



Ministry of Health & Family Welfare

Handbook for Health Professionals on Air Pollution & its Impact on Health

National Programme on Climate Change & Human Health



Ministry of Health & Family Welfare
Government of India, 2021



ACKNOWLEDGEMENT

Air pollution is recognized as an important environmental risk factor to human health and also, an avoidable cause of death and disability. It disproportionately affects the people's health, particularly children, women, the elderly and those who are economically disadvantaged and the marginalized groups of people in the country in both rural and urban India.

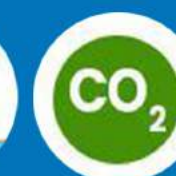
To deal with the health issues arising in the context of air pollution, the NPCCHH programme under the MoHFW along with the PGIMER and Panjab University have developed the '**Handbook for Health Professionals on Air pollution and its Impact on Health**'. This pictorial booklet will provide guidance to the health professionals and workers in the state on ways to protect, prevent, control the people's health and to manage the health issues arising due to exposure to air pollution.

The handbook was shaped under the guidance of Lav Agarwal, Joint Secretary, MoHFW. The NPCCHH programme division at NCDC undertook the task under the direction of Dr. Sujeet K. Singh, Director NCDC and the full support and supervision to the NPCCHH team working on the document.

The NPCCHH programme highly acknowledges the efforts and contributions from the Post Graduate Institute of Medical Educational Research (PGIMER), a designated 'Centre of Excellence on Air Pollution related Illness' under the National Programme on Climate Change and Human Health. The programme sincerely acknowledges Dr. Ravindra Khaiwal, Additional Professor from the PGIMER, Chandigarh, who is the nodal officer of the above climate-sensitive disease and Dr. Suman Mor from Panjab University, also a nodal officer of 'Institute of Repute - NACP' under the Ministry of Environment, Forest, and Climate Change in conceptualizing, designing and developing the present handbook.

All those who contributed to make this pictorial booklet a much valuable handbook of an urgent need to minimize the adverse impact of air pollution in the present times are highly applauded.

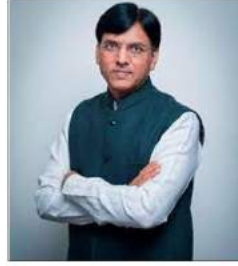
NPCCHH Team



मनसुख मांडविया
MANSUKH MANDAVIYA



सत्यमेव जयते



स्वास्थ्य एवं परिवार कल्याण
व रासायन एवं उर्वरक मंत्री
भारत सरकार

Ministry of Health and Family Welfare
and Chemical & Fertilizers
Government of India

Message

Air pollution is a challenging environmental and health concern which affects severely children, elderly persons, women, poor and marginalized groups of population in the country. Enhancing capacity building of health professionals and community workers on this subject is a welcome step to tackle the increasing health problems affecting vulnerable groups of population.

The '**Handbook for Health Professionals on Air Pollution and its Impact on Health**' is developed under the National Programme on Climate Change and Human Health (NPCCHH), MoHFW which is presentation of ideas as infographics. It shows the graphic visual representations of information on the role of health professionals dealing on air pollution related health problem. It comprehensively represent information about the roles of medical officers, nursing officers, pharmacists, community/level health workers like ASHA.

This document will help all the stakeholders across the States/UTs to increase the understanding of all sections of healthcare cadres enable them to provide efficiently the health care services to manage the people's health problems associated with air pollution in the community.

It is extremely of an immense pleasure for me to express my gratitude to all those involved in bringing out this handbook by NPCCHH.

(Mansukh Mandaviya)



डॉ. भारती प्रविण पवार
Dr. Bharati Pravin Pawar



सत्यमेव जयते

सर्वेसन्तु निरामया



स्वास्थ्य एवं परिवार कल्याण राज्य मंत्री
भारत सरकार

MINISTER OF STATE FOR
HEALTH & FAMILY WELFARE
GOVERNMENT OF INDIA



MESSAGE

The recent preparation of a 'Handbook for Health Professionals on Air Pollution and its Impact on Health' as infographics is an activity to achieve towards one of the key objectives under the National Programme on Climate Change and Human Health (NPCCHH), MoHFW. This will be a great initiative for capacity building of the health professionals including medical officers and community level workers to address the increasing health challenge among the people in the country living in the cities, urban and even in rural areas.

This infographics document or '**Handbook for Health Professionals on Air Pollution and its Impact on Health**' will help give a quick and clear understanding through the brief graphic visual representations of information on health sector preparedness on air pollution and health. It contains a brief description of the various roles and understandings that a health professional of all cadres in the health sector has to know to address through awareness generation measures, management of cases in the healthcare facilities and involvement of community.

All stakeholders including state programme health officials and workers in the country can refer the illustrated major health action points of the plan in context of air pollution including situational analysis of the health issue, awareness generation and strengthening healthcare facility. This may help in protecting, preventing and managing of negative health problems arising against the people particularly the vulnerable in the country.

