

**IN THE SUPREME COURT OF INDIA
CIVIL ORIGINAL JURISDICTION
WRIT PETITION (CIVIL) NO. _____ OF 2015
(Under Article 32 of the Constitution of India)**

IN THE MATTER OF:

ARJUN GOPAL &Ors.,

...Petitioners

VERSUS

UNION OF INDIA&Ors.,

...Respondents

PAPER BOOK
(FOR INDEX PLEASE SEE INSIDE)

ADVOCATE FOR THE PETITIONERS: PoojaDhar

INDEX

S.No.	Particulars	Page Nos.
1.	Office Report on Limitation	A
2.	Listing Proforma	A1 - A2
3.	Synopsis and List of Dates	B –
4.	Writ Petition with affidavit	1 –
5.	ANNEXURE P-1: A true copy of “The ambient air and noise quality in India during Diwali festival: A review” <i>Recent Research in Science and Technology</i> , 2014, 6(1): 203-210 dated NIL.	
6.	ANNEXURE P-2: A true copy of “Potential impact of fireworks on respiratory health” by Gouder C, Montefort S, <i>Lung India</i> 2014;31:375-9 dated NIL.	
7.	ANNEXURE P-3: A true copy of “Assessment of the Impact of Fireworks on Ambient Air Quality” by Sapan Bhatnagar and Shubham Dadhich, <i>IJRASET</i> , Volume 3, Issue IV, April 2015 dated NIL.	
8.	ANNEXURE P-4: A true copy of “The effects of air pollution on the health of children” <i>Paediatr Child Health</i> , 2006 Oct; 11(8): 513–516 dated NIL.	
9.	ANNEXURE P-5: A true copy of the 2005 World Health Organization report on air pollution and respiratory diseases dated NIL.	
10.	ANNEXURE P-6: A true copy of “Air Pollution and its Impact on Lung Function of Children in Delhi” by S.Siddique, et al., cited as <i>Environ We Int. J. Sci. Tech.</i> 5 (2010) 163-175 dated NIL.	
11.	ANNEXURE P-7: A true copy of “Beijing Better Than Delhi” published in the <i>Hindustan Times</i> dated 22.04.2015.	
12.	ANNEXURE P-8: A true copy of a report in the <i>Daily Mail</i> 05.05.2015 showing findings of two studies which show 1 in 4 children in Delhi have unhealthy lungs.	
13.	ANNEXURE P-9: A true copy of The <i>Hindustan Times</i> report of 04.06.2015 about a 12 year old boy who has asthmatic attacks due to Delhi NCR’s bad air quality	
14.	ANNEXURE P-10: A true copy of the <i>Times of India</i> News Report published on 27.06.2015 about the rising levels of PM1.	

15. **ANNEXURE P-11:** A true copy of the article on India Today on 29.06.2015 reporting how successive Delhi Governments have failed to utilize Rs. 385 Cr. of funds collected to reduce pollution on the Environment
16. **ANNEXURE P-12:** A true copy of an NDTV report on 23.07.2015 where research conducted by the government has shown that 80 people die per day on average according to data collected from 2002-2005 due to Air Pollution
17. **ANNEXURE P-13:** A true copy of The Economic Times article on 25.08.2015 about the admission of bad Air Quality of Delhi by Union Ministry of Environment
18. **ANNEXURE P-14:** A true copy of a Times of India report on 28.08.2015 about a University of Texas study that reveals that Air Pollution can affect grades
19. **ANNEXURE P-15:** A true copy of detailed accounts of expats who are leaving New Delhi for locations with better air quality published in The Economic Times on 07.06.2015.
- 20 **I.A.No. ____/2015: APPLICATION FOR STAY**

**IN THE SUPREME COURT OF INDIA
CIVIL ORIGINAL JURISDICTION
WRIT PETITION (CIVIL) NO. _____ OF 2015
(Under Article 32 of the Constitution of India)**

IN THE MATTER OF:

ARJUN GOPAL &Ors.,

...Petitioners

VERSUS

UNION OF INDIA &Ors.,

...Respondents

OFFICE REPORT ON LIMITATION

The Petition is within time.

New Delhi

Dated: __.09.2015

BRANCH OFFICER

LISTING PROFORMA IN THE SUPREME COURT OF INDIA

SECTION PIL(W)

The case pertains to (Please tick / check the correct box):

- | | | | |
|--------------------------|------------------------|---|----|
| <input type="checkbox"/> | Central Act (Title) | : | NA |
| <input type="checkbox"/> | Provision | : | NA |
| <input type="checkbox"/> | Central Rule (Title) | : | NA |
| <input type="checkbox"/> | Rule No(s) | : | NA |
| <input type="checkbox"/> | State Act | : | NA |
| <input type="checkbox"/> | Provision(s) | : | NA |
| <input type="checkbox"/> | State Rule (Title) | : | NA |
| <input type="checkbox"/> | Rule No(s) | : | NA |
| <input type="checkbox"/> | Impugned Interim Order | : | NA |
| <input type="checkbox"/> | Impugned Final Order | : | NA |
| <input type="checkbox"/> | High Court | : | NA |
| <input type="checkbox"/> | Names of Judges | : | NA |
| <input type="checkbox"/> | Tribunal/Authority | : | NA |

-
- Nature of Matter**
 Civil
 - Petitioner No. 1 : Arjun Gopal
 - Email ID : gsanks@gmail.com
 - Mobile Number : +91 9911546725
 - Respondent No. 1 : Union of India
 - Email ID : NA
 - Mobile Number : NA
 - Classification**
 - Main category :
 - Sub classification :

5. **Not to be listed before** : NA
6. **Similar/Pending Matter** : NA
7. **Criminal Matters** : NA
8. **Land Acquisition Matters** : NA
9. **Tax Matters** : NA
10. **Special Category** : NA

Senior Citizen SC/ST Woman/Child

Disabled Legal Aid In custody

11. **Vehicle Number** : NA
(in case of Motor Accident Claim matters)
12. **Decided cases with citation** : NA

Date : __.09.2015

Advocate on Record for Petitioners

Name :
Code :
E-mail :

SYNOPSIS

Over the last 2 years, Delhi has retained the unique distinction of being the most polluted city in the world. The levels of particulate matter are highest, and across the country, over 700,000 deaths occur annually due to air pollution related diseases. Studies show that citizens have 30% lower lung capacity than Europeans, and that the children are the worst affected, as their lungs have not yet fully developed and their vulnerable systems are made vulnerable. In Delhi, a majority of the pollution is caused by over 500 million tons of crop residue burning that happens in the States around the capital, by polluting trucks that pass through the city at night and road dust and industry. To add to this, in the months of October and November, the festivals of Dussehra and Diwali lead to massive risks to lung disease with firecrackers and fireworks clogging the atmosphere.

The present Writ Petition is filed by and on behalf of 3 infants, all citizens of Delhi, seeking *inter alia* the immediate intervention of this Hon'ble Court against the inevitable and upcoming widespread use of firecrackers and fireworks and other products of the same classification, especially during the festivals of Dussehra and Diwali, but thereafter in all other events and festivals as well. While considerable debate and long-term measures are being discussed by the slow moving state machinery for implementation of measures to control pollution levels in Delhi, this Hon'ble Court is duty bound under Article 32 to take interim steps in effectuating the people's right to clean, healthy and breathable air under Article 21 of the Constitution of India.

This Hon'ble Court has directly monitored the harmful effects of air pollution on India *inter alia* with its following orders:

- Directing relocation of noxious and polluting industries in *M.C.Mehtav. Union of India*, (1996) 4 SCC 750
- After accepting the Report of the BhureLal Committee, laying down a clear time frame within which there would be a conversion of commercial diesel vehicles to CNG and several other measures in *M.C.Mehtav. Union of India (Delhi Vehicular Pollution)*, (1998) 6 SCC 63.
- Closing down of brick kilns in *M.C.Mehtav. Union of India*, (1998) 9 SCC 149.
- Directing the National Highways Authority of India (NHAI) to be the nodal agency to carry out completion of the construction of bypasses and expressways in *M.C.Mehtav. Union of India*, (2004) 10 SCC 180.

Clearly, therefore, a Writ Petition for preservation of ecology and the environment will be maintainable under Article 32 due to violation of Article 21.

Firecrackers use charcoal, sulphur and potassium nitrate with aluminium instead of or in addition to charcoal in order to brighten the explosion. Sparklers use oxidisers like potassium nitrate. The fuel is charcoal and sulphur, with a binder which can be sugar or starch. Aluminium, iron, steel, zinc or magnesium dust is added to create bright, shimmering sparks. Fireworks generate a variety of air pollutants, like carbon monoxide, sulphur dioxide and nitrogen oxide, in addition to aerosols or particulate matter that worsens lung conditions like asthma.

While Article 25 of the Constitution guarantees the right to profess, practice and propagate religion, and hence celebrate festivals with all fervour and enthusiasm, it restricts such celebration on grounds of public order, morality and health. In this Writ Petition the main ground for seeking this Hon'ble Court's intervention is that the historic and beautiful city of Delhi is slowly being poisoned with the worst quality of air that is being consumed daily by the people of Delhi, and the needless and harmful fad of celebrating festivals with firecrackers is the last nail in the coffin.

This Hon'ble court in *M.C.Mehta v. Kamal Nath and Others*, (1997) 1 SCC 388 held that the government is under a strict obligation to hold the natural resources of the country- Rivers, air, sea-shores, forests, flora and fauna as a trustee. The court, after discussing the jurisprudence on the subject of Public trust, stated:

“Our legal system - based on English Common Law - includes the public trust doctrine as part of its jurisprudence. The State is the trustee of all natural resources which are by nature meant for public use and enjoyment. Public at large is the beneficiary of the sea- shore, running waters, airs, forests and ecologically fragile lands. The State as a trustee is under a legal duty to protect the natural resources”

Based on the above judgement, it is amply clear that even though the State and Central Governments are protectors of our natural resources, they are taking no effective steps to curb the growing menace of air pollution. The only way to effectuate rapid, wide-spread change in air pollution is by making urgent efforts to address this rising concern, and in the meantime, take all precautions and measures in the short-term to stop further air pollution from needless and equally harmful sources such as fireworks.

Diwali is the biggest festival in India celebrated all across the country regardless of sub-sects of Hinduism. Being a festival of lights and an auspicious occasion, public places, monuments, roads etc. were cleaned and beautified; People repainted and cleaned their homes, the most common and popular way to celebrate the festival of light was by lighting “Diyas” or earthen lamps which used biodegradable ingredients such as “ghee” and cotton to have a slow burning candle effect. But in modern times especially after Independence, lighting fireworks has become a popular way to celebrate Diwali across India with several factories for the same set up in the *Sivakasi* region of Tamil Nadu. But due to increase in population and increase in demand for such fireworks, they not only became more widespread in use around Diwali but also more dangerous. Apart from the risk of death or grievous injury, it also now poses a silent threat to life around festival time.

The quality of air in major cities in India is degrading by the day due to heavy traffic and industrialization, but this needless new gimmick in the name of celebration is posing a risk not only to us but our children and generations of Indians yet to be born. The amount of toxins and particulates released by fireworks are well documented by various research studies and scholarly papers. Apart from air pollution, the harmful effects through noise pollution due to fireworks is also well documented and particularly in the development of the children of our country.

The millions of Delhi residents who live in this toxic, unclean air have no hope or respite but to either wait for the government or legislature to take steps or to seek this Hon’ble Court’s help in enforcing their fundamental right to life which is being slowly choked by Delhi’s deadly air.

LIST OF DATES

- 1940 Indian Explosives Rules enacted wherein a system of licensing was introduced for manufacture, possession and sale. The first organized factory of the fireworks industry set up at Sivakasi, Tamil Nadu.
- 2001 Number of factories in Sivakasi region for manufacture of fireworks and matches increases to more than 450.
- 2005 This Hon'ble Court in *Noise Pollution(V), In Re*, (2005) 5 SCC 733 laid down directions for use of fireworks to control their impact on Noise Pollution and held that uncontrolled use of firecrackers has a harmful impact on the environment through Noise and Air pollution.
- 23.06.2014 An NDTV News report stated that the Union Environment Ministry in its reply to the Rajya Sabha claimed that an alarming 80 people die every day due to Air Pollution. The above figures have been released based on the 'Epidemiological Study on Effects of Air Pollution on Human Health in Delhi' during 2002-2005 and 'Study on Ambient Air Quality, Respiratory Symptoms and Lung Function of Children in Delhi' that was done between 2003-2005

- 2014 The World Health Organization study of 1600 cities across 91 countries ranked New Delhi as the worst city in the world in terms of Ambient Air quality calculated in terms of amount of particulate matter (PM 10 and PM2.5) in the air.
- 27.06.2015 A news article published in Times of India stated that Delhi Air, apart from having two of the worst pollutants i.e. PM10 and PM2.5 in high levels, has the worst type of suspended particulate matter (PM1) in large quantities, and that these are the primary source of cardiovascular diseases according to a Chinese study since they can easily enter the blood stream.
- 29.06.2015 An article on the India Today online Magazine reported that a Planning department report has shown that successive Delhi Governments in the past 7 years have collected close to Rs. 385 Crores for pollution control through a 0.25 paise Environment Cess, yet 87% of those funds remain unutilized. The Rs. 49.57 Crores that was utilized was for reimbursing the concession on Battery operated vehicles.
- 07.08.2015 A news report in The Huffington Post reported that the Environment ministry has submitted a report to the Rajya Sabha that more than 35000 people have died due to acute respiratory diseases in the period between 2006 and 2015. The report also states that a

joint study was conducted by the Central Pollution Control Board with the Chittranjan National Cancer Institute which focussed on the effects of air pollution in causing cancer in children.

25.08.2015 An article in the Economic Times stated that the Union Minister for Environment has admitted to Delhi being one of the worst polluted cities of the world and the need to monitor indoor air quality which itself is rising to unhealthy levels in most areas of Delhi.

28.08.2015 A University of Texas study of effects of toxic air on 1,895 fourth and fifth grade school students in Texas reveals that children's grades are affected due to exposure to air pollution. The study states that neurological damage due to air toxins could be one of the reasons for lower grades

___ .09.2015 Hence, the present Petition under Article 32 of the Constitution of India.

IN THE SUPREME COURT OF INDIA
CIVIL ORIGINAL JURISDICTION
WRIT PETITION (CIVIL) NO. _____ OF 2015
(Under Article 32 of the Constitution of India)

IN THE MATTER OF:

1. Arjun Gopal

Aged 6 months
Through Next Friend
Gopal Sankaranarayanan,
r/o. B-1/1148, Vasant Kunj,
New Delhi – 110070.

2. Aarav Bhandari

Aged 6 months
Through Next Friend
Amit Bhandari
r/o. L-287, Sarita Vihar,
New Delhi – 110076.

3. Zoya Rao Bhasin

Aged 14 months
Through Next Friend
Saurabh Bhasin,
r/o. S-196, 1st Floor,
Panchshila Park,
New Delhi – 110017.

...PETITIONERS

VERSUS

1 Union of India

Through the Secretary,
Ministry of Environment, Forests & Climate Change,
Shashtri Bhawan
New Delhi – 110001

2 Central Pollution Control Board

Through the Secretary,
Parivesh Bhawan,
CBD-cum-Office Complex,
East Arjun Nagar,
New Delhi – 110032

3 Delhi Pollution Control Committee

Through the Secretary,
6th Floor, ISBT Building,
Kashmere Gate,
Delhi – 110006.

4. The Delhi Police Licensing Unit

Through its Joint Commissioner of Police,
1st Floor, Police Station, Defence Colony,
New Delhi – 110040.

... **RESPONDENTS**

**A PETITION UNDER ARTICLE 32 OF THE CONSTITUTION OF
INDIA FILED IN PUBLIC INTEREST**

To,

Hon'ble the Chief Justice of India and
His Companion Judges of the
Supreme Court of India

MOST RESPECTFULLY SHOWETH:

1. The present Writ Petition is filed by and on behalf of 3 infants, all citizens of Delhi, seeking *inter alia* the immediate intervention of this Hon'ble Court against the inevitable and upcoming widespread use of firecrackers and fireworks and other products of the same classification, especially during the festivals of Dussehra and Diwali, but thereafter in all other events and festivals as well. While considerable debate and long-term measures are being discussed by the slow moving state machinery for implementation of measures to control pollution levels in Delhi, this Hon'ble Court is duty bound under Article 32 to take steps in effectuating the people's right to clean, healthy and breathable air under Article 21 of the Constitution of India.

THE PARTIES

2. All the 3 Petitioners are between 6 and 14 months of age, are citizens of Delhi and are filing the present Petition through their fathers who acts as their next friends/legal guardians. The Petitioners seek to enforce their guaranteed right under Article 21 of the Constitution to a clean and pollution free environment. The inaction by the Government authorities in not taking due steps to ensure that the dust, smog and suspended particulate matter in the air of Delhi are reduced has compelled the approach to this Hon'ble Court.

3. All the 4 Respondents herein are 'State' for the purposes of Article 12 of the Constitution and public authorities against whom a Petition under Article 32 is maintainable. The details of the Respondents are as follows:

- i. Respondent No. 1 is the Central Government through the nodal Union Ministry of Environment and Forests which is tasked with the initiation and implementation of all steps for the protection of the Environment. Under its auspices are the measures to ensure there is no air pollution.
- ii. Respondent No. 2 is the Central Pollution Control Board (CPCB) which is a statutory body constituted under the Water Act, 1974 and the Air Act, 1981. One of its main tasks is the monitoring of air quality through the National Air Monitoring Programme (NAMP). Both the laying down of standards and the execution of programmes for the prevention and control of air pollution are specific functions of the CPCB.
- iii. Respondent No. 3 is the nodal environmental agency for the Government of Delhi to which the Central Pollution Control Board has delegated certain powers and functions as a State Board as specified by the Central Government in March, 1991. This committee has been reconstituted on 14th June 2002 vide notification No. B-12015/7/92-AS.
- iv. Respondent No.4 is the licensing unit of the Delhi Police responsible for granting temporary licenses for the sale of fireworks. No licenses are required for stock less than 100kgs, but most of these licences are applied for in advance of the Diwali season and granted by this authority.

THE CAUSE OF ACTION

4. The facts that lead to the cause of action for the present Petition is the alarming rate of deterioration of the quality of air in Delhi due to air pollution caused by, but not limited to, traffic congestion, dust from widespread construction, industrial pollution and the seasonal use of firecrackers.
5. The timely intervention of this Hon'ble Court in the year 2005, in a Public Interest Litigation, Noise Pollution (V) In Re, facilitated the implementation of directives in usage of firecrackers and changing the basis for evaluation of these firecrackers from amount of noise produced to chemical composition. Although not enforced fully in practice due to the lax nature of enforcement authorities, these directions have substantially reduced the amount of noise pollution caused by firecrackers during festivals in residential colonies, thereby giving great relief to residents and also ensuring higher safety standards due to the change in basis of evaluating the firecrackers.
6. The present Petition is based on authentic information and public documents sourced from the World Health Organisation, authentic news reports, opinions and writings of eminent experts and scholars on environment and other publicly available information.

BACKGROUND

7. In the early Twentieth Century, the fireworks industry began in India by importing "Sparkle" fireworks from Germany and UK. The first indigenous factory for making fireworks began operations in 1940 after the Indian Explosives Rules were enacted whereby licensing for manufacture, possession and sale of fireworks was granted. By 2001, there were 450 factories in the Sivakasi Area of Tamil Nadu engaged in the production of Fireworks. This just shows the magnitude and scale of the fireworks industry in India, where the demand to burst crackers for enjoyment during festivals all around the year is

insatiable, but at the cost of completely destroying the ecology with air pollution caused by these fireworks.

8. With the advent of Industrial Development around big cities like New Delhi and increasing road traffic and developmental construction going round the clock since the past 25 years, Delhi's air is suffering the worst consequences. There have been several representations to the Government to take measures to control air pollution, and also to this Hon'ble court to interfere when Governments sit with a lackadaisical attitude on strategizing how to combat air pollution. While the above mentioned causes of Air Pollution as a necessary evil in developing Delhi to a great world-class city, the needless pollutants like fireworks that heap on the already miserable air quality of Delhi should be stopped for the sake of the millions of people living in Delhi. This Hon'ble Court was approached in *Noise Pollution(V), In re; (2005) 5 SCC 733* to curb the problem of Noise pollution. This Hon'ble Court passed orders restricting use of fireworks during only a specific time period from 6AM to 10 PM and changed the basis of evaluating fireworks from noise level to chemical composition. The Apex court also acknowledged how fireworks are a needless air and noise pollutant and its use must be restricted in the following words:

“Fireworks are used all over the world to celebrate special occasions. In India, fireworks are burst on festivals like Dussehra, Diwali and on special occasions like social gatherings, marriages, Independence day, Republic day, New year day, etc. In other countries of the world, fireworks are generally burst either on the New Year day or on the birthday of their respective countries. However, bursting of firecrackers is a health hazard since it is responsible for both air pollution and noise pollution.

The use of Fireworks has led to air pollution in the form of noise and smoke. Their excessive use has started to be a public hazard

and violation of their fundamental rights as enshrined in the Constitution of India.”

9. However, while the court laid down the law for restricted use of fireworks to avoid noise pollution, there was no total ban as the *lis* at that point of time concerned only noise pollution. Now with countless news reports, an unenviable first position in Global rankings of most polluted cities in the world by the World Health Organization and alarming pollution levels released by the Central Pollution Control Board, the time has come to completely ban the use of firecrackers for Diwali due to the irreparable and needless damage it will cause to an already damaged ecology.

SUPPORTING MATERIAL

Research Studies

10. There are a plethora of reports on ambient air and noise quality in India during Diwali, a select few of which are below:
- “The ambient air and noise quality in India during Diwali festival: A review” *Recent Research in Science and Technology*, 2014, 6(1): 203-210. A true copy of this report is annexed herewith and marked as **AnnexureP-1 (pp. ___ - ___)**.
 - A Study “Potential impact of fireworks on respiratory health” by Gouder C, Montefort S, noted authors of Mater Dei Hospital, Malta published in *Lung India* 2014;31:375-9. A true copy of this report is annexed herewith and marked as **AnnexureP-2 (pp. ___ - ___)**.
 - A recent paper entitled “Assessment of the Impact of Fireworks on Ambient Air Quality” by Sapan Bhatnagar and Shubham Dadhich published in the International Journal for research in Applied Science & Engineering Technology

(IJRASET), Volume 3, Issue IV, April 2015. A true copy of this report is annexed herewith and marked as **AnnexureP-3 (pp. ___ - ___)**.

All the above reports detail the harmful impact on air quality due to Suspended Particulate Matter of different sizes. They state that Fireworks cause dispersion of such Particulate Matter (PM) into the environment, which consist of metals, organic chemicals, soil dust and other minute materials which cause harmful effects to ecology and human life.

11. Particulate matter such as PM_{2.5} or PM₁ is the most harmful and it can penetrate deep into the lungs and blood stream, thus, affecting vital organs and the respiratory system. PM_{2.5} and PM₁ aerosols can penetrate into the alveolar region of the lungs. PM of size 2.5-10 micrometres is less harmful since it stays in the nose or mouth, but it is still important to measure PM₁₀ levels because it causes asthma attacks. The National Ambient Air Quality Standards (NAAQS) by the Central Pollution Control Board (CPCB) puts the maximum permissible level of PM₁₀ at 100 µg/m³ and PM_{2.5} at 60 µg/m³.
12. The study in AnnexureP-3 is a detailed experiment conducted in Dhanbad, Jharkhand in 2014 where the levels of PM in air were observed a day before and after Diwali day to track changes in PM levels. The sampling method is explained in detail on page 3 of the research study. The results that were recorded were shocking and alarming and point to a clear causation between Diwali day firecrackers and increased air pollutants. The level of PM₁₀ was at >220 µg/m³, an increase of more than twice the permissible amount of 100 µg/m³. The Level of PM_{2.5} had increased to >86 µg/m³ compared to the National permissible limit of 60 µg/m³. Hence levels

of PM₁₀ and PM_{2.5} increase significantly during Diwali and are a leading cause of respiratory diseases in people.

13. Fireworks consist of Carbon and Sulphur for combustion but harmful materials like arsenic, manganese, sodium oxalate, aluminium, iron dust powder, potassium perchlorate, strontium nitrate and barium nitrate are used in their manufacturing for stabilizing, colouring and oxidizing, as stated in AnnexureP-2.

14. The following are a non-exhaustive list of most common diseases and health disorders caused by PM and other toxins released in the air due to burning of fire crackers (AnnexureP-1):-

- a. Increased respiratory symptoms such as difficulty in breathing, coughing and irritation etc.
- b. Decreased lung capacity
- c. Chronic Bronchitis
- d. Asthma
- e. Irregular Heartbeat
- f. Heart attacks
- g. Premature Death
- h. Phlegm
- i. Chronic obstructive pulmonary disease
- j. Allergic rhinitis
- k. Lung cancer
- l. Lower respiratory tract infections

15. The various types of air pollutants that are released by combustion of firecrackers (AnnexureP-2):-

- Sulphur dioxide (SO₂)
- Carbon dioxide (CO₂)
- Carbon Monoxide (CO)
- Nitrogen dioxide (NO₂)
- Nitric Oxide

- Particulate Matter (PM) found in elevated levels:-
 - Aluminium
 - Barium
 - Strontium
 - Antimony
 - Lead
 - Magnesium
 - Potassium
 - PM10
 - Total suspended particulate matter
 - PM1, PM2, PM 2.5
 - Benzene
 - Toluene
 - Ethylbenzene
 - Xylene-volatile aromatic compounds (BTEX)
 - Percolate
 - Chloride
 - Metal salts like Aluminium, manganese and cadmium
16. The research studies also list the National Ambient air quality standards of some of the common pollutants released in burning firecrackers. The research has found that the air quality drops significantly during Diwali and exposes humans to a greater risk of pollution related diseases.
17. The studies also confirm that the effects of fireworks activity in degrading the air quality continue to linger for several days after Diwali day. Even rural areas like Rajim near Raipur, Chhattisgarh, which should ideally have a clean environment with fewer pollutants compared to a crowded metropolitan like Delhi had very unhealthy levels of PM in its air after Diwali in high concentrations.
18. Higher values of all the above mentioned pollutants were seen on Diwali day. In the study conducted in Annexure P-1, a comparison chart depicts the Respiratory Suspended Particulate Matter (RSPM) and the

concentration of PM₁₀ in Delhi was the highest amongst the Tier-A cities while RSPM concentrations in cities like Kolkata and Mumbai were comparatively much lower.

19. Table 6 in Annexure P-1 illustrates various toxic effects of the toxic elements that are released due to burning of firecrackers. The table contents are reproduced below for reference:

Toxin	Usage in Fireworks	Toxic Effect
Aluminium	Brilliant Whites	1) Contact Dermatitis 2) Bioaccumulation
Arsenic Sulfide	Colorant	Toxic ash can cause Lung cancer skin irritation and warts
Antimony Sulfide	Glitter effect	1) Toxic smoke 2) possible carcinogen
Barium Nitrate	Glittering greens	Poisonous, Fumes can irritate respiratory tract, Possible radioactive fallout
Copper compounds	Blue colour	Bioaccumulation and cancer risk
Hexachlorobenzene (HCB)	Banned substance still in use	Carcinogen, Mutagen and Reproductive Hazard
Lead Dioxide/Nitrate/Chloride	Oxidizer	Bioaccumulation Hampers child development Danger for unborn babies May remain airborne for days Poisonous to plants and animals
Lithium compounds	Red colour	Toxic and irritating fumes when burned
Mercury	Chlorine donor	Toxic heavy metal that may bio accumulate
Nitric Oxide	Used in some	Toxic when inhaled

	fireworks	Free radical
Nitrogen dioxide	Used in some fireworks	Highly toxic when inhaled
Ozone	Used in some fireworks	Greenhouse gas that attacks and irritates lungs
Ammonium and Potassium Perchlorate	Propellant/oxidizer	Can contaminate ground and surface waters and cause thyroid problems in humans and animals
Potassium Nitrate	Black Powder	Toxic dusts, Carcinogenic
Strontium Compounds	Red colour	Can replace calcium in the body and slightly toxic
Sulphur Dioxide	Gaseous by product of Sulphur combustion	Acid rain from sulphuric acid affects water sources, vegetation and causes property damage

20. The study also states that due to wide spread awareness campaigns and enforcement mechanisms, the city of Bangalore showed a sharp 32% decrease in pollution levels in 2013 compared to 2012. The same can be done in Delhi if this Hon'ble Court intervenes and puts a stop on usage of these harmful fireworks.

21. In the research study conducted in Annexure P-2, it was found that in India, a 30-40% increase occurs in cases of wheezing, respiratory diseases, exacerbation of bronchial asthma, and bronchitis in patients of all ages and both genders during Diwali. Many epidemiological studies that the article itself cites directly linked exposure to a variety of air particles to exacerbate symptoms of the above mentioned respiratory disorders. Dominici *et al* reported almost a doubling of hospital admissions for every $10\mu\text{g}^3$ of increase in PM_{2.5}.

22. A research paper published on the U.S. National Institutes of Health's National Library of Medicine website entitled "The effects of air pollution on the health of children" cited as *Paediatr Child Health*, 2006 Oct; 11(8): 513–516 discusses the adverse impact of ambient air quality on children's health. The article highlights the mortality, pregnancy outcomes, vitamin D deficiencies and alteration of the immune system of children. The committee on Environmental Health of American Academy of Pediatrics issued a policy statement in 2004 on the link between ambient air pollution and children's health. Children are more vulnerable to the adverse health effects of air pollution due to longer exposure outdoors, rigorous physical activity requiring more intake of oxygen from air, higher minute ventilation, undeveloped immune system and lung development during childhood.

a. A large number of epidemiological studies have shown a link between exposure to ambient air pollutants and morbidity and mortality in children. There are 6 pollutants that this study is based on that cause adverse health effects- Ozone, PM, Nitrogen dioxide, Sulphur dioxide, Carbon monoxide and lead. The work refers to various studies that show the above mentioned pollutants cause increased child and adult mortality in Canada and other developed countries.

b. It was observed that there is a significant relationship between PM and respiratory related mortality and also sudden infant death syndrome.

c. The ambient air pollutants also cause adverse pregnancy outcomes like premature birth, low birth weight, growth retardation and physical abnormalities. One study by Ritz et

al has investigated and found a relationship between exposure to ambient air and birth defects.

- d. Carbon monoxide has been found to cause cardiac ventricular septal defects and Ozone exposure is associated with risk of arterial, pulmonary and valve defects. Ambient air pollution causes acute and chronic respiratory defects in both asthmatic and non-asthmatic children with increased asthmatic symptoms and incidence of attacks.
- e. Other studies have also shown a link between lung function and air pollution whereby there is a deficit in lung development. A natural consequence of being ill due to air pollution is school absenteeism.
- f. Vitamin D deficiency causes rickets in children and in tropical regions with higher levels of ambient air pollution there is an increased risk of developing rickets. The amount of sunlight needed for a healthy dose of vitamin D is inversely related to the level of ambient air pollution or haze.

The research study also discusses effects of improved air quality on children's health. A decline in ambient SO₂ and PM levels in the former East Germany after reunification saw improvements in lung function, reduction in respiratory diseases such as bronchitis and sinusitis. In US, children who relocated to areas with lower ambient air PM experienced increased growth in lung function and conversely, those who moved from lower ambient air PM States to higher, experienced a decreased growth in lung function. During the 1996 Olympics in Atlanta, Georgia, USA, there was a steep 27.9% decline in Ozone concentration levels and consequently, a significant reduction in childhood asthma events. A true copy of this report is annexed herewith and marked as **Annexure P-4 (pp. ___ - ___)**.

23. As per a report published by the World Health Organization (WHO) in 2005 on the ill effects caused by air pollution in children:

“Various periods of vulnerability characterize children. The intrauterine, perinatal and early childhood periods, during which the lungs are developing and maturing, are very vulnerable times. These are periods when the lungs are susceptible to injury by air pollutants. Exposure during these periods reduces the maximal functional capacity achieved in adult life and can lead to enhanced susceptibility during adulthood to infection and to the effects of such pollutants as tobacco smoke and those present in occupational exposures. Children with underlying chronic lung diseases, particularly asthma and cystic fibrosis, are especially vulnerable. These children are at greater risk of adverse effects from pollution than are healthy children. Also, children subject to higher exposures indoors – for example, from tobacco smoke or smoke from poorly maintained heating or cooking appliances – are at greater risk of being affected by outdoor pollutants.”

24. The report also states that there is a causal relationship between air pollution and health effects in children. Aggravation of Asthma, coughing, bronchitis, retarded nervous system development and cognitive impairment are some of the effects for which evidence exists that they are caused by air pollution.

“The evidence also shows a relationship between exposure to ambient air pollutants and adverse effects on the development of lung function. Reversible lung function deficits, chronically reduced lung growth rates and lower lung function levels are associated with exposure to air pollution. Moreover, the evidence shows clearer relationships for particulate matter and traffic-related air pollution (indicated by nitrogen dioxide) than for other pollutants. Based on current knowledge, air pollutants seem to interact with other environmental factors, such as allergens, viruses and diet that influence the overall impact of air pollutants on children’s health.”

25. The report also states that there is suggestive evidence of there being a causal link between air pollution and low birth weight, premature births and intrauterine growth retardation. There is also considerable evidence of a causal link between ambient air pollutants and childhood morbidity and mortality. A true copy of this report is annexed herewith and marked as **AnnexureP-5 (pp. ___ - ___)**.

26. A Research Gate study entitled “Air Pollution and its Impact on Lung Function of Children in Delhi” by S.Siddique, et al., cited as *Environ We Int. J. Sci. Tech.* 5 (2010) 163-175 corroborates the WHO study findings that air pollution has a causal relationship with asthma. The study found that annual average levels of PM10 in Delhi were more than twice as much as that of rural areas of Uttaranchal and West Bengal. The incidence of Asthma, both current (wheezing anytime within 12 months) and physician-diagnosed was also almost twice as much in Delhi compared to the rural control areas. It was also found that the prevalence of asthma was found more in Boys than girls in the age group of up to 14 years. The prevalence of asthma in children above 14 years of age was less, hence showing that occurrence of asthma is substantially high in childhood. A true copy of this report is annexed herewith and marked as **AnnexureP-6 (pp. ___ - ___)**.

News Reports

27. Several news reports have carefully catalogued the dangerous levels of particulate matter and how the environment is getting irreversibly polluted in Delhi, particularly with reference to the ill effects on children.

- a. The Hindustan Times, in a report dated 22nd April, 2015 entitled Beijing Better Than Delhi found that between the 2 capitals notorious for dirty air, Delhi had healthy air for just 7

days out of 730 while Beijing had managed that for as many as 58 days. This is because Beijing had introduced stringent air pollution measures as against India which failed with both Central and Delhi Governments taking no serious steps. A true copy of this report is annexed herewith and marked as **AnnexureP-7 (pp. ___ - ___)**.

- b. The Daily Mail online newspaper, on 5th May 2015, reported that as per a study conducted by the HEAL foundation and Breathe Blue, it was found that 4 in 10 children in Delhi suffer from severe lung problems. The study by Breathe Blue found that 35% of school children across the country fared badly in the Lung Health Screening Test (LHST) which determines how much air lungs can hold and transmit from the body. In Delhi, 21% of the children surveyed were categorized as 'poor' and another 19% 'bad'. Children are exposed to Delhi's toxic air while playing outdoors, travelling to and from school, and even in ventilated school corridors. Bangalore was a close second with 36% children faring either 'poor' or 'bad'. Kolkata children were marginally less at 35% and Mumbai children were comparatively safer at only 27% securing 'poor' or 'bad' in the lung test. The study found that the people neither held themselves accountable for the quality of air, nor believed themselves to be capable of effectuating change in air quality. Thus, only rapid sensitization and education about pollution and its effect is needed to curb the growing threat. A true copy of this report is annexed herewith and marked as **AnnexureP-8 (pp. ___ - ___)**.

- c. In a news report by Hindustan Times on 4th June 2015 that followed the unfortunate story of a 12 year old boy in Delhi who has contracted asthma which had been aggravated due to Delhi's bad air quality, Dr. Randeep Guleria, Professor and Head of Department of Pulmonary Medicine and Sleep Disorders, AIIMS said that with the advent of monsoons, one would expect cooler weather to bring in fresher air, but because of heavy cloud cover and overcast, the toxins in the air hang low and this aggravates asthmatic patients, in children even more so. A true copy of this is annexed herewith and marked as **AnnexureP-9 (pp. ___ - ___)**.
- d. The Times of India on June 27th 2015 reported that apart from the already dangerous PM₁₀ and PM_{2.5} that are floating in Delhi above the permissible levels decided by the Central Pollution Control Board, a government agency has found the most dangerous class of particulate pollutant, which is ultrafine PM or PM₁. The level at which there is suspended PM₁ is alarmingly high even in cleaner and greener areas such as Lodhi Road area of Delhi. PM₁ is so dangerous that no safe standard has been prescribed yet by the government, but according to the monitoring agency SAFAR, its level peaked 70 micrograms/cubic metre which is even higher than the permissible level of PM_{2.5}. A study in China's Fudan University found that PM_{2.5} and below can enter the blood stream and affect the inner walls of arteries and cause cardiovascular problems. The news report also claims it is linked to strokes since it travels in the blood stream. A true copy of this is annexed herewith and marked as **AnnexureP-10 (pp. ___ - ___)**.

e. In a report in India Today on June 29, 2015, it was stated that over the past 7 years from 2006-07 to 2014-15, over Rs.385Crore has been collected via environment cess of .25paise, yet only around 13% of it, i.e. Rs. 49.57Crore has been utilized, ironically to reimburse concession on purchase of battery operated vehicles. Successive Delhi Governments have not utilized these funds in curbing the air pollution that is choking Delhi today. The article also reports that these funds remain unutilized even though the levels of PM are up to 5 times more than permissible levels of 60 microgram/cubic meter. In the wake of rise in number of vehicles, construction projects, industries around the National Capital region, there seems to be no clear direction or strategy that the governments will use to curb air pollution, even with all the requisite funds available. The article also included a comment from the present Delhi government that they have engaged IIT-Kharagpur to charter out a plan to reduce air pollution in Delhi. As such vague promises are the hallmark of all governments, hence this court is requested to protect the residents of Delhi who are left helpless at the hands of successive governments doing nothing about the state of its air quality. A true copy of this is annexed herewith and marked as **Annexure P-11 (pp. ___ - ___)**.

f. A news report on 23rd July 2015 on the NDTV website stated that the Union Environment Minister, in his written reply to the Rajya Sabha stated that an alarming 80 people die on average everyday due to Air pollution in Delhi, according to two studies commissioned by the centre, the 'Epidemiological

study on effects of air pollution on human health in Delhi' done between 2002-2005 and 'Study on Ambient Air Quality, Respiratory symptoms and Lung Function of Children in Delhi' done between 2003-2005. The ministry also admitted that severe health hazards including pulmonary and DNA damage is associated with high level of PM pollution. A true copy of this is annexed herewith and marked as **AnnexureP-12 (pp. ___ - ___)**.

g. On August 25, 2015, the Central Government, after several media reports and the World Health Organization's 2014 ambient air quality by city report which ranked Delhi to have the worst quality air in the world, finally admitted that Delhi was facing a pollution crisis. According to an Economic Times report, the Environment minister, Mr. Prakash Javadekar spoke of the National Air Quality Index that was launched by the government and said that the government is working on preparing an indoor air quality protocol as well. The minister called for a collective effort at creating awareness and reducing pollution, but the news report said little about anti-pollution laws that the government should put in place. The news item shows little in terms of actual effective measures being taken in the short run to control air pollution. This news report is another example of why the intervention of this Hon'ble Court is most urgently required to curb this nation-wide threat of needless pollution caused by burning firecrackers. A true copy of this is annexed herewith and marked as **AnnexureP-13 (pp. ___ - ___)**.

h. A Times of India report on August 28, 2015 from Washington, USA states that new research by the University

of Texas, El Paso shows that children's grades are affected by high levels of toxic air pollutants especially from vehicular emissions. The researchers have two theories to explain a decline in grades and causal relationship with air pollution. The first is absenteeism due to respiratory illnesses, hence consequently missing school and performing poorly. The second is that air pollutants can severely affect children's neurological and brain development. The study was also published in the Population and Environment Journal of the University. A true copy of this report is annexed herewith and marked as **AnnexureP-14 (pp. ___ - ___)**.

- i. In an article published on the Economic Times website on 7th of June, 2015, personal accounts of facing Delhi's toxic air was discussed with the growing trend amongst expatriates to move back to their respective home countries. It features the following:
 - i. Jack Leenars, a former journalist from Holland who has a successful business in Delhi, but after spending three years in Delhi, has now decided to move out in view of the toxicity present in Delhi's air.
 - ii. Philly Malicka, a British writer and publishing consultant, who moved to India for a 5 year stint, but has decided to move back to London mainly due to the congestion and pollution in Delhi which she believes are harming her health.
 - iii. Alex Le Beuan, a French travel agent who has lived in Delhi for the past 10 years, and has now decided to move to Bali. Le Beuan regrets that he has to depart a city that he considers his second home, but says the

pollution and traffic has changed for the worse since he moved to Delhi. When his daughter was born, he and his wife took the decision to leave Delhi.

- iv. Rod Oliver, a British MNC professional who has had a short stint of less than a year in Delhi, but is concerned about his family's health especially after the scientific evidence on pollution in Delhi has been found to be a major cause for concern. Rod and his wife are already considering moving out for the sake of their children's health.

While expatriates may have the luxury of moving cities and countries when faced with such dire health concerns, the same is not available to Indian citizens who live and work in Delhi. Those who have lived for many years in the city are unaware of how clean air feels and are unable to tell the difference, with toxicity having become second nature. A true copy of this report is annexed herewith and marked as **Annexure P-15 (pp. ___ - ___)**.

