DOES INDIA NEED A BAN ON MANUFACTURE OF FIRE CRACKERS? – AN ENVIRONMENTAL PERSPECTIVE

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INTRODUCTION

High pollution levels in India are not a recent phenomenon and its miserable rank of 177 out of 180 in Environmental Performance Index shows the amount of efforts needed to improve environment.[1] Various factors like discharge of industrial effluents, vehicular emissions, inconsiderate garbage dumping, burning of fossil fuels, agricultural activities, mining etc. contribute to all forms of pollution in India. Though not paid much consideration (except during Diwali season), burning of firecrackers and fireworks ***[hereinafter referred to as crackers collectively]*** is a major source of pollution of air, water and land. The bursting of crackers results in shooting up of particulate matter (PM) levels by the levels much beyond the safe levels suggested by World Health Organisation. Though burning of crackers is usually only associated with air pollution, it also results in noise, land, and water pollution. Millions are spent each year for crackers which eventually leads to contamination of all the natural resources. Further, lives are lost and others are mutilated permanently. Not only humans, but animals and plants suffer alike immensely from burning of fire crackers.

The recent Supreme Court judgement of *Arjun Gopal and Ors.* v. *Union of India*,[2] prohibited sale of fire crackers in Delhi during Diwali due to alarmingly deteriorating air quality, which sparked a big debate regarding ban on crackers. However, the judgement took a communal colour and was widely opposed. The opposition on the ban comes in the name of jobs being lost and economic activity being curtailed due to vested interest of the cracker industry. Further,

[1] *India ranks 177 out of 180 in Environmental Performance Index*, THE HINDU (Feb. 18, 2018, 11:04 AM), http://www.thehindu.com/sci-tech/energy-and-environment/india-ranks-177-out-of-180-in-environmental-performance-index/article22513016.ece.

[2] Arjun Gopal v. Union of India, 2017(12) SCALE 348.

it was contended that burning of crackers is an integral and essential religious practice of Hinduism during Diwali which gave the ban a communal twist.

The present paper attempts to contemplate the whether there should be a complete ban on manufacture of firecrackers and whether it can be constitutionally validated.

POLLUTION DUE TO CRACKERS IN INDIA

The World Health Organization in its urban air database reported that India has exceeded the maximum PM_{10} limit by almost 10-times at 198μg/m3.[3] Health hazards from exposure to PM_{10} include effects on breathing and respiratory systems, damage to lung tissue, cancer and premature death.[4] A study has found that Indians have 30% lower lung function as compared to Europeans.[5]

Though sufficient data is not available to show the pollution caused by burning of crackers, various papers have studied the air quality degradation in few cities in India due to firework activities during Diwali.

Table 1. The number of times increases in aerosol components and trace gases concentrations compared to normal days over Kolkata and other Indian locations during Diwali.

	Kolkata (This Study)	Delhi (Perrino *et al.*, 2011)		Hyderabad (Kulshrestha *et al.*, 2004)	Hisar (Ravindra *et al.*, 2003)	Lucknow (Barman *et al.*, 2008)	Howrah (Thakur *et al.*, 2010)
Year of study	2010	2008	2009	2002	1999	2005	2008
PM_{10}	4.6	2.8	1.6	NA	1.5–2.0	5.7	7.2
Al	6.0	3.3	3.8	18.0	NA	NA	6.0
Pb	11.0	2.1	1.7	NA	NA	1.4	15.0
Zn	5.5	4.2	2.6	NA	NA	2.2	NA
Fe	26.0	1.1	1.2	2.0	NA	1.7	NA
Mn	40.0	2.9	2.8	2.0	NA	1.3	NA
V	80.0	7.5	6.6	1.5	NA	NA	NA
Cd	12.0	NA	NA	NA	NA	2.0	17.0
Co	70.0	NA	NA	NA	NA	1.3	NA
Cu	25.0	NA	NA	9.0	NA	3.7	79.0
SO_2	5.0	NA	NA	NA	4.0	7.0	1.7

[6]

[3] SA Rizwan et al., *Air pollution in Delhi: Its Magnitude and Effects on Health*, 38(1) IJCM 4–8 (2013).
[4] *Id.*
[5] Durgesh Nandan Jha, *Indians have 30% weaker lungs than Europeans: Study*, TIMES OF INDIA (Feb. 19, 2018, 10:04 AM), https://timesofindia.indiatimes.com/home/science/Indians-have-30-weaker-lungs-than-Europeans-Study/articleshow/22217540.cms.
[6] A. Chatterjee et al., *Ambient Air Quality during Diwali Festival over Kolkata – A Mega-City in India*, 13 AEROSOL AND AIR QUALITY RESEARCH 1133–1144 (2013).

The above figures from various studies clearly indicate a high increase in toxic elements like aluminium, lead zinc, iron, manganese, cobalt, copper, phosphorous which is hazardous for water and land. Further, a drastic rise in $PM_{10,}$ Nitrogen Dioxide and Sulphur Dioxide levels due to burning of crackers is also visible. Nitrogen Dioxide leads to formation of smog and acid rain which are associated with adverse health effects.[7] Further, continuous exposure to nitrogen dioxide and sulphur dioxide to it also increases the risk of respiratory tract infections and in extreme cases death.[8]

Table 2. Levels of $PM_{2.5}$ produced by crackers

Name of Crackers	**Peak levels of $PM_{2.5}$ (µg/m³)**	**Cumulative levels of $PM_{2.5}$ (µg/m³)**
Snake	64500	64849
Garland (1000)	38540	47789
Sparklers	10390	10898
Ground spinner	9490	10475
Flower pots or fountains	4860	5640

Source: Hindustan Times[9]

$PM_{2.5}$ are fine particulate matters which have the ability to damage the human body and especially the lungs by accumulating inside due to its fineness. WHO has a standard of 25 µg/m³ for PM 2.5[10] which implies that burning just a single snake tablet exposes humans to 2580 times more than the prescribed safe limit. As evident from Table 2, the snake tablet, burnt for only 9 seconds, produces the highest peak of $PM_{2.5}$ (64,500µg/m³) which is equivalent of smoke

[7] *Nitrogen Oxide (NOx) Pollution*, ICOPAL (Feb. 17, 2018, 10:04 PM), http://www.icopal-noxite.co.uk/nox-problem/nox-pollution.aspx.

[8] Chen TM et al., *Outdoor air pollution: nitrogen dioxide, sulfur dioxide, and carbon monoxide health effects*, 333(4) AJMS 249-56 (2007).

[9] Shrinivas Deshpande, *Fire-cracker free Diwali: Bursting cracker is equal to lighting 500 cigarettes at once, show Pune researchers*, HINDUSTAN TIMES (Feb. 16, 2018, 10:04 PM), https://www.hindustantimes.com/pune-news/why-bursting-a-cracker-is-equal-to-lighting-500-cigarettes-at-once/story-zSqFpTjnUGqneFBreAgFUI.html.

[10] *Id.*

generated from 500 cigarettes and the garland burnt for 48 seconds produces equivalent to particulate matter emitted by 300 cigarettes.[11]

Thus, considering the aforementioned facts regarding the hazardous impact of burning of firecrackers, it needs to be contemplated whether manufacturing of crackers should be banned.

LEGAL REGIME SUPPORTING BAN ON CRACKERS

The right to wholesome environment has been recognised as the part of the right to life under Article 21 of the Constitution of India in plethora of judgements.[12] The Supreme Court in *Arjun Gopal and Others* v. *Union of India*[13] relied on various laws and established principles to ban the sale of crackers in Delhi and NCR. The court recognized the duty of citizens "to protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures."[14] Further, **the Explosive Rules, 2008** framed under the Explosives Act, 1884 governing the manufacture and sale of crackers were also relied upon. Rule 118[15] confers power on the Central Government to suspend or cancel a license of explosives in public interest and also an opportunity to hear the licensee could be dispensed with if the Central Government considers that there is imminent danger to the public. Similarly, the "precautionary principle" was also considered, to prevent to human life and environment from the threat of serious and irreversible damage caused due to crackers. Further, the Water Act, 1974, the Air Act, 1981 and the Environment (Protection) Act 1986 enacted under international commitments of India to preserve the natural resources and control air pollution also come into aid in support of such ban.

The Water (Prevention and Control of Pollution) Act, 1974 provides for the prevention and control of water pollution and the maintaining or restoring of wholesomeness of water. A Board is thus established for the prevention and control of water pollution, and powers and functions relating thereto have been conferred on the board.

[11] *Id.*
[12] C. Kenchappa v. State of Karnataka, 2000 (4) KarLJ 1; Mahendra Lodha v. State of Rajasthan, 2001 (1) WLC 337.
[13] 2017(12) SCALE 348.
[14] INDIA CONST. Article 51A (g).
[15] The Explosive Rules, 2008.

The Air (Prevention and Control of Pollution) Act, 1981 was enacted as a part of the decision taken at the United Nations Conference on the Human Environment held in Stockholm in June, 1972, in which India participated, to take appropriate steps for the preservation of the natural resources of the earth which, among other things, include the preservation of the quality of air and control of air pollution. Thus, it was considered necessary preserve the quality of air and control of air pollution. Article 48A of the Constitution of India mandates that the State shall endeavour to protect and improve the environment and to safeguard the forests and wild life of the country. Article 51A of the Constitution of India imposes as one of the fundamental duties on every citizen, the duty to protect and improve the natural environment including forests, lakes, rivers and wild life and to have compassion for living creatures.

In the recent case of *Arjun Gopal and Ors.* v. *Union of India*[16], the Supreme Court prohibited sale of fire crackers in Delhi and NCR due to the worsening air quality standards in the region because of extensive use of crackers during Diwali last year. Even though, it was not the only cause for alarming air pollution, it was one of the major causes due to which the air quality had sharply deteriorated. The ban was contested on two major grounds –

1. ***Right to Trade and Commerce*** –

The major debate on the topic arises due to the inherent conflict between the Right to Life under Article 21 and the Right to Freedom of Trade and Commerce under Article 19(1)(g) of the Constitution. Article 19(1)(g) provides that all the citizens shall have the right to practise any profession, or to carry on any occupation, trade or business. This right is subject to Article 19(6) which states that "nothing in sub clause (g) of the said clause shall affect the operation of any existing law in so far as it imposes, or prevent the State from making any law imposing, in the interests of the general public, reasonable restrictions on the exercise of the right conferred by the said sub clause." Thus, manufacture of crackers can be banned in interest of general public and to protect their life and right to wholesome environment under Article 21 of the Constitution. Evidently, a complete ban on manufacture of fire crackers will lead to loss of employment for thousands of people. Further, the ancillary activities associated to fire crackers shall also suffer.

2. ***Essential religious practice of Hindus during Diwali –***

[16] *Supra note* at 2.

The judgement in Arjun Gopal (supra) took a communal colour and was widely resisted on the grounds that burning crackers is an essential practice of Hindus during Diwali. Article 25 of the Constitution protects the freedom of conscience and free profession, practice and propagation of religion. Clause (1) of this Article states: "Subject to public order, morality and health and to the other provisions of this part, all persons are equally entitled to freedom of conscience and the right freely to profess, practice and propagate religion." This right is made subject only to public order, morality and health. Since this right is subject to health, the noise caused by firecrackers can be prohibited in the interest of health, provided, the nexus between noise and health will have to be judicially established. Thus, the Court by restricting the time of bursting the firecrackers has not in any way violated the religious rights of any person as enshrined under Article 25 of the Constitution. The festival of Diwali is mainly associated with Pooja performed on the auspicious day and not with firecrackers. Further, the Hindu religious texts do not prescribe for burning of crackers as an 'essential religious practice'. Diwali is considered as a festival of lights, not of noises. Thus, shelter in the name of religion cannot be sought for, for bursting firecrackers and that too at odd hours.

CONCLUSION

In light of the statistics showing the harmful impact of burning crackers for humans, the manufacturing of crackers needs to be banned altogether. To stop such ban from taking a communal twist, the crackers should not be banned only during Diwali but a complete ban on manufacturing of crackers is required. Regarding loss of livelihood, it is pertinent to note that the manufacturing of fire crackers is a serious threat to the environment due to the drastic impact on air, land, water and noise. Though ban on manufacture endangers the livelihood of thousands, the intrinsic health hazard posed by manufacture and burning of fire crackers affects millions of lives in some form or the other. Thus, a healthy approach towards environment and general well-being of humans, a radical step of blanket ban on manufacturing of crackers has been justified concretely.

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