I express my sincere gratitude to all the NPCCHH programme team members and the experts who develop this valuable infographic on health professionals on air pollution and its impact on health to benefit the public health in the country.

(Dr. Bharati Pravin Pawar)

“दो गज की दूरी, मास्क है जरूरी”



राजेश भूषण, आईएएस
सचिव

RAJESH BHUSHAN, IAS
SECRETARY



सत्यमेव जयते

भारत सरकार
स्वास्थ्य एवं परिवार कल्याण विभाग
स्वास्थ्य एवं परिवार कल्याण मंत्रालय

Government of India
Department of Health and Family Welfare
Ministry of Health and Family Welfare



Message

Air pollution, a major environmental risk factor for morbidity and premature deaths, is found to be associated with a large proportion of health problems like respiratory and heart diseases, stroke etc. in both urban and rural India.

The National Programme on Climate Change and Human Health (NPCCHH) under the Ministry of Health and Family Welfare has recently come out with a booklet of infographics -- '**Handbook for Health Professionals on Air Pollution and its Impact on Health**' which will strengthen various health measures being developed under the programme. The booklet will help the programme officers and workers to obtain understandings of air pollution and their roles and responsibilities.

I am sure these infographics on the health professionals will be very useful to supplement the implementation of various health action plans in the States/UTs to minimize and control the health impact of air pollution among the people. This will also play a significant role in creating increased awareness on air pollution, managing its negative health impact and undertaking its various health adaptation measures collectively in the States and the country. This will prove to be a positive step in undertaking the overall health adaptation measures.

I sincerely express my heartfelt thanks to the NPCCHH programme team and all the experts for bringing out such an important infographics booklet to help build capacity of the health professionals on air pollution and public health.

(Rajesh Bhushan)

प्रो.(डॉ.) सुनील कुमार

एम.बी.बी.एस एवं एम.एस.(एम्स)

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स्वास्थ्य सेवा महानिदेशक

DIRECTOR GENERAL OF HEALTH SERVICES



सत्यमेव जयते

भारत सरकार
स्वास्थ्य एवं परिवार कल्याण मंत्रालय
स्वास्थ्य सेवा महानिदेशालय
Government of India
Ministry of Health & Family Welfare
Directorate General of Health Services



MESSAGE

Health impact due to air pollution is a challenging public health concern all across the country. Because it causes an increase in morbidity like respiratory and heart diseases, stroke and non-communicable diseases etc. and premature deaths particularly to those more vulnerable populations like children, women, elderly and the poor in both urban and rural India. Enhancing capacity building of the health professionals and workers is an important key objective to address such priority issue of public health concern under the National Programme on Climate Change and Human Health (NPCCHH) under the Directorate General of Health Services (DGHS), Ministry of Health and Family Welfare.

So, the NPCCHH programme has recently developed the infographic on '**Handbook for Health Professionals on Air Pollution and its Impact on Health**'. The booklet will help in understanding more clearly and easily on negative health effects of air pollution, its adaptive measures and the roles and responsibilities of the professional health cadres and workers while dealing such a priority health concern in their respective areas and ultimately will help to build the capacity of the health sector.

I am confident that these infographics on the health professionals will support as an important tool in the States/UTs to minimize and control the health impact of air pollution among the people, managing its negative health impact and undertaking its various health adaptation measures collectively in the states and the country. This will be a great positive step for the health adaptation measures in air pollution.

I sincerely express my gratitude to the NPCCHH team and all professional experts in bringing out such important infographics for clear understanding of the health professionals and community level workers on air pollution and to help benefit the health concern of the people in the country.


23/07/21
(Sunil Kumar)

Handbook for Health Professionals on Air Pollution & its Impact on Health



Index

- 1 AIR POLLUTION : ITS SOURCES & TYPES 
- 2 STATUS OF AIR POLLUTION IN INDIA 
- 3 HEALTH IMPACTS OF AIR POLLUTION 
- 4 SHORT & LONG TERM EFFECTS OF AIR POLLUTION 
- 5 AIR POLLUTION & VULNERABLE GROUPS 
- 6 AIR POLLUTION & ROLE OF PHYSICIANS: EARLY DEALING WITH PATIENTS 
- 7 AIR POLLUTION & ROLE OF MEDICAL OFFICERS : DIAGNOSTIC CHECKLIST 
- 8 PREVENTIVE PUBLIC HEALTH MEASURES: ROLE OF MEDICAL OFFICERS 
- 9 ROLE OF NURSES IN AIR POLLUTION & HEALTH: GUIDE PATIENTS FOR AIR POLLUTION 
- 11 ROLE OF PHARMACISTS IN AIR POLLUTION & HEALTH 
- 12 ROLE OF COMMUNITY LEVEL HEALTH WORKER IN AIR POLLUTION & HEALTH 
- 13 ASHA WORKER FOR AIR POLLUTION REDUCTION 
- 14 SAVE YOURSELF FROM AIR POLLUTION 
- 15 HEALTH ADAPTATION PLAN: ACTIONS FOR HEALTH SECTOR 
- 17 HEALTH ADAPTATION PLAN: COMPREHENSIVE FRAMEWORK 
- 18 ACTION TO REDUCE OUTDOOR AIR POLLUTION 
- 19 MEASURES TO REDUCE INDOOR AIR POLLUTION 

AIR POLLUTION

: ITS SOURCES & TYPES



Air Pollution?

