

Draft

State Fuel Policy

HIMACHAL PRADESH

**Department of Environment, Science & Technology
Government of Himachal Pradesh**

Prepared in Consultation
with

HIMACHAL PRADESH STATE POLLUTION CONTROL BOARD

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1.1 BACKGROUND

The Hon'ble Supreme Court in the matter titled as M.C. Mehta *Versus* Union of India & Ors. in Writ Petition (s) (Civil) No. 13029/1985 passed an order directing that **since the State Governments of UP, Haryana and Rajasthan have no objection and they have not taken any positive action, keeping the pollution level in NCR and particularly in Delhi, we have no option but to place a ban on use of Furnace Oil and Pet-Coke in the States of UP, Haryana and Rajasthan. The ban will come into effect from 1st November, 2017. We expect the State Governments to issue appropriate notification immediately. Even if they do not issue such notification then in compliance with the order of this Court, the ban will take effect from 1st November, 2017 in any case.**

Also the Hon'ble National Green Tribunal observed in OA No. 67/2019 titled as Sumit Kumar *Versus* State of HP & Ors. with Amarjeet Kumar *Versus* Union of India & Ors., Accordingly, the response has been received vide e-mail dated 15.02.2019 from the CPCB. The conclusion therein is as follows: **“Considering the various directions and orders of Hon'ble Supreme Court regarding use of Pet-Coke and Furnace Oil (FO) containing higher sulphur, it is required that States and UTs, including Himachal Pradesh, formulate fuel policies regarding use of Pet-Coke and FO in light of Hon'ble Supreme Court order dated 24.10.2017 (banning use of Pet-Coke and FO in NCR States) and observing vide order dated 17.11.2017 that States/UTs are suggested to take similar measures. Also further Hon'ble Supreme Court order dated 13.12.2017, 05.02.2018 and 26.07.2017 allowing use of Pet-Coke in industries/processes which use Pet-Coke and FO either as feed stock such as Calcined Pet Coke (CPC) units, Aluminum industries or where they get absorbed along with product in manufacturing process such as Cement, Lime Kiln, Calcium Carbide Industries. It is relevant to mention that use of Raw Petroleum Coke (RPC) in CPC units has been allowed with condition of 90% recovery of SO₂ emission. The same principal may be followed in industrial processes where use of FO as feed stock is considered by States/UTs.”**

The reason for the above conclusion is huge emission of SO₂ and other pollutants on account of use of *Pet-Coke* and *FO* by the industries which has been banned in several

States but continuing in some of the States. A Technical Expert Committee was constituted to evaluate pollution load and as per the report of the said Committee, pollution load of SO₂ is four times higher when Low Sulphur Heavy Stock (LSHS) and LDO(Light Diesel Oil) are used.

Hon'ble NGT further observed that on consideration of the matter, we find that in view of established adverse impact of use of *Pet-Coke* and *FO* by the industries, prohibition of its use may need consideration on 'Precautionary' principle as well as 'Sustainable Development' principle statutorily recognized under the National Green Tribunal Act, 2010, the industries may have to switch over to alternatives and cleaner fuels. We may note that air quality in many of the locations in India is not of prescribed quality and as many as 102 cities have been identified as "Non-attainment Cities". The said cities are spread over almost in all the States, including the State of Himachal Pradesh. 100 industrial clusters are declared critically polluted throughout India. This makes it imperative that any measure which is helpful in controlling air pollution must be preferred to the extent viable. These aspects have been considered by the Tribunal in order dated 08.10.2018 in O.A No. 681 of 2018 in News Item published in "The Times of India" Authored by Shri Vishwa Mohan Titled "NCAP with multiple timelines to clean air in 102 cities to be released around August 15" and order dated 13.12.2018 in Original Application No. 1038/2018 in News Item published in "The Asian Age" Authored by Sanjay Kaw Titled "CPCB to rank industrial units on pollution levels" respectively."

In the backdrop of aforesaid, it has been concluded that prohibition of use of *Pet-Coke* and *FO* need serious consideration by the States including the State of Himachal Pradesh which has seven identified Non-attainment Cities. Accordingly, the State Pollution Control Board has collected data on all aspects relating to air pollution which has been elaborated herein followed by recommendations for use of *Pet-Coke and FO* in the State of Himachal Pradesh.

1.2 HIMACHAL AT A GLANCE

TABLE-I			
S. No.	Particulars	Units	Quantity
1.	Area (2013-14)		
a)	Area	(Sq. Kms)	55,673
b)	Districts	Nos.	12
e)	Towns & Cities	Nos.	59
2.	Population (2011)		
a)	Total Population	Lakh	68.65
	Rural population	Lakh	61.76
	Urban Population	Lakh	6.89
e)	Literacy:		
	Males	Per cent	89.53
	Females	Per cent	75.93
	Total	Per cent	82.80
f)	Total Workers (2011 Census)	Nos.	35,59,422
	Cultivators	Nos.	20,62,062
	Agriculture Labour	Nos.	1,17,038
	Workers in Household Industries	Nos.	58,719
	Other Workers	Nos.	12,63,603
3.	Forest:		
a)	Area under forest (2010-11)	Sq. km.	37,033

(Source himachal.nic.in)

2.1 FUEL

Polluting fuels such as Petroleum Coke (PC) and Furnace Oil (FO) are used by industrial units, especially the Small and Medium-Sized Enterprises (SMEs). Even some categories of waste such as tyre, oils and used lubricants are used as source of energy in some industrial units.

2.2 PET COKE (PC)

Petroleum coke, abbreviated coke or petcoke, is a final carbon-rich solid material which is derived from oil refining, and is one type of the group of fuels referred to as cokes. This coke can either be fuel grade (high in sulfur and metals) or anode grade (low in sulfur and metals). Pet-Coke is over 80% Carbon and emits 5% to 10% more Carbon Dioxide (CO₂) than Coal on a per unit-of-energy basis when it is burned.

Heavier oils are naturally higher in their carbon content, creating challenges in production, refining, transport, and marketing. The heavier the oil, the more Pet-Coke produced. The higher an oil's sulfur and heavy metal content, the lower the Pet-Coke's quality and value. While Pet-Coke that is low in sulfur and heavy metals can be treated (Calcined).

2.3 FURNACE OIL (FO)

Fuel oil (also known as heavy oil, marine fuel or furnace oil) is a fraction obtained from petroleum distillation, either as a distillate or a residue. Fuel oil is made of long hydrocarbon chains, particularly alkanes, cycloalkanes and aromatics.

Furnace oil is used mainly in different furnaces of the steel plant, in power plant boilers for raising steam and for injection in the blast furnace. A water based scrubber is used in the exhaust chimney of furnace, which arrests considerable amount of carbon soot and improves the emissions. It has Ash, % wt., max (0.1) and Sulphur, total % wt., max.(4.0).

3.0 INDUSTRIAL AREAS IN HP

There are about 44 no. notified Industrial Areas/Estates in the State of Himachal Pradesh. The Regional office wise details are given below in the Table-II.

TABLE-II

Name of Regional Office	Total Industrial Areas
Bilaspur	4
Chamba	1
Dharamshala	7
Kullu	1
Rampur	0
Shimla	2
Solan (Parwanoo)	9
Solan (Baddi)	9
Sirmour	2
Una	9
TOTAL	44

3.1 INDUSTRIES USING PET COKE & FURNACE OIL IN HP

Presently, there are about 9991 industries operational in Himachal Pradesh as per the data base (as on 2017). Last latest criteria of Comprehensive Environmental Pollution Index (CEPI) issued by Central Pollution Control Board (CPCB), 3 areas in the State viz. Baddi, Parwanoo and Kala Amb fall under the classification of Severely Polluted Areas and seven cities of the State fall under the list of *Non-Attainment Cities* which include namely **Baddi**¹, **Nalagarh**², **Parwanoo**³, **Kala Amb**⁴, **Paonta Sahib**⁵, **Sunder Nagar**⁶ and **Damtal**⁷. The Regional office wise details about number of Industrial Units using Pet-Coke and Furnace Oil is given in the Table-III below:

Table-III

Regional Office	Total unit using Furnace Oil or Pet-Coke	Detail		
		Pet Coke		Furnace Oil
		Fuel	Feedstock	
Bilaspur	2	00	2	00
Chamba	00	00	00	00
Dharamshala	5	3	00	2
Kullu	00	00	00	00
Rampur	00	00	00	00
Shimla	00	00	00	00
Solan (Parwanoo)	10	1	3	6
Solan (Baddi)	140	20	00	120
Sirmour	42	8	5	29
Una	14	7	00	7
TOTAL	213	39	10	164

4.0 Environmental Data [National Ambient Air Quality Programme Data (NAMP Annual Average)]

The Environmental Data of emission levels of SO₂, NO_x and RSPM in respect of various cities of Himachal Pradesh for the last six years is given in the Tables below.

TABLE-IV

Year	Shimla-I			Shimla-II		
	SO ₂ (Limit = 50 µg/m ³)	NO _x (Limit = 40 µg/m ³)	RSPM (Limit = 60 µg/m ³)	SO ₂ (Limit = 50 µg/m ³)	NO _x (Limit = 40 µg/m ³)	RSPM (Limit = 60 µg/m ³)
2017-18	---	---	---	2.0	24.8	56.6
2016-17	2.0	15.0	41.5	2.0	20.9	61.9
2015-16	2.0	11.0	41.2	2.0	16.0	68.3
2014-15	2.0	9.9	46.1	2.0	13.2	56.8
2013-14	2.0	8.9	43.3	2.0	11.6	47.6
2012-13	2.0	9.4	47.4	2.0	12.7	57.6

Year	Parwanoo-I			Parwanoo-II		
	SO ₂ (Limit = 50 µg/m ³)	NO _x (Limit = 40 µg/m ³)	RSPM (Limit = 60 µg/m ³)	SO ₂ (Limit = 50 µg/m ³)	NO _x (Limit = 40 µg/m ³)	RSPM (Limit = 60 µg/m ³)
2017-18	2.0	4.8	61.5	2.0	4.8	68.3
2016-17	2.0	9.9	64.6	2.0	9.3	74.5
2015-16	2.0	11.3	57.8	2.0	11.1	67.2
2014-15	2.0	12.3	56.8	2.0	13.0	69.0
2013-14	2.5	12.6	56.9	2.7	13.0	78.2
2012-13	2.0	7.2	59.3	2.0	8.9	88.0

Year	DIC Baddi			AHC Barotiwala			HB Baddi			MC Nalagarh		
	SO ₂ (Limit = 50 µg/m ³)	NO _x (Limit = 40 µg/m ³)	RSPM (Limit = 60 µg/m ³)	SO ₂ (Limit = 50 µg/m ³)	NO _x (Limit = 40 µg/m ³)	RSPM (Limit = 60 µg/m ³)	SO ₂ (Limit = 50 µg/m ³)	NO _x (Limit = 40 µg/m ³)	RSPM (Limit = 60 µg/m ³)	SO ₂ (Limit = 50 µg/m ³)	NO _x (Limit = 40 µg/m ³)	RSPM (Limit = 60 µg/m ³)
2017-18	2.0	31.2	192.4	2.0	18.7	142.8	2.0	25.6	169.6	2.0	20.9	145.0
2016-17	2.0	30.2	154.6	2.0	16.8	101.0	2.0	21.9	109.8	2.0	22.0	119.7
2015-16	2.0	29.8	154.4	2.0	18.1	108.3	2.0	19.2	103.3	2.0	22.4	104.1
2014-15	2.0	24.3	118.5	2.0	24.3	102.7	2.0	21.9	72.2	2.0	22.4	99.3
2013-14	2.0	24.3	119.3	2.0	25.1	109.1	2.0	29.8	123.7	2.0	27.9	112.7
2012-13	2.0	22.0	107.1	2.0	19.6	99.3	2.0	22.8	101.7	2.0	20.7	95.4

Year	Damtal-I			Damtal-II		
	SO ₂ (Limit = 50 µg/m ³)	NO _x (Limit = 40 µg/m ³)	RSPM (Limit = 60 µg/m ³)	SO ₂ (Limit = 50 µg/m ³)	NO _x (Limit = 40 µg/m ³)	RSPM (Limit = 60 µg/m ³)
2017-18	2.0	10.1	57.3	2.4	12.7	53.6
2016-17	2.0	12.0	97.3	2.0	10.2	72.1
2015-16	2.0	12.4	77.0	2.0	15.4	106.5
2014-15	2.0	10.4	66.4	2.0	15.8	145.5
2013-14	2.0	9.3	61.7	2.0	13.8	109.6

2012-13	2.0	11.7	71.2	2.0	13.3	117.2
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Year	Kotwali Bazar, Dharamshala			PCB, Residential Building, Darri, Dharamshala		
	SO ₂ (Limit = 50 µg/m ³)	NO _x (Limit = 40 µg/m ³)	RSPM (Limit = 60 µg/m ³)	SO ₂ (Limit = 50 µg/m ³)	NO _x (Limit = 40 µg/m ³)	RSPM (Limit = 60 µg/m ³)
2017-18	2.0	6.1	33.3	2.0	6.5	34.8
2016-17	2.0	9.0	40.3	2.0	6.7	40.4
2015-16	2.0	9.2	32.3	2.0	7.0	40.9
2014-15	2.0	10.8	31.2	---	---	---

Year	Paonta Sahib			Gondpur			Kala Amb			Trilokpur		
	SO ₂ (Limit = 50 µg/m ³)	NO _x (Limit = 40 µg/m ³)	RSPM (Limit = 60 µg/m ³)	SO ₂ (Limit = 50 µg/m ³)	NO _x (Limit = 40 µg/m ³)	RSPM (Limit = 60 µg/m ³)	SO ₂ (Limit = 50 µg/m ³)	NO _x (Limit = 40 µg/m ³)	RSPM (Limit = 60 µg/m ³)	SO ₂ (Limit = 50 µg/m ³)	NO _x (Limit = 40 µg/m ³)	RSPM (Limit = 60 µg/m ³)
2017-18	2.4	12.7	77.5	3.0	14.0	92.5	3.4	14.6	151.8	2.7	13.1	83.9
2016-17	2.6	12.9	79.6	3.2	14.4	136.4	3.3	14.5	161.6	2.7	13.0	90.2
2015-16	2.7	13.4	90.7	3.2	14.6	160.1	3.5	13.6	139.4	2.7	13.2	78.5
2014-15	2.7	13.7	100.8	3.5	14.5	141.6	3.5	13.0	141.3	2.7	13.3	79.6
2013-14	2.4	13.9	95.7	2.9	15.0	140.8	3.1	13.0	147.8	2.3	14.9	77.8
2012-13	2.7	14.7	114.3	3.0	15.9	161.9	3.2	14.2	156.8	2.5	15.6	94.6

Year	RO Una			DIC Mehatpur		
	SO ₂ (Limit = 50 µg/m ³)	NO _x (Limit = 40 µg/m ³)	RSPM (Limit = 60 µg/m ³)	SO ₂ (Limit = 50 µg/m ³)	NO _x (Limit = 40 µg/m ³)	RSPM (Limit = 60 µg/m ³)
2017-18	2.1	5.1	60.3	2.0	5.4	68.7
2016-17	2.1	5.0	61.8	2.1	5.3	72.7
2015-16	2.0	5.5	77.6	2.0	6.2	83.3
2014-15	2.0	5.3	69.6	2.1	5.6	79.0
2013-14	2.2	5.6	83.8	2.5	6.4	89.0
2012-13	---	---	79.6	---	---	83.6

Year	Sunder Nagar-I			Sunder Nagar-II		
	SO ₂ (Limit = 50 µg/m ³)	NO _x (Limit = 40 µg/m ³)	RSPM (Limit = 60 µg/m ³)	SO ₂ (Limit = 50 µg/m ³)	NO _x (Limit = 40 µg/m ³)	RSPM (Limit = 60 µg/m ³)
2017-18	2.0	10.0	72.5	2.0	11.7	85.2
2016-17	2.0	9.4	73.2	2.0	12.9	89.6
2015-16	2.0	9.4	77.7	2.1	14.6	94.8
2014-15	2.1	10.3	79.5	2.1	14.0	93.9
2013-14	2.0	8.6	71.0	2.0	10.3	90.0
2012-13	2.0	7.9	79.3	2.0	14.6	100.7

Year	Manali-I	Manali-II
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	SO₂ (Limit = 50 µg/m ³)	NO_x (Limit = 40 µg/m ³)	RSPM (Limit = 60 µg/m ³)	SO₂ (Limit = 50 µg/m ³)	NO_x (Limit = 40 µg/m ³)	RSPM (Limit = 60 µg/m ³)
2017-18	2.4	11.9	53.0	2.1	5.5	41.1
2016-17	2.0	10.8	58.0	2.0	5.4	41.5
2015-16	2.1	13.5	54.9	2.1	13.5	38.9
2014-15	2.3	13.9	53.1	2.1	8.4	31.4
2013-14	2.6	10.6	51.9	2.5	9.8	32.8
2012-13	3.8	9.5	95.5	4.0	9.5	51.5

4.1 CONCLUSION-EMISSION RESULTS

The NAMP results with respect to emission of SO₂ [Permissible Limit (Annual Average) = 50 µg/m³] & NO_x [Permissible Limit (Annual Average) = 40 µg/m³] indicate that these levels are within the permissible limits in this State. However, the emission of Particulate Matter has increased beyond permissible limits in some of the areas.

5.0 CPCB-Report of the Technical Expert Committee (TEC) to evaluate pollution load of Pet-Coke Vs. Possible Alternatives

5.1 Emission load for Industrial Boilers

The estimated Particulate Matter (PM) and SO₂ emission loads for Pet-Coke, Coal, Natural Gas, FO, Low Sulphur Heavy Stock (LSHS) & Light Diesel Oil (LDO) from 2, 10, 15 and 40 Tonnes per hour steam generating capacity Boilers are given in **Table-V** below. The emission load in respect to PM (primary and secondary) and SO₂ is much less in industrial Boilers compared to Thermal Power Plants. However, reduction in pollution load using alternative fuels such as Coal, LSHS, LDO and Natural gas instead of Pet-Coke would be proportionately same as in case of Thermal Power Plants.

For a 40 TPH Boiler, the fuel consumption is calculated as follows;

$$FC = [SP * (hs - hw) / (BE \& \text{ VHI})]$$

Where:

FC = Fuel consumption

SP = Steam Produced (T/hr)

hs = Enthalpy of feed water @ required pressure (810.1 Kcal / kg at 67 atm pressure & 490⁰ C)

hw = Enthalpy of feed water @ saturation temperature (132 k Cal/kg)

BE = Boiler efficiency (82% assumed)

VHI = Fuel Heating Valve (GCV)

Table-V

Boiler Capacity : 2 TPH						
Pollutant	Pet coke	Coal	Natural Gas	FO	LSHS	LDO
Fuel consumption	4.96	9.92	-	3.97	3.77	3.71
Uncontrolled Emission						
SO ₂ emission	0.66	0.09	NM	0.34	0.9	0.13
Secondary Particulate emission as (NH ₄) ₂ SO ₄	1.36	0.19	NM	0.698	0.18	0.26
Primary PM emission	0.04	3.17	NM	0.03	NM	NM
Total PM emission load (Primary + Secondary)	1.40	3.36	NM	0.728	0.18	0.26
Controlled Emission						
Scenario 1: Assuming 50% removal efficiency of control system for SO ₂ and 70% for PM (coal & petcoke)						
SO ₂ emission	0.33	0.05	NM	0.36	0.9	0.13
Secondary Particulate emission as (NH ₄) ₂ SO ₄	0.68	0.10	NM	0.74	0.19	0.27
PM emission	0.01	0.95	NM	0.01	NM	NM
Total PM emission load (Primary + Secondary)	0.69	1.05	NM	0.75	0.19	0.27

8.

Scenario 2: Assuming 90% removal efficiency of control system for SO ₂ and 70% for PM (coal & petcoke)						
SO ₂ emission	0.08	0.01	NM	0.3	0.9	0.1
Secondary Particulate emission as (NH ₄) ₂ SO ₄	0.16	0.02	NM	0.6	0.18	0.2
PM emission	0.01	0.95	NM	0.01	NM	NM
Total PM emission load (Primary + Secondary)	0.17	0.97	-	0.7	0.18	0.02

Boiler Capacity : 10 TPH						
Pollutant	Pet coke	Coal	Natural gas	FO	LSHS	LDO
Fuel consumption	24.8	49.6	-	19.85	18.85	18.54
Uncontrolled Emission						
SO ₂ emission	3.30	0.47	NM	1.70	0.43	0.64
Secondary Particulate emission as (NH ₄) ₂ SO ₄	6.79	0.97	NM	3.49	0.90	1.32
Primary PM emission	0.19	15.87	NM	0.13	0.005	0.004
Total PM emission load (Primary + Secondary)	6.98	16.84	NM	3.62	0.905	1.324
Controlled Emission						

Scenario 1: Assuming 50% removal efficiency of control system for SO ₂ and 70% for PM (coal & petcoke)						
SO ₂ emission	1.65	0.24	NM	0.85	0.22	0.32
Secondary Particulate emission as (NH ₄) ₂ SO ₄	3.40	0.49	NM	1.75	0.45	0.66
PM emission	0.06	4.76	NM	0.04	0.002	0.001
Total PM emission load (Primary + Secondary)	3.46	5.25	NM	1.79	0.452	0.661
Scenario 2: Assuming 90% removal efficiency of control system for SO ₂ and 70% for PM (coal & petcoke)						
SO ₂ emission	0.33	0.047	NM	0.17	0.043	0.064
Secondary Particulate emission as (NH ₄) ₂ SO ₄	0.68	0.10	NM	0.35	0.09	0.13
PM emission	0.06	4.76	NM	0.04	0.002	0.001
Total PM emission load (Primary + Secondary)	0.74	4.86	NM	0.39	0.092	0.131

Boiler Capacity: 15 TPH						
Pollutant	Pet coke	Coal	Natural gas	FO	LSHS	LDO
Fuel consumption	37.2	74.4	-	29.78	28.28	27.82
Uncontrolled Emission						
SO ₂ emission	4.95	0.706	NM	2.54	0.65	0.96
Secondary Particulate emission as (NH ₄) ₂ SO ₄	10.19	1.46	NM	5.23	1.34	1.98
Primary PM emission	0.30	23.81	NM	0.19	0.007	0.006
Total PM emission load (Primary + Secondary)	10.49	25.27	NM	5.42	1.347	1.986
Controlled Emission						
Scenario 1: Assuming 50% removal efficiency of control system for SO ₂ and 70% for PM (coal & petcoke)						
SO ₂ emission	2.47	0.35	NM	1.27	0.33	0.48
Secondary Particulate emission as (NH ₄) ₂ SO ₄	5.10	0.73	NM	2.62	0.68	0.99
PM emission	0.003	0.24	NM	0.002	NM	NM
Total PM emission load (Primary + Secondary)	5.103	0.97	NM	2.622	0.68	0.99
Scenario 2: Assuming 90% removal efficiency of control system for SO ₂ and 70% for PM (coal & petcoke)						
SO ₂ emission	0.50	0.07	NM	0.25	0.07	0.10
Secondary Particulate emission as (NH ₄) ₂ SO ₄	1.03	0.14	NM	0.51	0.14	0.21
PM emission	0.003	0.24	NM	0.002	NM	NM
Total PM emission load (Primary + Secondary)	1.033	0.38	NM	0.512	0.14	0.21

Boiler Capacity: 40 TPH						
Pollutant	Pet coke	Coal	Natural gas	FO	LSHS	LDO
Fuel consumption	99.22	198.48	-	79.31	75.36	74.16
Uncontrolled Emission						
SO ₂ emission	13.2	1.89	NM	6.78	1.74	2.57
Secondary Particulate emission as (NH ₄) ₂ SO ₄	27.18	3.89	NM	13.97	3.59	5.29
Primary PM emission	0.79	63.6	NM	0.51	0.018	0.017
Total PM emission load (Primary + Secondary)	27.97	67.49	NM	14.48	3.608	5.307

Controlled Emission						
Scenario 1: Assuming 50% removal efficiency of control system for SO ₂ and 70% for PM (coal & petcoke)						
SO ₂ emission	6.6	0.95	NM	3.39	0.87	1.285
Secondary Particulate emission as (NH ₄) ₂ SO ₄	13.6	1.96	NM	6.99	1.79	2.65
PM emission	0.08	0.63	NM	0.51	0.018	0.017
Total PM emission load (Primary + Secondary)	13.68	2.59	NM	7.50	1.808	2.667
Scenario 2: Assuming 90% removal efficiency of control system for SO ₂ and 70% for PM (coal & petcoke)						
SO ₂ emission	1.32	0.19	NM	0.68	0.17	0.26
Secondary Particulate emission as (NH ₄) ