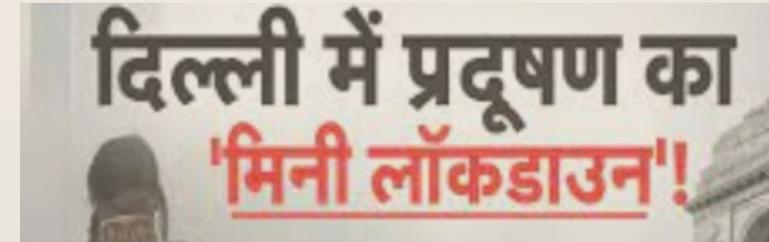


DELHI The Pollution Capital of India



दिल्ली को दाहत की सांस
बंड से कांप रहा NCR



क्या इहने लायक नहीं बची दिल्ली?



दिल्ली की हवा हुई और ज़हरीली
प्रदूषण से लोगों की हालत खराब

धूल को नीचे बैठाने के लिए
दिल्ली में हो रहा पानी का छिड़काव

दिल्ली की जहरीली हवा
आज फिर गंभीर श्रेणी में AQI

Delhi world's most polluted city

TOXIC India slips to 155 among 178 countries on environment performance index, Capital pips Beijing to be city with dirtiest air

CAPITAL BREATHES UNEASY

The Times of India New Delhi, 08, May-2014

Delhi air worst in the world

Packed With Fine Particles That Damage Heart, Lungs: WHO

TIMES NEWS NETWORK

New Delhi: Delhi has the most polluted air in the world. A World Health Organization (WHO) air quality database of 1,600 cities and 91 countries released on Wednesday shows

SUBCONTINENT'S DIRTY AIR



High PM2.5 levels are associated with major health effects. WHO in its statement said: "High concentrations of small and fine particulate pollution is particularly associated with high numbers of deaths from heart disease and

Delhi air pollution

Air Pollution :-

- Air pollution occurs when harmful substances including particulates and biological molecules are introduced into Earth's atmosphere. Air pollution causes acid rain, ozone depletion, photochemical smog, and other such phenomena.
- It may cause diseases, allergies or death in humans; it may also cause harm to other living organisms such as animals and food crops, and may damage the natural or built environment.

Pollutants

1. Primary pollutants:
 - Produced from a direct process, such as ash from a volcanic eruption.
 - Examples : Carbon monoxide gas from motor vehicle exhaust Sulphur dioxide released from factories.

2. Secondary pollutants
 - Not emitted directly, rather form in the air when primary pollutants react or interact.
 - Example : Ground level ozone

Effects on Health:

- Short-term effects -
 - Irritation to the eyes, nose and throat
 - Respiratory infections such as bronchitis
 - Pneumonia
 - Headaches
 - Nausea
 - Allergic reactions.
 - Short-term air pollution can aggravate the medical conditions of individuals with asthma and emphysema.

Effects on Health:

- Long-term Effects -
 - Chronic respiratory diseases
 - Lung cancer
 - Heart disease
 - Damage to the brain, nerves, liver, or kidneys.
 - Continual exposure to air pollution affects the lungs of growing children and may aggravate or complicate medical conditions in the elderly.
 - Pre-mature Deaths

Examples:



A healthy baby girl born in Delhi's Indraprastha Apollo Hospital on October 29. Kept in Hospital for 2 days because of Diwali. However, on October 31, the baby developed breathing trouble and had to be moved to the ICU. Doctors said, "The baby had perfectly developed lungs when she was born but is likely to suffer from bronchitis for life," Reason - High level of PM 2.5 on November 5 and 6,, reached $837\mu\text{g}/\text{m}^3$. (Safe limit for humans is $60\mu\text{g}/\text{m}^3$)

Examples:



Meet the 6 year old Shreya Goswami, born with Ventricular Septal Defect, or a hole in the heart, Shreya had undergone a surgery when she was eight. For children born with such defects, a polluted atmosphere can be fatal. Moving her around the city for three hours with such high PM2.5 (883 $\mu\text{g}/\text{m}^3$) and carbon monoxide levels was akin to making her smoke five cigarettes.

Air quality index:

Air quality in world cities, November 7



Air quality index:

- Air quality monitoring stations reported the situation to be the WORST in almost two decades.
- According to the Central Pollution Control Board (CPCB), on November 5, PM 2.5 levels reached 999 at Punjabi Bagh and Anand Vihar. This is the maximum possible level most monitoring machines in the city are equipped to measure.
- “150 to 200 patients daily around this time of the year, over 50 per cent of which are children. Airways, lungs and immune system of children are not fully developed, which makes them vulnerable to allergies, respiratory infections and irreversible lung damage,” says Anupam Sibal, senior pediatrician at the Indraprastha Apollo Hospital.

What happened next?

So, what happened next?

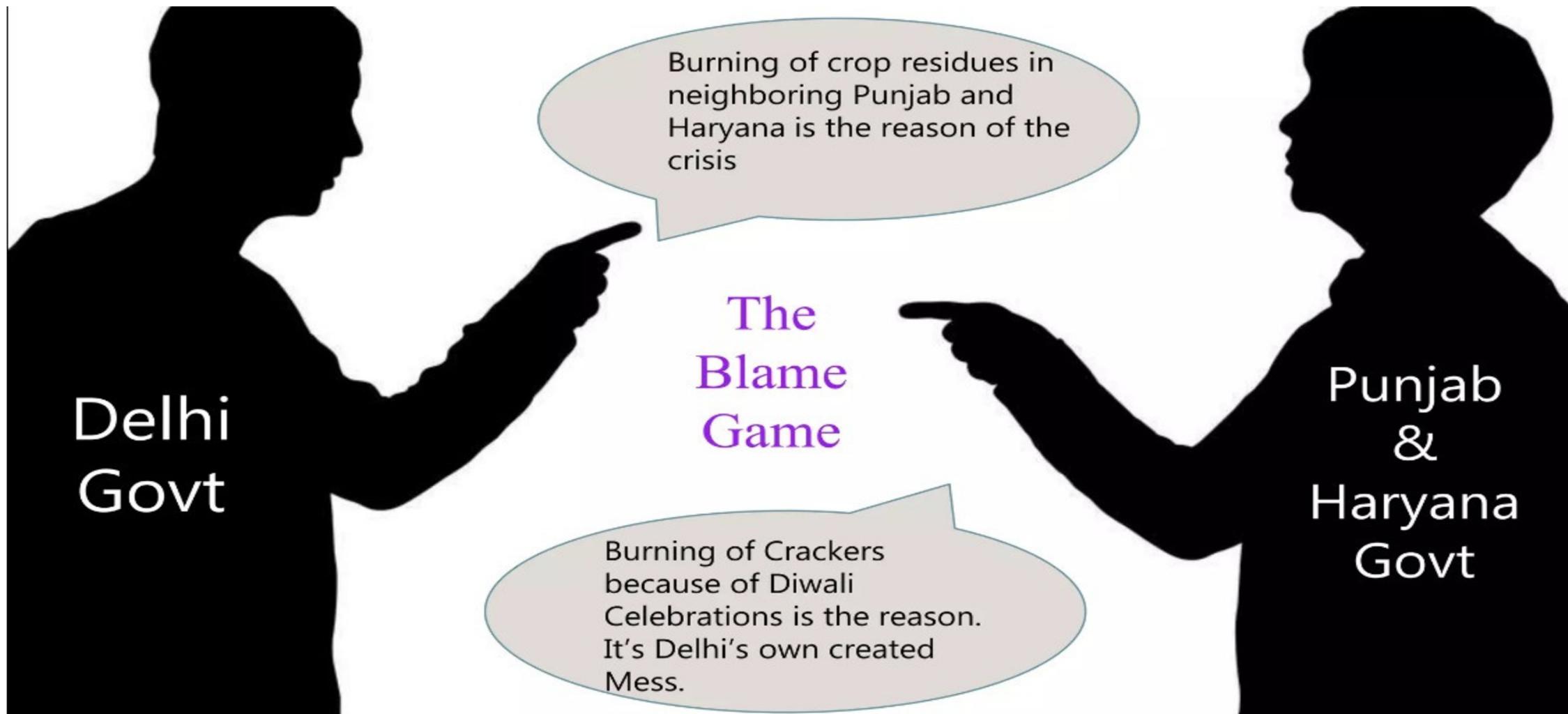
The Delhi government ordered :-

- Closure of 5000 schools for 3 days
- Stopped all construction activities.
- Shut down Badarpur Thermal Power Station for 10 days.
- Banned bursting of firecrackers except on religious occasions.



Debate, Discussion & a Blame Game started

The Blame Game



Main factors for pollution:

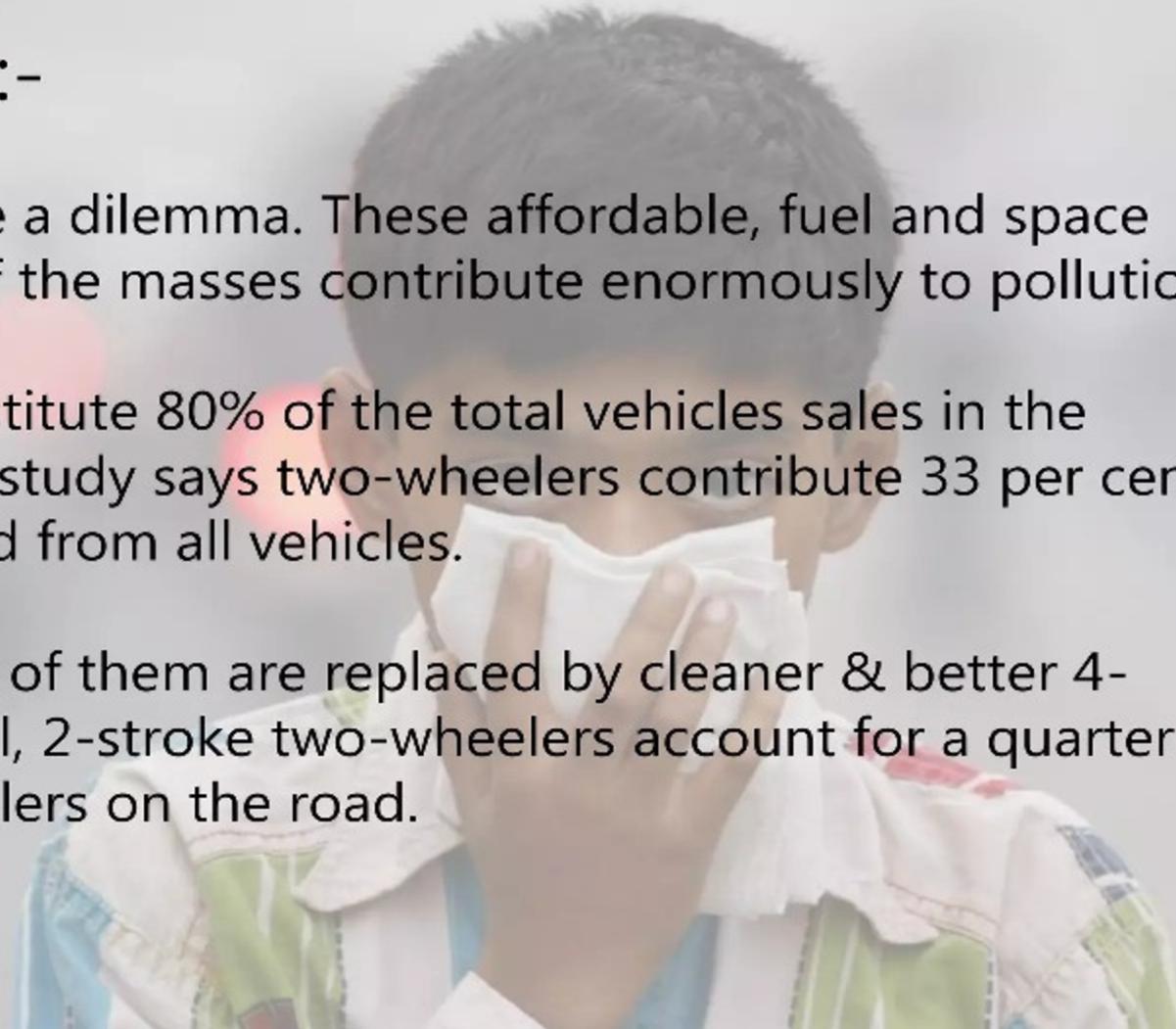
Main Factors Responsible for Delhi Pollution :-

