

# AIR POLLUTION CONTROL

PERSONAL DEVICES

**PRESENTED BY-  
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# What is Air Pollution?

**Air pollution is the introduction of particulates, biological molecules, or other harmful substances into Earth's atmosphere, causing diseases, allergies, death to humans, damage to other living organisms such as animals and food crops, or the natural or built environment.**




# Types of Air Pollutants:-

**Primarily air pollutants**

**Secondary pollutants**

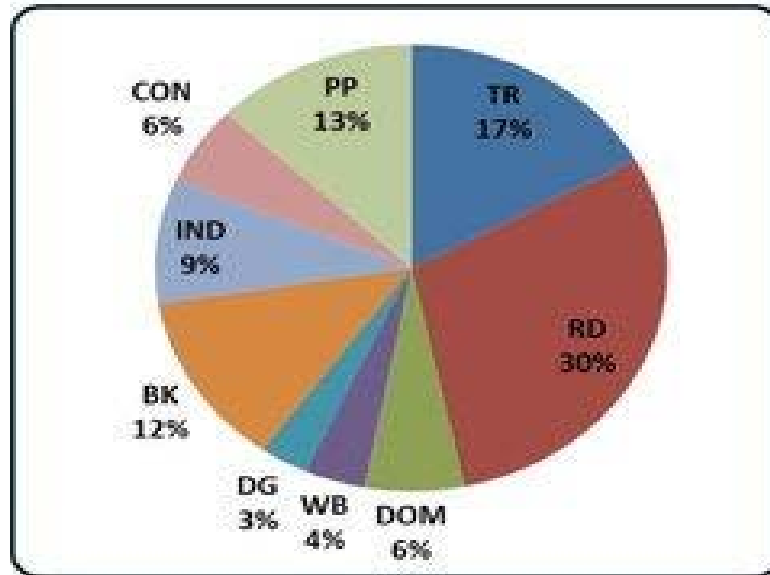


# Causes of Air Pollution:

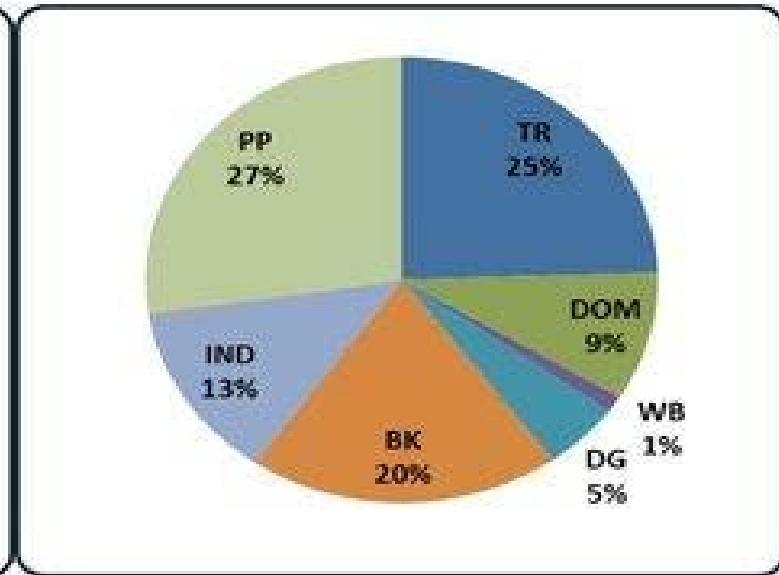
- 1. Burning of Fossil Fuels:**
  - 2. Agricultural activities:**
  - 3. Exhaust from factories and industries:**
  - 4. Mining operations:**
  - 5. Indoor air pollution:**
- 

# % Contribution (Delhi data:2011)WHO

## PM<sub>10</sub>



## CO



IND = industries; PP = power plants; DOM = domestic; TR = transport; RD = road dust; WB = waste burning; CON = construction activities; BK = brick kilns; GS = generator sets

# Air Pollution in India?

Should we worry?



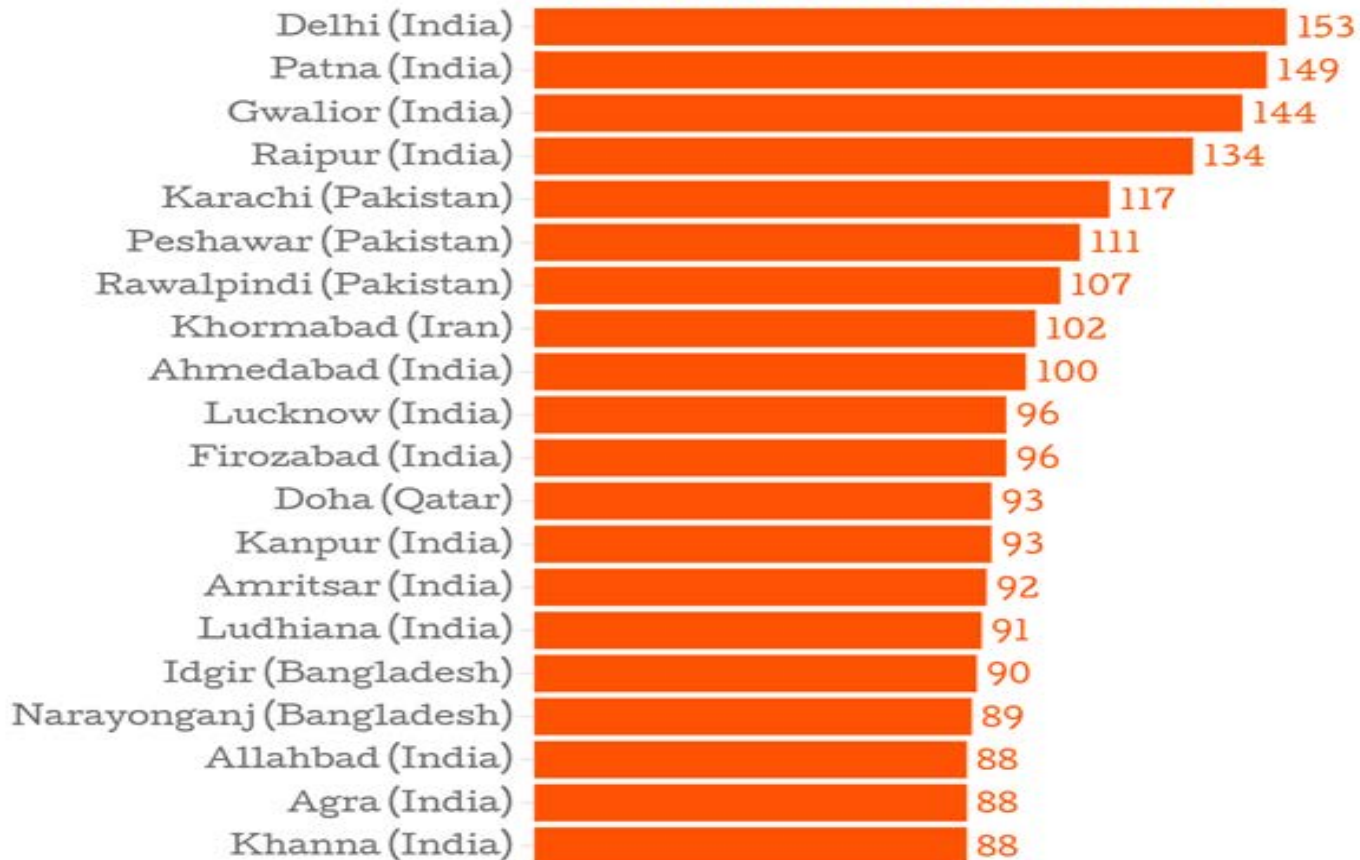


13 out of 20 most polluted cities  
are in India.

WHO Data in 2014.

## Top 20 cities in the world with the highest level of PM 2.5

PM 2.5 (micrograms per cubic metre)





# Effects of Air pollution

**1. Respiratory and heart problems:**

**2. Global warming:**

**3. Acid Rain:**

**4. Depletion of Ozone layer:**

# Deaths due to Air Pollution

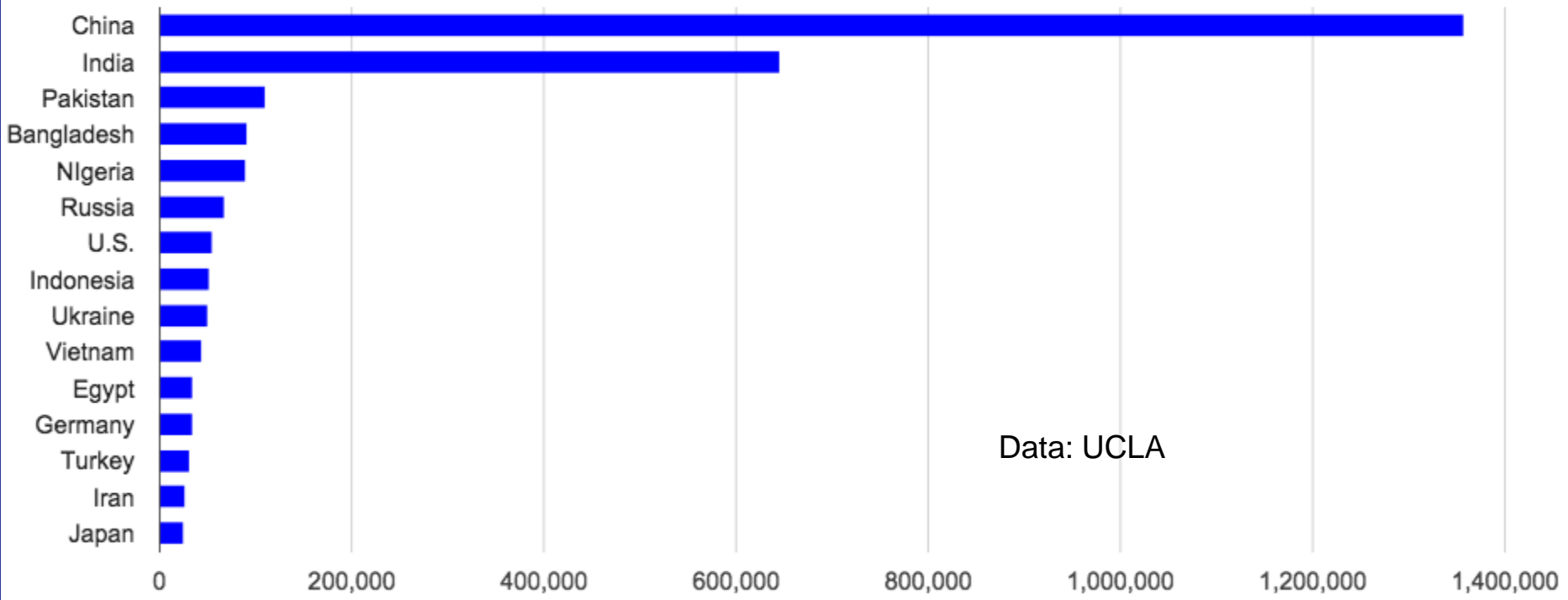
Any guesses how many people in the world and in India die each year due to Air Pollution?

**Polluted air causes 5.5 million deaths a year new research says**

1.3 Million deaths in India due to air pollution.

Data: Global burden of Disease project.

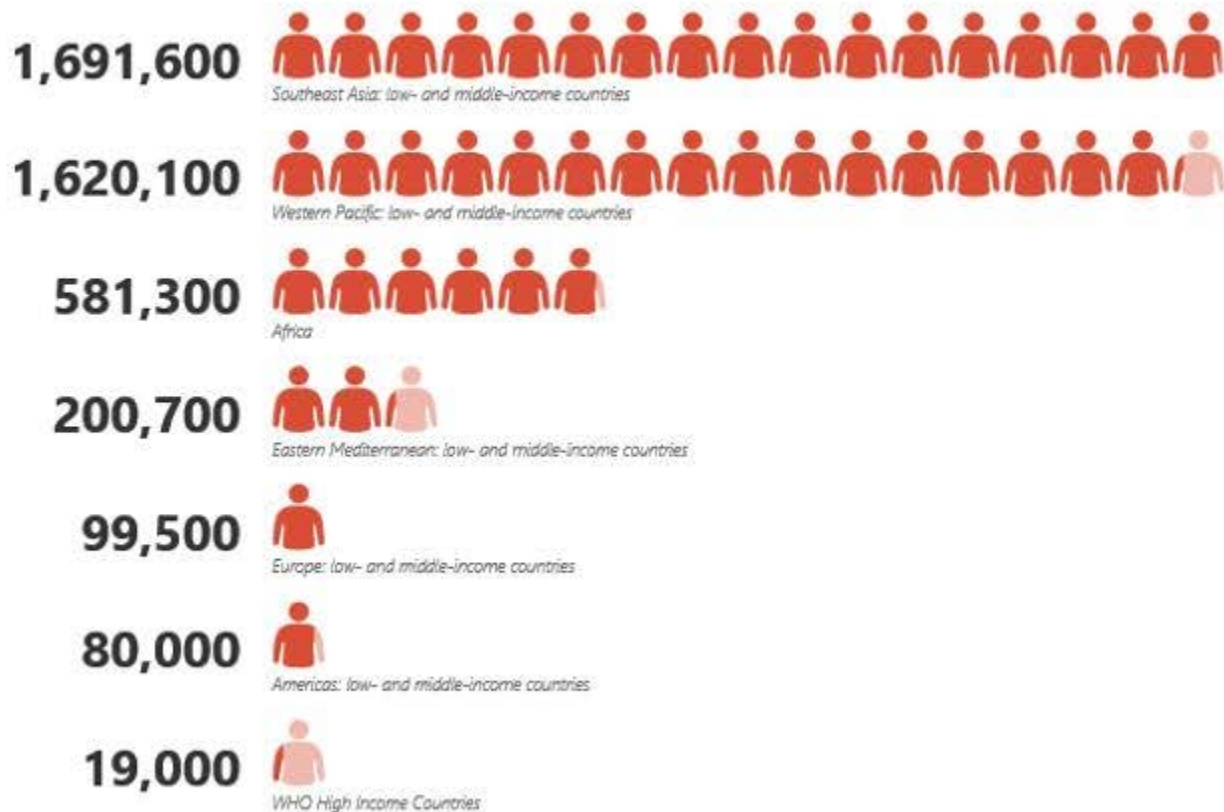
# Worst Countries for Air-Pollution Deaths