The condition in which air is contaminated by foreign substances, or the substances themselves which are injurious to human, plant or animal life or cause damage to property

Sources of Air Pollution?

Natural Sources



Forest Fires



Volcanic Eruptions



Pollen Dispersal



Evaporation of organic compounds



Natural Radioactivity

Human/Anthropogenic



Vehicles



Industries



Power Plants



Many Cleaning Products



Insect Repellents



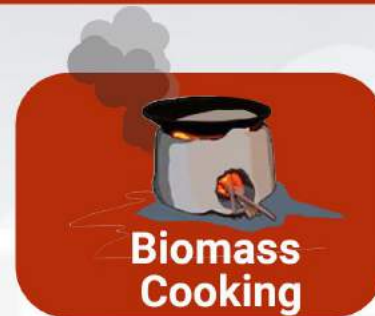
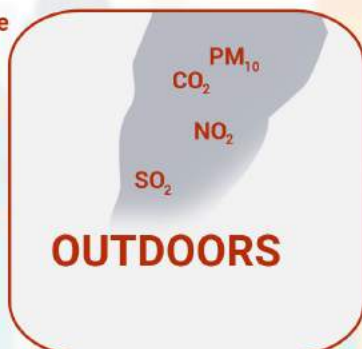
Pesticides

Types of Pollution



Construction & Vehicle

Example



Biomass Cooking

Example



STATUS OF AIR POLLUTION IN INDIA

As per the World Air Quality Report 2019-

India was listed among most polluted country in the world

Out of 30 most polluted cities globally, many of them are in India



Air Pollution is the largest environmental cause of disease & premature death in the world today



An ICMR, 2017 report state-

6.7 lakh premature deaths due to Outdoor Air Pollution

4.8 lakh premature death due to Household Air Pollution in 2017



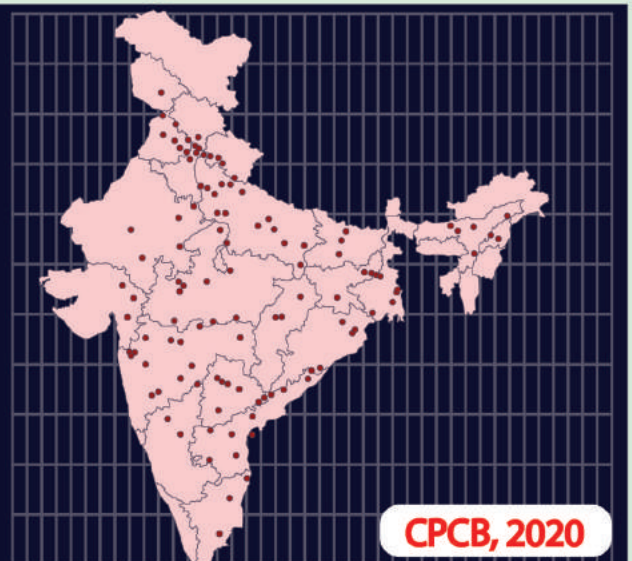
As per Lancet report, 2017-

Pollution was linked to 9 million worldwide premature deaths in 2015

NATIONAL CLEAN AIR MISSION

It aims to reduce 20-30% air pollution in 122 non-attainment cities by 2024 in India plan to reduce their respective air pollution levels in 2024 by atleast 20%

- Augment public transport
- Control road & construction dust
- Stop open waste burning
- Promote clean cooking
- Implement industrial emission standard
- Increase ambient monitoring capacity
- Raise public awareness