28. The present Writ Petition is being filed on the following grounds and without prejudice to one another:

GROUNDS

- A** THAT the Hon'ble Court has always acted as *parens patriae* of the citizens of the country, more particularly of its disadvantaged and vulnerable sections. It is in the interests of the children who are claiming their fundamental right under Article 21 for a clean and healthy environment that the present petition is filed. The right to breathe clean air is essential for a conducive environment for their growth and development.

- B** THAT as several studies referred to above have shown, Indian cities and particularly Delhi is suffering from grave pollution issues which affect the right to health of its citizens. Children are more gravely affected because of their less developed immune systems, and so are at greater risks than adults. It is imperative that immediate steps are taken to ensure that crop burning in the surrounding areas of the Delhi/NCR are immediately stopped as they unleash several million tonnes of fumes and dangerous suspended particles into the air which are transported over Delhi by the seasonal winds.
- C** That it is necessary that the Central Government and State Governments take immediate steps to bring the Bharat Stage Emission standards in line with the highest international norms so that Euro-VI equivalent fuel, which is presently exported will now be used domestically and uniformly across the country. It is necessary that at the very least Bharat-V fuel be implemented with immediate effect and that rigorous penalties imposed and implemented on erring parties.
- D** THAT the use of Firecrackers are a needless and harmful vice that is caused by innocent citizens in the spirit of celebrations not knowing or understanding the deep implications of burning these firecrackers which have grave and poisonous consequences.
- E** THAT there are already several pollutants choking the air we breathe which need government intervention through policy and norms namely construction induced dust, vehicular emissions and industrial pollutants, many of which are wholly ignored by the Government and no serious steps are taken to engage with them.

- F** THAT there is nothing in the religious texts of any major religion practiced in India that advocates or calls for the use of firecrackers in celebrating festivals and the same cannot be claimed to be a right under Article 25 of the Constitution.
- G** THAT the custom of celebrating Diwali and other Indian festivals which have been using fireworks in recent years have to be viewed historically in the nature of the festival's pith, substance and entirety. Merely because the late 20th century practice of celebrating national festivals has up till now involved the use of firecrackers does not by itself make them a custom or ritual.
- H** THAT the reasoning that firecrackers are burnt on only special occasions cannot detract from the long-term costs and injury to life and property involved. Apart from pollution, several injuries, fires and deaths will be avoided on an annual basis.
- I** THAT this Hon'ble Court, as decided in *M.C. Mehta v. Kamal Nath* has expounded the roman doctrine of public trust, whereby the Government holds the environment- air, sea-shores, rivers, forests in trusteeship for the free and unimpeded use by the general public. Hence, the Government's omission in not protecting this public trust may then be imposed by this Hon'ble Court.
- J** THAT the fireworks industry is *res extra commercium*, and with the evils of child labour, danger to humans and property while both manufacturing and using, and the harm to the environment, there can probably be no contesting right which can preclude a ban on fireworks.

K THAT as this Hon'ble Court has been constantly monitoring the air pollution issues of Delhi, this is the only forum that the Petitioners can approach and crave interference in the interest of protecting guaranteed fundamental rights to live a healthy, fruitful life.

PRAYER

It is most respectfully prayed that this Hon'ble Court be pleased to:

- a Pass a Writ of *Mandamus* or any other appropriate writ, order or direction to ban the use in any form, of firecrackers, sparklers and minor explosives in any form, for use during festivals or otherwise;
- b Pass a Writ of *Mandamus* or any other appropriate writ, order or direction directing the Respondents to ensure that seasonal crop burning is halted in favour of less harmful alternatives;
- c Pass a Writ of *Mandamus* or any other appropriate writ, order or direction directing the Respondents to take stringent action against those who dump dust, malba and other pollutants without following due regulations and permissions, the failure of which will entail severe penalties;
- d Pass a Writ of *Mandamus* or any other appropriate writ, order or direction directing the Respondents to immediately bring Bharat-V or better emission norms into operation uniformly across the country;
- e Pass a Writ of *Mandamus* or any other appropriate writ, order or direction to the Respondents to constitute an independent permanent body tasked with spreading awareness and maintain compliance of this Hon'ble Court's orders;

- f Pass a Writ of *Mandamus* or any other appropriate writ, order or direction Respondents to widely publicize the steps being actively taken, if any, in reducing pollution in Delhi, especially pollution caused by Particulate Matter of different sizes;
- g Appoint an expert committee consisting of key stakeholders from the legal ecosystem (comprising members of Academia, the Bench and the Bar) to review the working of the state's efforts at curbing environmental degradation caused specifically by ambient air pollution and suggest institutional reforms with a view to making our environment more robust and healthy for not just our sake but for future generations as well; and
- h Pass such other and further orders as are deemed fit and appropriate in the interest of justice.

FILED BY

DRAWN BY:

Zeeshan Dhawan,

Advocate, Supreme Court of India

POOJA DHAR

ADVOCATE FOR PETITIONERS

Drawn On : __.09.2015

Filed On : __.09.2015

IN THE SUPREME COURT OF INDIA
CIVIL ORIGINAL JURISDICTION
WRIT PETITION (CIVIL) NO. _____ OF 2015

IN THE MATTER OF:

ARJUN GOPAL &Ors., ...Petitioners

VERSUS

UNION OF INDIA &Ors., ...Respondents

AFFIDAVIT

I, Gopal Sankaranarayanan, aged about 38 years, residing at B-1/1148, VasantKunj, New Delhi-110070, do hereby solemnly affirm and state as under:

1. That I am the father of the minor Petitioner No.1 in the abovementioned matter, and as his next friend and legal guardian, am conversant with facts and circumstances of the case and as such competent to swear the present affidavit. I have also been authorized by the next friends/ legal guardians of the other Petitioners to swear to this affidavit on their behalf as well.
2. That the contents of the Synopsis and List of Dates from pages B to ___ and those of Paragraphs 1 to ___ of the Writ Petition from Page Nos.1 to ___ are facts true to my knowledge and belief, while Paragraphs ___ to ___ are the prayers made to this Hon'ble Court.
3. That the Annexures filed along with the Writ Petition are the true copies of their respective originals.

DEPONENT

VERIFICATION

I, the above named Deponent, do hereby solemnly affirm and verify that the contents of this affidavit are true to best of my knowledge and belief and nothing material has been concealed therefrom.

DEPONENT