity by persons with chronic cardio-pulmonary disease.

11. Patients with chronic pulmonary and cardio vascular disease should keep their prescribed medicines readily available while going outdoors on poor to severe plus air pollution days (AQI>200).
12. Patients with chronic pulmonary and cardio vascular disease should keep a check on exacerbation of symptoms on poor to severe plus air pollution days (AQI>200).
13. Patients with chronic pulmonary and cardio vascular disease could seek immediate medical advice if symptoms worsen during poor to severe plus air pollution days (AQI>200).
14. On days of poor to severe plus air pollution (AQI>200) consider use of close fitted N95 or N99 masks to reduce exposure to air pollution.
15. On days of poor to severe plus air pollution (AQI>200) use of air purifiers may be beneficial to reduce the effects of air pollution.
16. Avoid uses of air purifiers that works by generating ozone and other harmful byproducts as they increase indoor air pollution.
17. Air conditioners in buildings and vehicles may use "re-circulate" mode to avoid contact with outside polluted air on days of poor to severe plus air pollution (AQI>200).
18. Stop smoking cigarettes, bidis and other related tobacco products which aggravate ill effects of air pollution.
19. When the air pollution level is poor to severe plus (AQI>200), drive the vehicle with windows closed to minimize exposure to air pollution.
20. Use public transport whenever possible to reduce air pollution.
21. When the air pollution level is poor to severe plus (AQI>200), if someone experiences cough, wheezing, chest tightness – level of exertional activity should be decreased or stopped and immediately consult to nearest doctor.
22. Follow local air quality forecasts before planning to outdoor activity.
23. Ensure cooking areas are well ventilated with cross ventilation by opening windows, doors to reduce exposure to household air pollution.
24. Avoid burning mosquito coils and incense sticks in closed premises to reduce exposure to indoor air pollution.
25. Avoid spending long periods of time in busy routes in poor to severe plus air pollution days.
26. Avoid exercising near high traffic areas where exposure to air pollution is usually high.
27. Act in time, protect yourself from ill effects of air pollution.

28. Pollution due to fire-cracker burning can seriously impact health of person's suffering from cardiovascular, respiratory diseases.
29. Pollution due to fire-cracker burning can seriously impact health of person's suffering from or who has recovered from COVID-19.
30. Avoid fire-crackers burning especially by people suffering from asthma or another lung disease.
31. Stay indoor during nights of Diwali to reduce exposure to air pollution.
32. Wear a mask (N95 or N99) to reduce exposure to air pollution by fire-crackers.
33. If a person develops breathing difficulty during Diwali, consult to doctor immediately.
34. When complete escape from air pollution is difficult, taking some measures can provide you a certain level of protection from its harmful effects on your health.
35. Increased air pollution level can have major health consequences. Do check the AQI before planning your outdoor activities for the day. Website to check AQI: CPCB
36. It makes such a difference to live in a green and healthy city! Become aware & Act now
37. Vulnerable population are the highest risk of their health being affected due to Air Pollution. These vulnerable groups should avoid outdoor physical activities when Air Quality is poor to severe.
38. Choose green to breathe clean: Planting more trees can reduce the effect of air pollution on health. Head towards a pollution free tomorrow with every tree you plant.

Note please: Hash tags may be considered to coordinate with relevant Ministries/ departments/ Institutes/ Organizations like Central/ State Pollution Control Board, Environment, NPCCHH Programme etc.

 # References and links to access information and documents on air pollution and those related to air pollution health issues from NPCCHH programme, CPCB etc. -

1. 68th WHA on (WHA 68.8; Agenda item 14.6; 26 May, 2015) Health and the environment: addressing the health impact of air pollution- https://apps.who.int/iris/bitstream/handle/10665/253237/A68_R8-en.pdf?sequence=1&isAllowed=y
2. India State-Level Disease Burden Initiative Air Pollution Collaborators. Health and economic impact of air pollution in the states of India: The Global Burden of Disease Study 2019. Lancet Planetary Health. 22 December 2020.
    - ICMR_Press_Release_Air_Pollution_22122020 (1).pdf
    - Health and economic impact of air pollution in the states of India: the Global Burden of Disease Study 2019 - The Lancet Planetary Health
3. NPCCHH programme- https://ncdc.gov.in/index1.php?lang=1&level=1&sublinkid=876&lid=660
4. Detailed forecast analysis/ verification for air pollution in Delhi: https://ews.tropmet.res.in
5. AQI bulletin at CPCB: https://cpcb.nic.in//upload/Downloads/AQI_Bulletin_20220816.pdf
6. 132 Non-attainment/ Million plus cities in India under NCAP : https://cpcb.nic.in/uploads/Non-Attainment_Cities.pdf
7. Sameer app (Mobile app for AQI level): https://play.google.com/store/apps/details?id=com.cpcb&hl=en_IN&gl=US
8. CPCB's **"Graded Response Action Plan"** for Delhi NCR on air pollution as- *https://cpcb.nic.in/uploads/final_graded_table.pdf*
9. file:///C:/Users/HP/Downloads/Katoto%202021.pdf
10. file:///C:/Users/HP/Downloads/Maleki%202021.pdf
11. https://www.who.int/health-topics/air-pollution#tab=tab_1

स्वास्थ्य एवं परिवार कल्याण मंत्रालय
भारत सरकार
प्रदूषित हवा स्वास्थ्य के लिए हानिकारक हैं
प्रदूषण का आपके स्वास्थ्य पर असर
चक्कर आना
साँस लेने में तकलीफ
खाँसी
छाती में तकलीफ
आँखों में जलन
जरूरत पड़ने पर ही घर से बाहर निकलें
आखों में जलन, साँस की तकलीफ या खाँसी होने पर डॉक्टर से सम्पर्क करें
दिल, फेफड़े एवं अन्य गंभीर बीमारी के रोगियों का विशेष ध्यान दें
धुआ रहित ईंधन का प्रयोग करें
ज्यादा प्रदूषित जगहों पर ना जायें
घरों के खिड़की –दरवाजे सुबह व शाम बन्द रखें
सुबह व शाम की सैर टालें
पटाखे, कूड़ा, पत्तियां आदि न जलाएं
धूम्रपान से बचें
समझदार बनें...प्रदूषण के असर से बचें

National Programme on Climate Change and Human Health
Ministry of Health and Family Welfare
Government of India
सत्यमेव जयते
Act to protect your health
from AIR POLLUTION
Do's
Don'ts
Remain Indoor
Consult doctor in case of breathlessness, chest discomfort, irritation in eyes
Keep medications readily avilable for persons with airway, lung or heart illnesses
Use clean smokeless fuels for cooking & heating purposes
Avoid going to places with heavy traffic & congested places
Avoid opening doors & windows in early morning & late evening
Avoid going for morning walk & evening walk
Don't burn fircrackers, garbage or waste
Don't smoke tobacco products
www.mohfw.gov.in