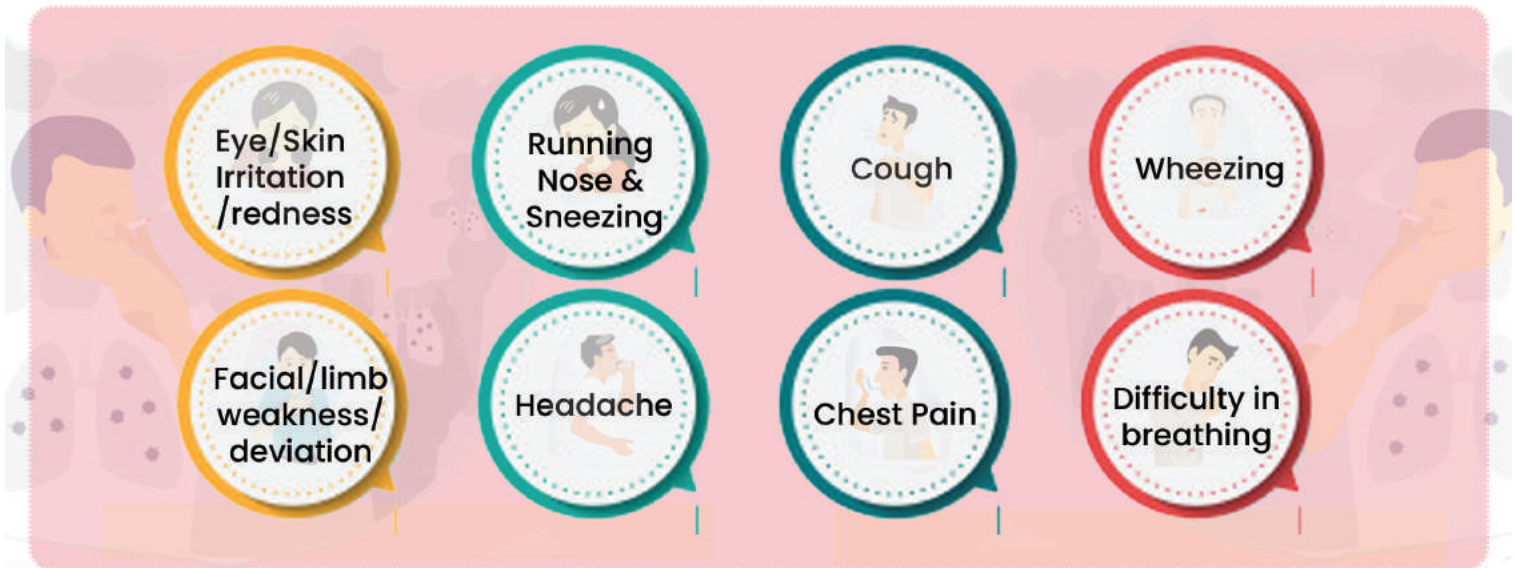


Lets be a part of solution

HEALTH IMPACTS OF AIR POLLUTION

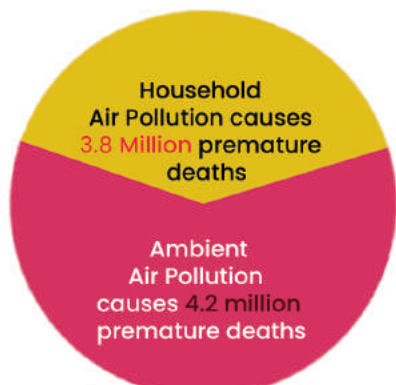
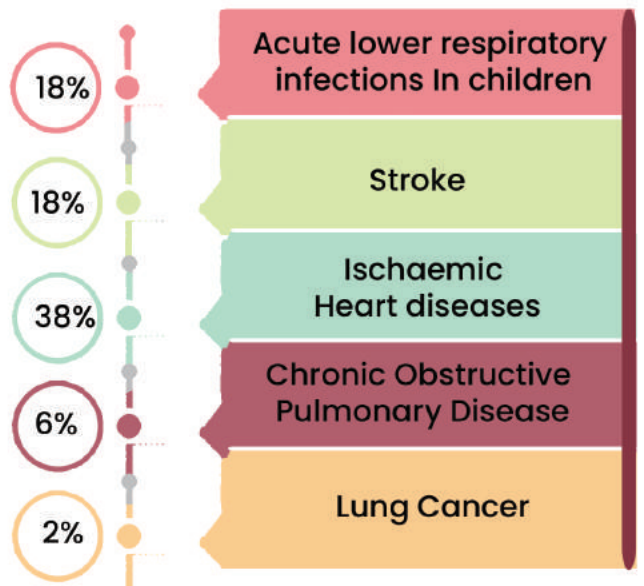
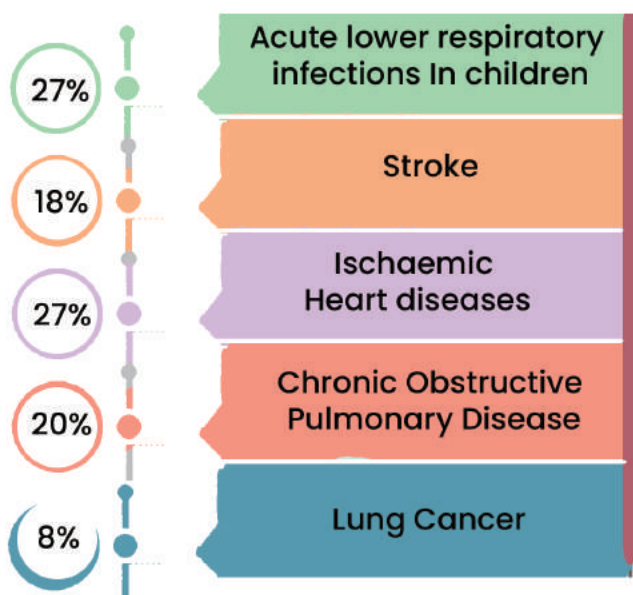


AIR POLLUTION & PRESENTING SYMPTOMS



HOUSEHOLD AIR POLLUTION*

AMBIENT AIR POLLUTION*



1 OUT OF 9 DEATHS GLOBALLY

★ WHO, 2014

SHORT & LONG TERM EFFECTS OF AIR POLLUTION

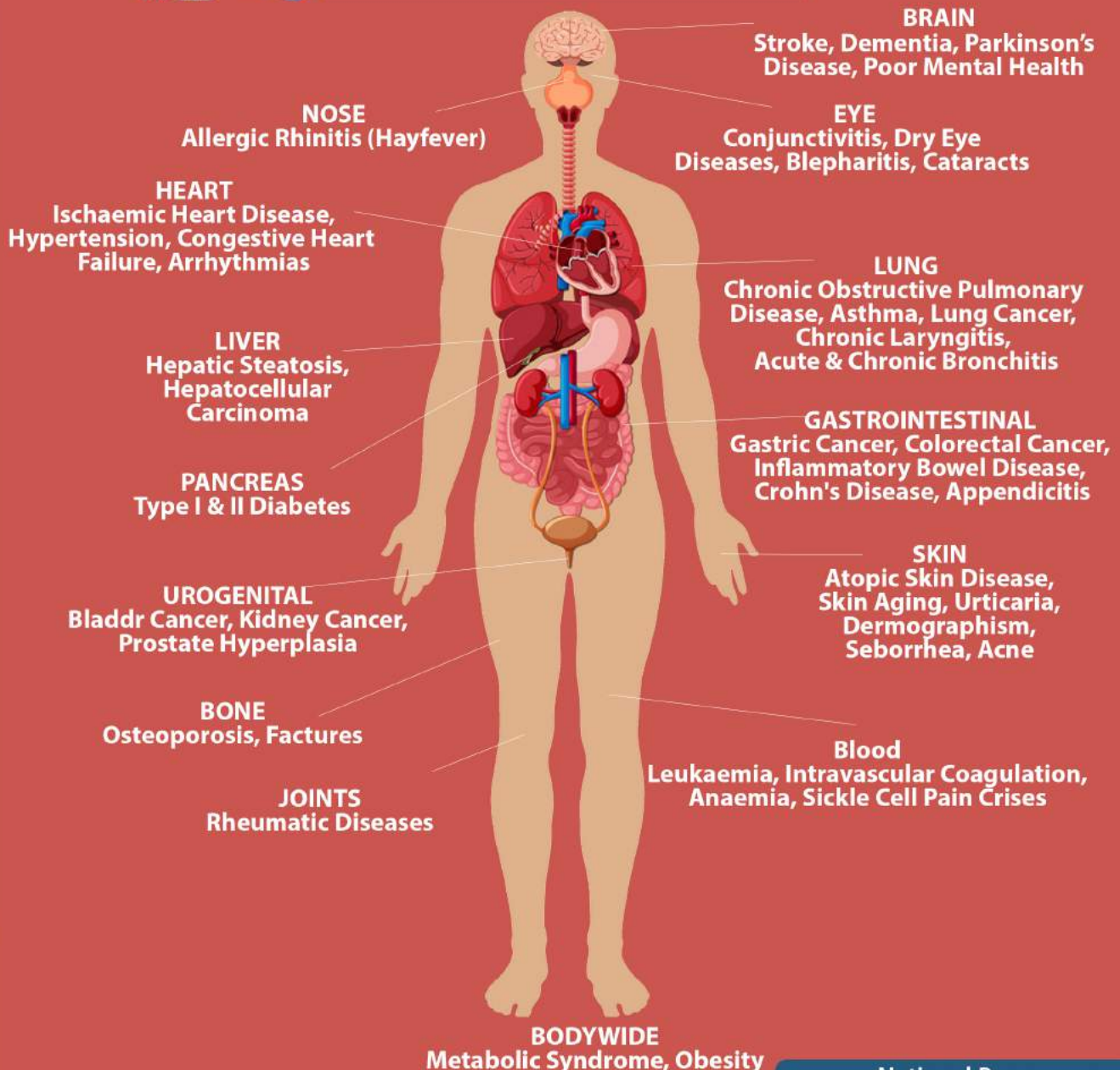


SHORT -TERM EFFECTS

- HEADACHE
- ALLERGIC REACTIONS
- NAUSEA
- COUGH
- POOR HAIR TEXTURE
- BREATHLESSNESS
- IRRITATION IN EYES
- DRY SKIN
- ACNE



LONG -TERM EFFECTS



AIR POLLUTION & VULNERABLE GROUPS



Neonates/
Infants



Children



Women



Pregnant
Women



Elderly



People with
Underlying
Medical
Conditions



Outdoor
Workers



Traffic Police



Municipality Workers /
Sweepers



AIR POLLUTION & ROLE OF MEDICAL OFFICERS

:EARLY DEALING WITH PATIENTS



Important role to motivate patients, family & relatives on air pollution & health



Provide medical needs of the patients related to health effects due to air pollution



Poorer air quality can lead to health problems respiratory, cardiovascular etc.



Awareness on health impacts of air pollution & on preventive health measures



Doctors can easily communicate correlation of health effects of air pollution to patients



Risk of exposure to air pollution & important sources of air pollution



AIR POLLUTION & ROLE OF MEDICAL OFFICERS : DIAGNOSTIC CHECKLIST

Beginning of the Symptoms



Presenting symptoms-(respiratory or cardiopulmonary or others suggestive of air pollution)



Risk of exposure to air pollution?

Vulnerable groups to air pollution?



Symptoms



Recent - Onset



Long Standing/
Chronic



Intervals/Onset

Symptoms- Appearing during the exposure time?

Areas with poorer AQI?



Any undergoing medical illness like respiratory problems, COPD, NCDS, HTN?

PREVENTIVE PUBLIC HEALTH MEASURES :ROLE OF MEDICAL OFFICERS



Restrict outdoor activities, when air quality is comparatively poorer



Refrain any intense physical activity or exercising near roads with heavy traffic



Avoid burning of leaves, wood or trash. Stay away from such areas



Measures like walking, cycling or carpooling



Limit the use of electric appliances. Switch them off when not in use

ADVICE FROM A HEALTH CARE PROFESSIONAL



BASIC ROUTINE PRESCRIBED FROM THE DOCTOR'S DIARY



Recommend nutritious food & good hydration

Consume green leafy vegetables & fruits rich in anti-oxidants



Gargling with luke warm water to reduce the soreness of throat

ROLE OF NURSES IN AIR POLLUTION & HEALTH : GUIDE PATIENTS FOR AIR POLLUTION

AIR QUALITY INDEX	0-50	51-100	101-200	201-300	301-400	401-500	>500
	Good	Satisfactory	Moderate	Poor	Very Poor	Severe	Emergency



Educating patients about the health impacts from the exposure to polluted air



Guide the vulnerable population with the information regarding Air Quality Index



By providing health advice to individuals they can also inform communities residing near high air polluted area like industries or plants to be alert & prevent exposure on bad air quality days



Explain them about SAMEER, SAFAR -AIR Apps to check air quality & air quality index



Recommendation to reduce outdoor activities on poor air quality days



Reminders regarding their routine self-care measures



They can provide counselling to help quit smoking which may exaggerate health effects of Air Pollution

ROLE OF NURSE IN AIR POLLUTION & HEALTH



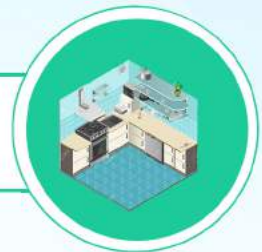
Awareness on air pollution & health

Women's & children's health during pregnancy, foetal life & neonatal



Sources of air pollution at home (biomass wood, cow dung, charcoal smoke)

Cross ventilation while cooking



Cleaner fuels - LPG, electric devices, PM Ujjawala Scheme (LPG)

Outdoor activity to reduce during poor air quality



Immunisation Area & Ward (IEC Points)

OPD

Delivery Points

Emergency

Postnatal OPD

Antenatal OPD

Immunisation Days



National Programme on Climate Change & Human Health

ROLE OF PHARMACISTS IN AIR POLLUTION & HEALTH



Ensure preparedness of health care facility to address health problems due to air pollution



List the medicine or drugs or equipment's (such as nebulizers, ventilators, face masks) required for health problem due to air pollution



Ensure buffer stock & timely procurement of medicine & equipments



Know the disease calendar & ensure the maintenance of the essential equipments

Ensure oxygen support in hospital & ambulance



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Climate Change & Human Health

ROLE OF COMMUNITY LEVEL HEALTH WORKER IN AIR POLLUTION & HEALTH



STRESS TO HEART



STRESS TO LUNGS



ASTHMA



SHORTENED LIFE SPAN



EYE IRRITATION



HARM TO BLOOD



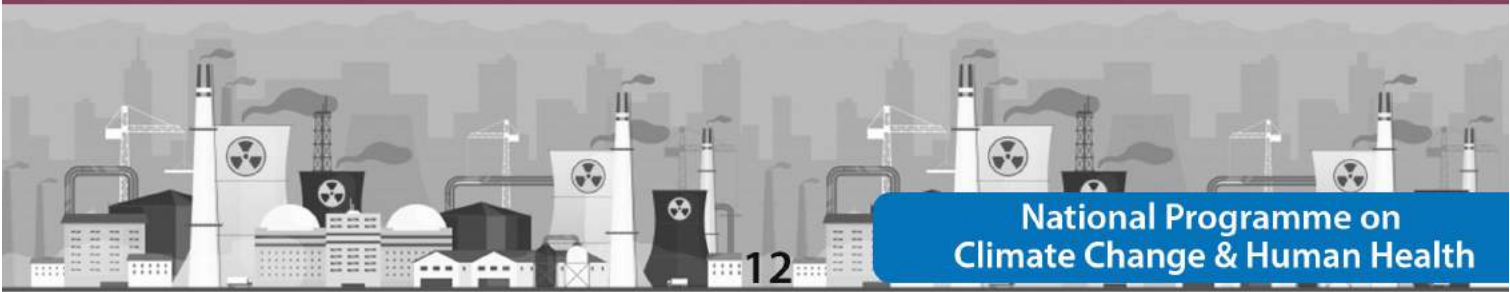
Awareness generation on health effects of air pollution

Maintain a better communication with community about avoiding combustion of wood, stubble, biomass or tobacco smoking - Air Pollution & Health Effects



Ensure direct & frequent contact with community to understand & solve the health issues

Plan frequent health awareness programmes for community to promote and establish healthy environment



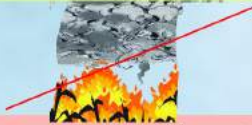


ASHA WORKERS FOR AIR POLLUTION REDUCTION



Conduct child-friendly training to teach children about Air-pollution & its impact

Provide information on how health is affected. Impart knowledge about proper use of mask & PPE



Raise awareness about stubble burning & household air pollution due to biomass burning in chulhas

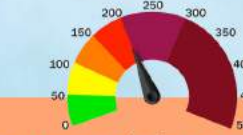
Raise awareness of how to minimize exposure & community support



Performing activities like skits & nukkad natak to aware people more about air pollution & its harmful impact



Conduct training workshops about air quality index & harmful pollution levels



Organising community discussions to reach out to every individual & educate them on air pollution & health impacts

Audio visual presentations are shown to the community groups to make them aware about their surroundings & the environment



IEC Messages

- ✓ Make daily exercise a routine
- ✓ Develop the habit of taking green leafy vegetables
- ✓ Regularly check Air Quality Index
- ✓ Decide a date to quit & remove all tobacco products around you

SAVE YOURSELF FROM AIR POLLUTION

What to Avoid



Women, children, elderly are more vulnerable



Don't burn firecrackers, wood, leaves, agricultural products, garbage



Don't smoke the cigarettes, bidis & related tobacco products



Don't go for morning & late evening walk, run, jog & physical exercise



Don't open doors & windows during morning & late evening; ventilate in afternoon (12 to 4p.m.)



Don't go to places with heavy traffic & industries



What to Do



Air pollution is risk factor to health



Persons with airway, lung or heart illness should keep their medications readily available



Remain indoor or reschedule outdoor activities after checking Air Quality Index (AQI) at <https://app.cpcbcr.com/AQIIndia/>



Continue use of clean smokeless fuels (gas or electricity) for cooking & heating purposes



If using face mask, use proper fit certified N95 or N99 mask, simple paper & cloth masks are not so effective



Consult the nearest doctor in case of breathlessness, giddiness, cough, chest, discomfort or pain, irritation in eyes (red or watery)



HEALTH ADAPTATION PLAN

: Actions for Health Sector



TRAINING & CAPACITY BUILDING

- Air pollution & health effects; district disaster preparedness & management during air pollution episodes; Environmental Emergency Preparedness & Response
- Implement different training programmes for officials at various levels



AWARENESS GENERATION

- Mass media campaigns; engage local & regional media (community radio, TV) for air pollution-related disease awareness
- Promote attitude & behavior change in the awareness campaigns linking air pollution & climate change

STRENGTHEN THE FACILITIES

- Provide health facilities such as medicines, masks etc.
- Hire 'Environmental Health' professionals



MONITORING & EVALUATION INTERVENTIONS

- Collecting & compiling the outcomes of the interventions; distribution of data & information for necessary actions

SCREENING

- Extracting information about loop-holes in the implementation of the actions
- Screening the important diseases that need to be addressed



HEALTH ADAPTATION PLAN :COMPREHENSIVE FRAMEWORK



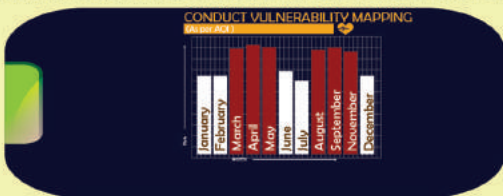
HEALTH ADAPTATION PLAN : AIR POLLUTION

A guide for the preparation of state-specific action plan for climate-sensitive illness



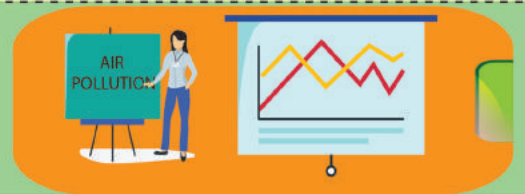
Suggest occurrence of diseases as per season month based on association with environmental parameters (temperature, humidity etc)

Preparation of disease calendar for 4-5 zones like plain region, mountainous, desert, coastal to initiate appropriate action in advance

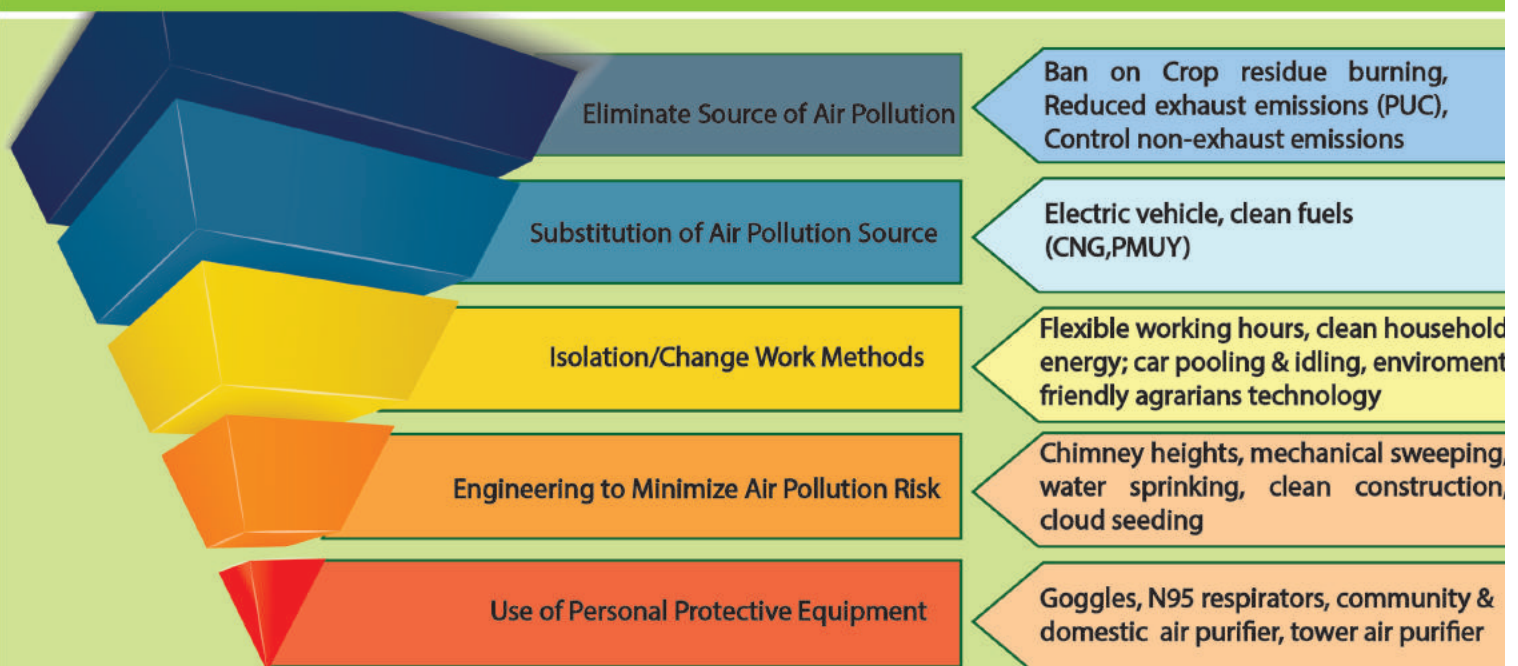


Suggest trends for diseases/ illness to priorities actions, especially if emerging or reemerging diseases

For timely action; the geo-climatic for social, economic & cultural occupational practices condition which favour disease initiation, propagation & even decline in disease occurrence may be highlighted



Minimizing the exposure to air pollution should follow



ACTIONS TO REDUCE OUTDOOR AIR POLLUTION

Increase the use of Renewable energy, like solar etc.



Spread awareness about the impacts of air pollution

Use less electricity & energy efficient appliances



Improve waste management (domestic, industrial & municipal)

Drive less & prefer public transportation as well as carpooling



Provide & encourage clean, affordable fuels & technologies for transportation



MEASURES TO REDUCE INDOOR AIR POLLUTION



Use clean combustion equipments in the household (such as LPG fuel stove, improved cook store)



Ensure combustion equipment such as stoves, gas furnaces etc properly vented to outside for optimum air flow

Minimum emissions from furniture, incense & household cleaning products



Promote routine maintenance of household combustion items

Does the building have an underground parking where motor vehicles may idle? Is the space adequately ventilated? Does the building/ facility have a no idling of vehicles policy?



Restricting the infiltration of outdoor air during high pollution levels



Avoid using mosquito coils, incense stick, room fresheners
Don't allow smoking indoors



National Programme on Climate Change & Human Health

Joining Hands for Air Pollution Reduction & Better Health



National Programme on
Climate Change & Human Health



सत्यमेव जयते



This booklet is meant for the health professionals & workers on their roles & responsibilities on air pollution & health while interacting with the patients & with public. It will enable them to manage & aware of various health adaptive measures to protect, prevent & treat the patients & the public from impact of air pollution in health care facility & in the community.