- Vehicular Emissions
 - Cars
 - 2-Wheelers
 - Trucks
- Agricultural Activities
- Exhaust from factories and industries
- Mining operations
- Indoor air pollution

Main factors for pollution:

Two Wheelers :-

- Two-wheelers pose a dilemma. These affordable, fuel and space efficient vehicles of the masses contribute enormously to pollution.
- Two-wheelers constitute 80% of the total vehicles sales in the country. The IIT-K study says two-wheelers contribute 33 per cent of total PM2.5 emitted from all vehicles.
- Even though, most of them are replaced by cleaner & better 4-Stroke Engines. Still, 2-stroke two-wheelers account for a quarter of the total two-wheelers on the road.



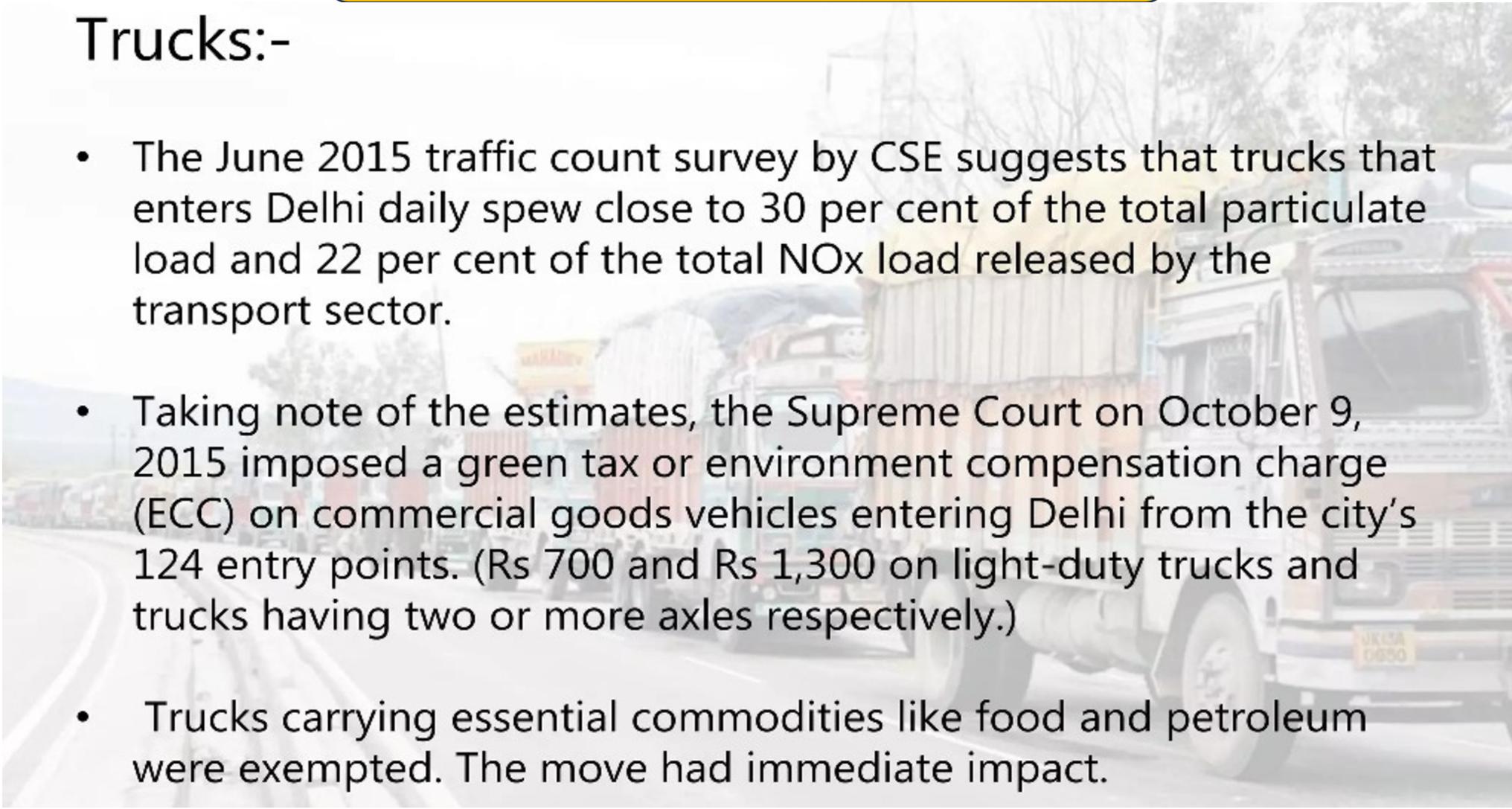
Main factors for pollution:

- There are concerns about potential high NOx emissions from four-stroke engines that power nearly all new vehicles now, because the norms do not regulate NOx separately. A combined limit for hydrocarbon and NOx allows margin for higher NOx emissions when vehicle is optimized for higher fuel efficiency. There is a technical trade off between NOx emissions and fuel economy.
- Two-wheeler industry is gearing up to meet BS IV norms which will have separate NOx limit.
- A paradigm shift in two-wheeler technology is expected with the enforcement of BS VI norms in 2020. With BS VI, India, for the first time, will set particulate standards for two-wheelers, have tighter and separate NOx and hydrocarbon limits, and on-board diagnostic systems.

Main factors for pollution:

Trucks:-

- The June 2015 traffic count survey by CSE suggests that trucks that enters Delhi daily spew close to 30 per cent of the total particulate load and 22 per cent of the total NOx load released by the transport sector.
- Taking note of the estimates, the Supreme Court on October 9, 2015 imposed a green tax or environment compensation charge (ECC) on commercial goods vehicles entering Delhi from the city's 124 entry points. (Rs 700 and Rs 1,300 on light-duty trucks and trucks having two or more axles respectively.)
- Trucks carrying essential commodities like food and petroleum were exempted. The move had immediate impact.

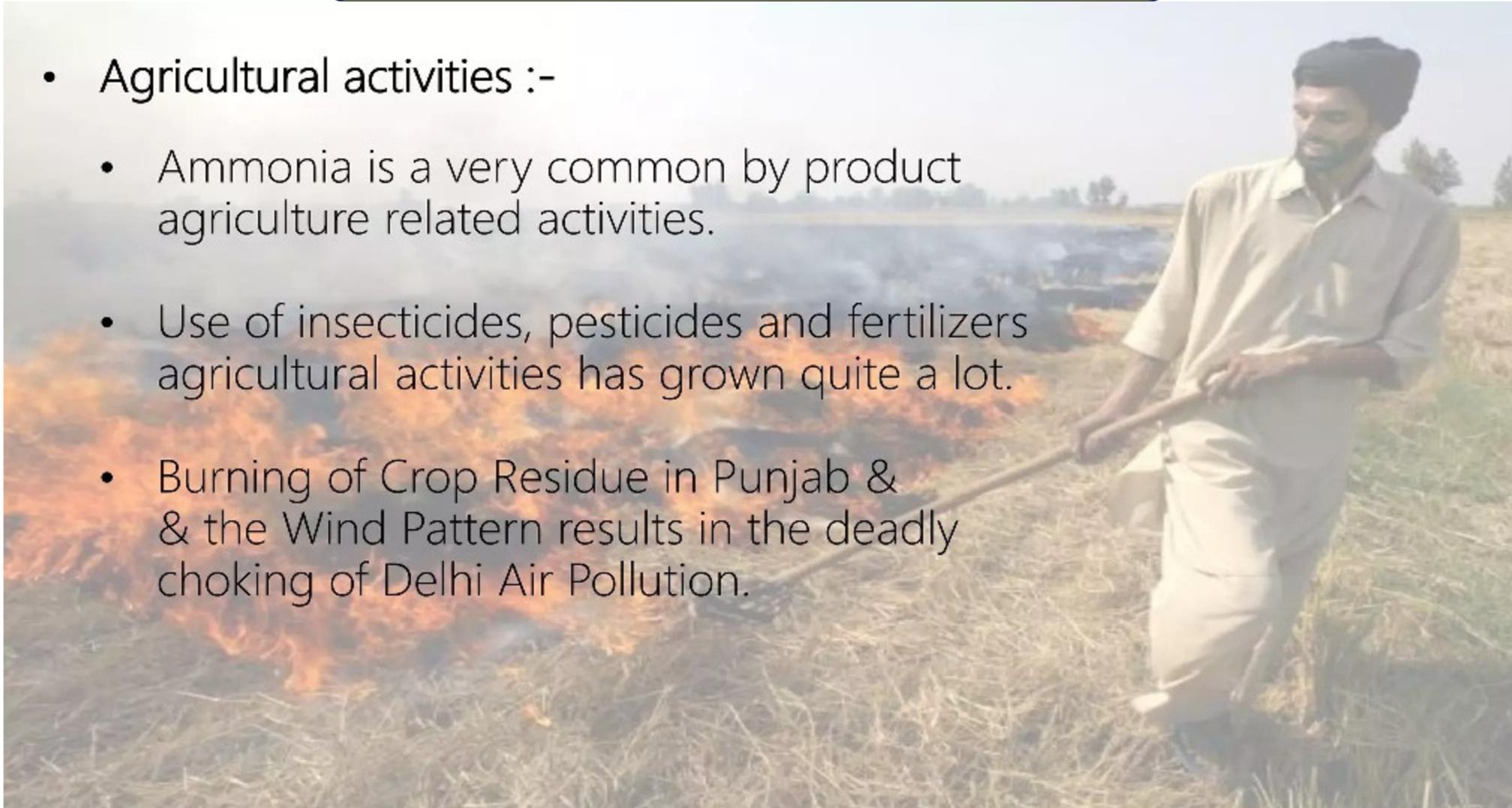


Main factors for pollution:

- Another traffic count survey by CSE in December 2015 suggests that the decrease in truck traffic led to a reduction of 30-35 per cent in particulate load and NOx levels in this vehicle category.
- Though ECC has been introduced in Delhi, there were concerns that manual collection might allow tax evasion. To address this, the Supreme Court directed that the ECC collected should be used for installing a radio frequency identification (RFID) infrastructure in Delhi. RFID is an electronic system that allows automatic toll collection when vehicles pass through the entry gates. ECC will be transferred to government accounts,
- RFID will not only allow efficient collection of toll but also opens up the enormous possibility of tracking vehicle operations and performance.

Main factors for pollution:

- Agricultural activities :-
 - Ammonia is a very common by product agriculture related activities.
 - Use of insecticides, pesticides and fertilizers agricultural activities has grown quite a lot.
 - Burning of Crop Residue in Punjab & & the Wind Pattern results in the deadly choking of Delhi Air Pollution.



Main factors for pollution:

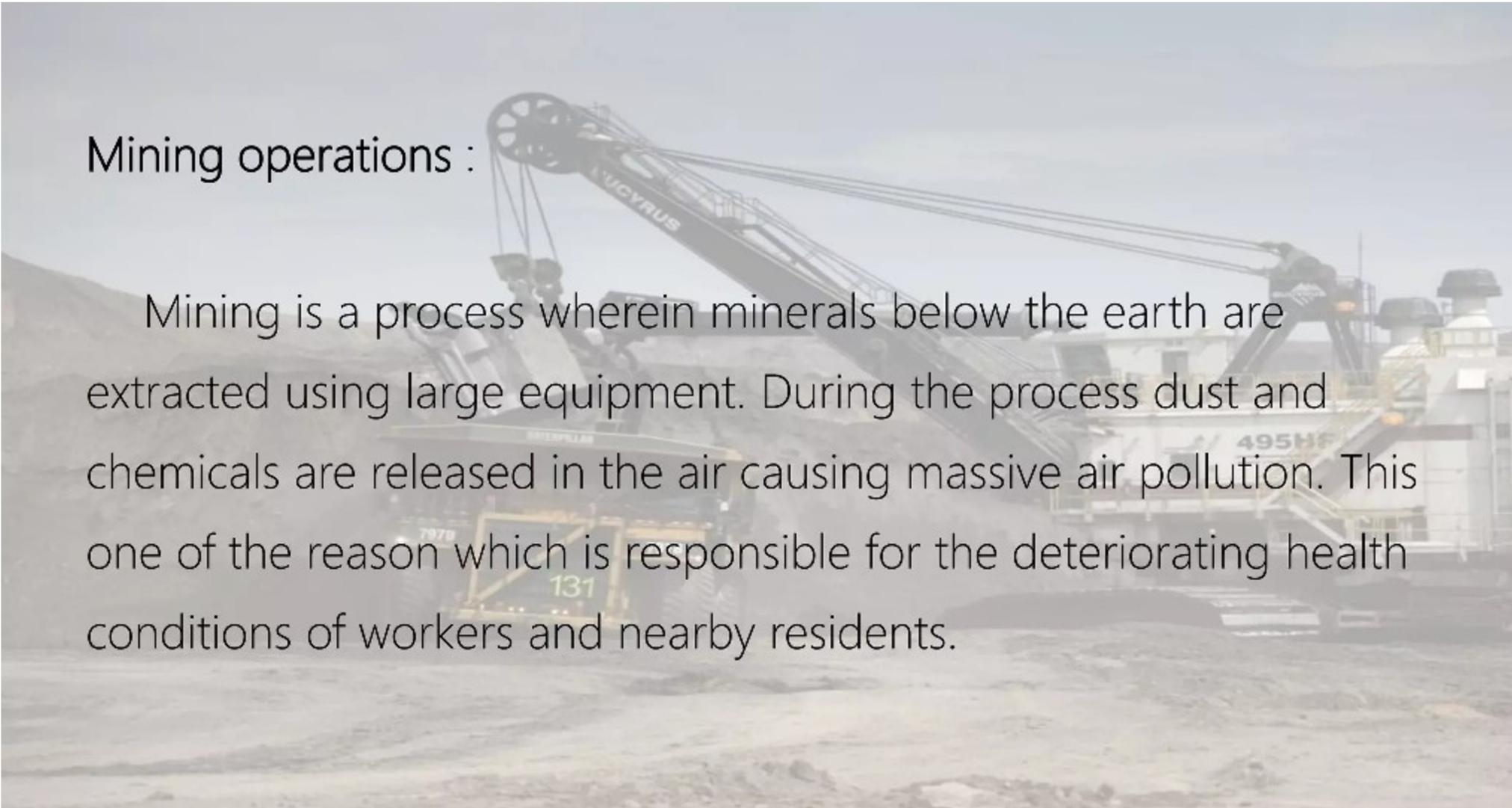
- Exhaust from Factories and Industries :-
 - Manufacturing industries release large amount of carbon monoxide, hydrocarbons, organic compounds, and chemicals into the air thereby depleting the quality of air.
 - Petroleum refineries also release hydrocarbons and various other chemicals that pollute the air.



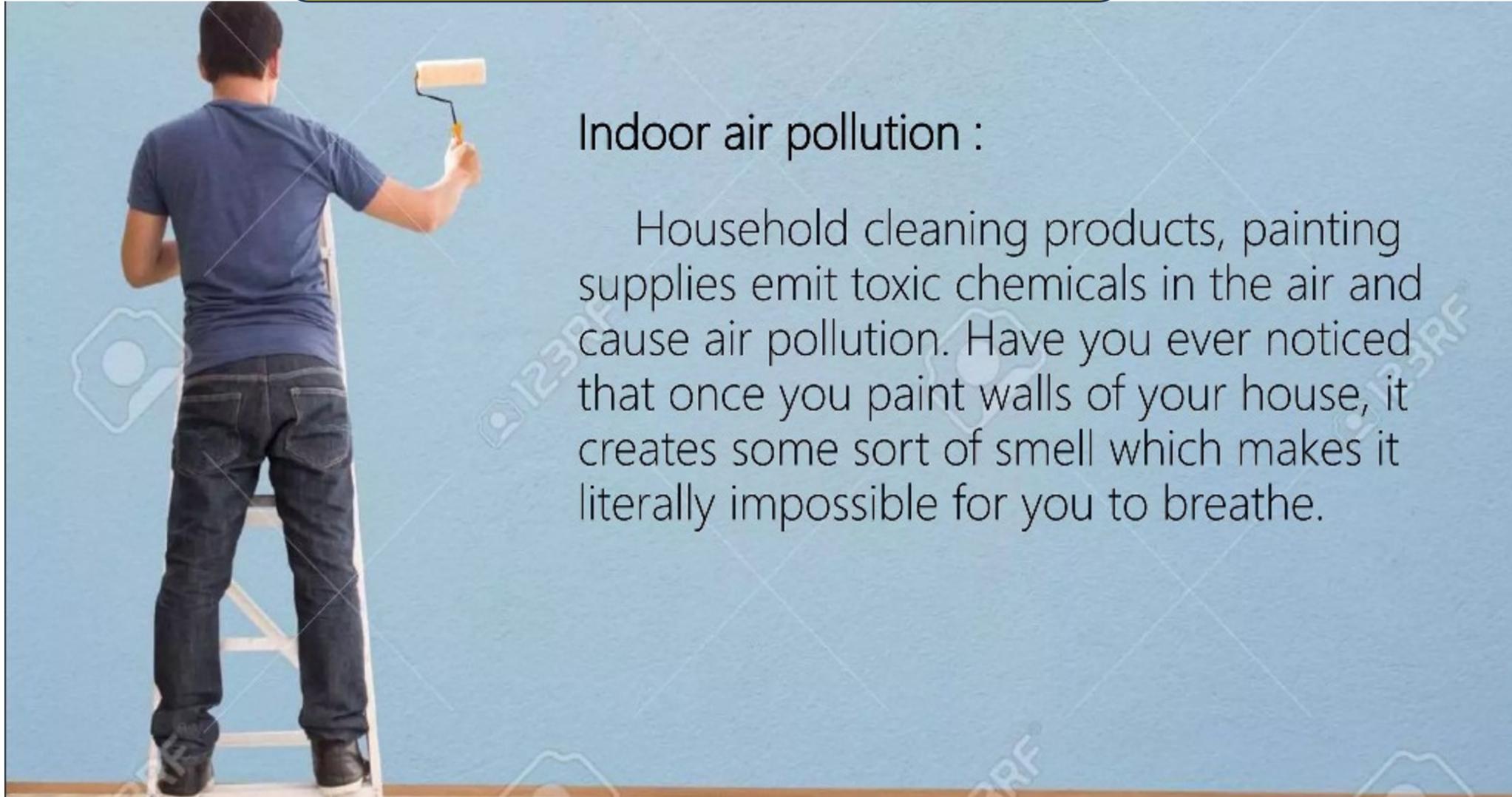
Main factors for pollution:

Mining operations :

Mining is a process wherein minerals below the earth are extracted using large equipment. During the process dust and chemicals are released in the air causing massive air pollution. This one of the reason which is responsible for the deteriorating health conditions of workers and nearby residents.



Main factors for pollution:



Indoor air pollution :

Household cleaning products, painting supplies emit toxic chemicals in the air and cause air pollution. Have you ever noticed that once you paint walls of your house, it creates some sort of smell which makes it literally impossible for you to breathe.

Remedies & Solutions:

- Improving Public Transportation
- Adopt Vehicles with BS-VI Standards
- Shifting towards Greener Energy (Solar, Wind, Nuclear instead of Fossil Fuels based Power Plants)
- Avoiding burning of Crop Residues
- Avoiding burning of Fire Crackers & use of such elements.
- Mandatory Provision of Green Belts in all Areas
- Regulation for controlling the Emissions from Industries & Mining & Construction Sectors

Remedies & Solutions:

- Awareness among the Masses regarding Air Pollution



Some Shocking Facts:

- Air pollution is not a recent occurrence. In 1952, the Great Smog of London killed 8000 people.
- According to the Lancet journal, air pollution caused by waiting in traffic increases the chances of death caused due to heart attack.
- Toxic air pollution poses a greater threat to children, due to their smaller physical size and lung capacity.
- Air pollution that causes smog affects dolphins and makes them suffer from black lung diseases.
- Outdoor air pollution outdoor, ranks in the top ten killers on earth.
- 65% of the deaths in Asia and 25% deaths in India are due to air pollution.
- By 2050, 6 million people will die per year due to air pollution.

Spread the
Word "Be a Part
of the Solution,
not the
Pollution" Go
Green

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Thank You

