



## Mains Practice Question

**Q.** What constitutes air pollution, particularly in the context of stubble burning? What measures can be implemented to mitigate its effects? (250 words)

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### Approach

- Start by defining the term Air Pollution and stubble burning.
- Mention how stubble burning leads to air pollution.
- Mention the remedial measures to be taken along with examples.
- Conclude by summarizing the key points of your answer.

### Introduction

Air pollution, defined as the presence of harmful substances in the atmosphere, poses a significant threat to human health, the environment, and overall well-being.

Stubble burning, a process of setting on fire the straw stubble, left after the harvesting of grains, like paddy, wheat, etc. adds to the problem of air pollution.

### Body

#### **Air Pollution from Stubble Burning:**

- **Particulate Matter (PM):** Stubble burning releases fine particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>) into the air, leading to respiratory problems and reduced visibility.
- **Greenhouse Gases:** Stubble burning emits greenhouse gases such as carbon dioxide (CO<sub>2</sub>) and methane (CH<sub>4</sub>), contributing to climate change.
- **Toxic Gases:** Harmful gases like nitrogen oxides (NO<sub>x</sub>) and sulfur dioxide (SO<sub>2</sub>) are released, posing health risks and causing acid rain. These can also form secondary aerosols and ozone.
- **Reduced Air Quality:** Stubble burning collectively deteriorates air quality, resulting in smog formation and poor visibility. India's current Air Quality Index (AQI) stands at 80 (MODERATE) but can drop to POOR or VERY POOR levels during the peak burning season.

#### **Mitigation Measures:**

- **Alternate Farming Practices:** Encouraging farmers to adopt practices like no-till farming, direct seeding, or crop residue management reduces the need for stubble burning, benefiting soil health and crop productivity.
- **Mechanization:** Promoting modern machineries like Happy Seeder and balers for residue management ensures cleaner disposal of crop residues.
- **Subsidies and Incentives:** Financial incentives and subsidies can alleviate economic pressures driving stubble burning. For instance, a 2019 scheme to provide 2,400 rupees per acre for not burning stubble was proposed but not implemented due to funding constraints.
- **Awareness and Education:** Mass media, social media, workshops, and expert demonstrations are tools to educate farmers about the harmful effects of stubble burning and the benefits of

alternative practices.

- **Legal Enforcement:** Strictly enforcing regulations and penalties for stubble burning, with satellite or drone monitoring, fines, imprisonment, or withholding subsidies for violators.
- **Crop Diversification:** Encouraging farmers to diversify crops can reduce paddy straw concentration, a major contributor to stubble burning.

## Conclusion

Air pollution, particularly from stubble burning, threatens public health and the environment. Mitigation efforts must encompass changes in agricultural practices, economic incentives, awareness campaigns, and stringent legal measures to combat this pressing issue and enhance air quality in affected regions.

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