Firecrackers – The Machanism, Regulations & Impacts

What is the issue?

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- Supreme Court has recently banned the sale of firecrackers in Delhi-NCR.
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- But research on crackers & its impact is lacking in the country.
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How has CPCB's position been?

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- In 2016, a great smog enveloped Delhi for days after Diwali.
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- SC mandated the Central Pollution Control Board (CPCB) under the Ministry of Environment, to study the effects of firecrackers.
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- CPCB noted that the competence for such a study lies with the Petroleum and Explosives Safety Organisation (PESO) - the explosives regulator under the Commerce Ministry.
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- It nevertheless did review existing literature on the subject and put together a summary.
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- It listed the health impacts of fireworks, delved into the chemical processes involved, and the toxic substances that are released.
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What is the Chemistry of fireworks?

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- Explosive fireworks depend on four primary ingredients — oxidiser, fuel, colouring agents & binder.

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- The oxidisers in fireworks are chemicals that release oxygen to allow the explosion to take place. Ex: Nitrates, chlorates.
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- The fuel for burning is usually charcoal.
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- Colouring agents impart desired colours like aluminium compounds for brilliant whites, barium nitrate for greens.
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- Binders are used to hold the mixture of the firework together in a paste while burning.
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- Also, other metals like titanium & strontium are added to regulate the speed of the burning reaction.
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What are the existing guidelines?

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- Currently, guidelines exist four types of explosive firecrackers — atom bombs, Chinese crackers, garland crackers and maroons.
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- The guidelines for these were drawn up by PESO in 2008 after the Supreme Court ordered it to regulate regarding their composition.
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- According to these guidelines, the sulphur, nitrate & aluminium power contents must not exceed 20%, 57%, & 24% respectively.
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- In July 2016 the SC ordered that no firecrackers shall contain antimony, lithium, mercury, arsenic and lead.
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What are the studies that establish health risks?

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- Studies in Europe, Canada and China have established links between fireworks bursting and variations in air quality.
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- A 2014 study on ‘Impact of Fireworks on Respiratory Health’, in India, showed an increased risk of asthma & cancers due to crackers.

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- A 2007 study published in ‘Atmospheric Environment’ magazine established that children were at a greater risk due to cracker enhanced particulate matter in the air.
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Source: Indian Express

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