



Wildfires in California

[Source: HT](#)

Why in News?

Los Angeles, California, is battling devastating **wildfires**, with fatalities and structural losses, as **authorities deploy pink fire retardants to contain the flames**.

- These wildfires have been occurring with **increasing frequency** and **outside the usual wildfire season**, prompting questions about their causes, the role of **climate change**, and potential solutions.
- Authorities are using **pink fire retardants** to control the wildfires.

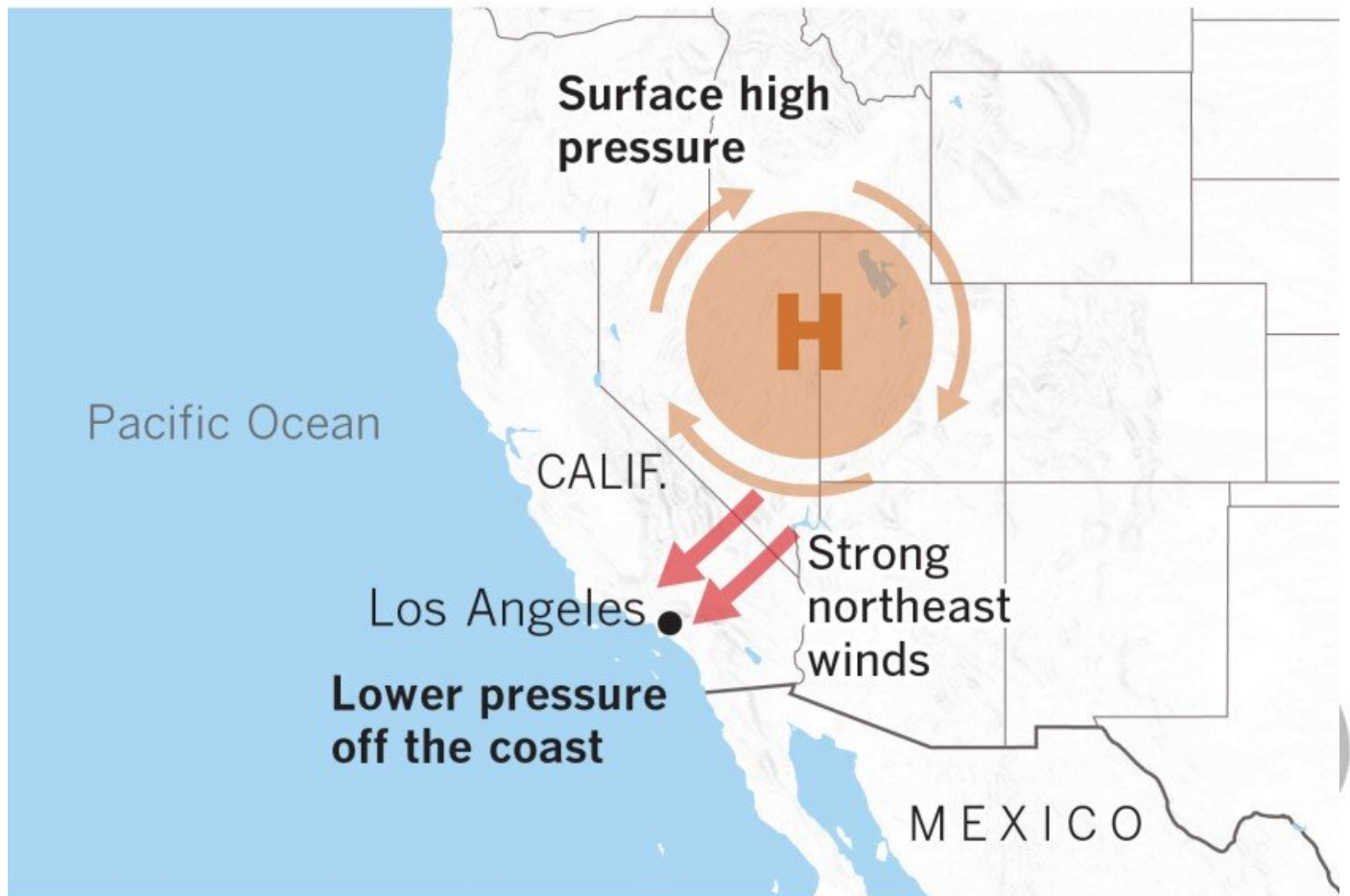
Note: In India, as per the [India State of Forest Report \(ISFR\) 2021](#) published by the [Forest Survey of India \(FSI\)](#), **35.47% of the forest cover is prone to fire.**

What are the Causes and Impacts of Frequent Wildfires in California?

- **Natural Causes:**
 - **Lightning Strikes:** Lightning Strikes **ignite dry vegetation** like trees and grass, triggering uncontrollable fires, especially when combined with strong winds. This is **common during dry seasons**.
 - **Climate Change:** California, in the last **two winters (2022 and 2023)** saw **heavy rainfall**, promoting vegetation growth.
 - The **unusually dry winters of 2024-2025** have **dried out vegetation** in Los Angeles, **turning it into fuel for wildfires**.
 - **Global warming** has also exacerbated dry and wet seasons, leading to prolonged **droughts** and **reduced moisture in vegetation**, which has led to a rise in **frequency and severity of wildfires**.
 - **Santa Ana Winds:** The **Santa Ana winds** in California, typically strong between **October and January**, have been exceptionally **powerful in 2025**.
 - The winds originate from **high-pressure systems** in the **Great Basin** and blow hot, **dry air** from **east to west**, flowing down **towards the Pacific coast**.
 - As air **descends the Sierra Nevada and Santa Ana mountains** and passes through valleys, **it gets compressed**, which raises its **temperature and reduces humidity**.
 - In Southern California, these winds **exacerbate wildfires by rapidly** spreading flames across dry vegetation, power lines, and buildings.

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Santa Ana winds



- **Human Intervention:** According to the US National Park Service, **human activities** account for approximately **85%** of wildfires in the US.
 - **Campfires:** Unattended or **improperly extinguished campfires** are major human-induced causes of wildfires.
 - **Roadside Ignition:** Sparks from vehicles, such as dragging chains or malfunctioning **catalytic converters**, **can ignite fires** along highways.
 - **Power Lines:** Faulty or wind-disturbed power lines often trigger wildfires.
 - **Other Human Activities:** Equipment malfunctions, arson, and discarded cigarettes also contribute to wildfire outbreaks.
 - Sometimes **smugglers and wildlife traffickers** ignite **wildfires** to **divert the attention of security forces** or to **destroy the evidence of crime**.
- **Impact of Wildfires:**
 - **Economic loss** from destruction of life and property.
 - **Air pollution** by small particulate matter and also acids, organic chemicals, and metals along with dust and allergens.
 - **Land degradation** as high temperatures consume all nutrients and vegetation from a land, leaving it barren and infertile.
 - **Loss of biodiversity**

What is Pink Fire Retardant?

- **About:**
 - It is a chemical mix used to **slow or extinguish wildfires**.
 - It primarily contains **ammonium phosphate-based slurry** with salts like **ammonium polyphosphate** and toxic metals like **chromium** and **cadmium**.

- A commonly used fire retardant in the US is **Phos-Chek**.
 - **Phos-Chek** is a **mixture of water, ammonium phosphate-based fertilizers** (diammonium phosphate and ammonium polyphosphate), and a **red dye (iron oxide)** for visibility.
 - It also includes **thickening agents** to enhance its stickiness and prevent drift during aerial application.



- **Function:** It is sprayed ahead of fire that **coats vegetation to prevent oxygen from aiding combustion**.
 - **Pink** is chosen because it is **highly visible**, helping firefighters target fire lines more effectively.
- **Concerns:** Toxic metals like chromium and cadmium cause **cancer and organ damage**, and pose **severe risks to aquatic life** when they contaminate waterways.

UPSC Civil Services Examination Previous Year Question (PYQ)

Prelims

Q. Consider the following: (2019)

1. Carbon monoxide
2. Methane
3. Ozone
4. Sulphur dioxide

Which of the above are released into atmosphere due to the burning of crop/biomass residue?

- (a) 1 and 2 only
- (b) 2, 3 and 4 only
- (c) 1 and 4 only
- (d) 1, 2, 3 and 4

Ans: (d)

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