Data: UCLA

*Annual Deaths from Outdoor Air Pollution*

## DEATHS ATTRIBUTABLE TO HOUSEHOLD AIR POLLUTION BY REGION (2012)



Source: World Health Organization

# Air Pollution Control:

The techniques employed to reduce or eliminate the emission in the atmosphere of substances that can harm the environment or human health.



What can individuals do to  
protect themselves from Outdoor  
Air Pollution?

1. Check daily air pollution forecasts in your area.
2. Avoid outdoors when pollution levels are high.
3. Always avoid exercising near high-traffic areas.
4. Use less energy in your home.
5. Walk, bike or carpool. Combine trips. Use Public transport.



# Air Pollution masks ?



# Pollution Masks:

Face masks that filter out airborne particles can make a big difference in your exposure to air pollution. A mask with a high quality filter that fits properly can be an effective measure against the inhalation of harmful pollutant particles as small as PM 2.5.

# What to look in a pollution mask, Important considerations:

Not all masks are effective against breathing in small pollutant particles.

**1. Look for a mask with U.S. NIOSH or EU FFP ratings:** certification and ratings on a mask are important – they indicate that the mask has been tested and meets benchmark standards to filter out small airborne particles.

**N95, N99 or P100 rating** – is a U.S. government-approved certification from the U.S. Centers for Disease Control and Prevention (CDC)

**EN 149 FFP2 or FFP3 rating** – is a European Union tested rating standard.

## NIOSH N95 rating:

One such rating is N95, which is recommended by [US CDC](#) for most cases of air contamination. These filters seal are made to seal tightly around mouth and nose and is made of material certified to block 95% of particles 0.3  $\mu\text{m}$  or larger in diameter, roughly the size of a single virus<sup>[1]</sup> and include [PM2.5](#). Nevertheless, strict protocol must be taken to wear properly these masks, even facial hair is enough to break the seal and let in particles.

## NIOSH N99 rating:

A stricter rating than N95, but still not resistant to oil. Stops 99% of particles.

**2. Make sure the mask fits securely and that there are no gaps to let outside air in.** A gap in your mask that allows air in completely negates any benefit or protection you would get from filtering out pollutant particles.

**3. Check the mask's material to ensure that it can filter out small particles.**

**4. Make sure your mask is well ventilated.**

## **BRANDS AND COMPANIES**

In the past two years, high quality anti-pollution masks have entered the Indian marketplace. As community awareness about the detrimental effects of air pollution on health grows, so too has the demand for protective masks.

3M:



sells various N95 and N99 certified and relatively inexpensive disposable masks





# How to control Indoor/household air pollution?



1. Ventilation.

2. Ban smoking.

3. Eliminate Odour.

4. Switch from coal/biomass to  
LPG, electricity.

# References:

<https://delhiar.org/what-to-do/pollution-masks/>

<http://www.who.int/indoorair/interventions/en/>

<http://www.bloomberg.com/news/articles/2015-09-16/outdoor-air-pollution-will-kill-6-6-million-people-each-year-by-2050>

<http://www.forbes.com/sites/williampentland/2014/03/25/air-pollution-replaces-poor-diet-as-worlds-largest-preventable-health-risk/#1725d9c21dc8>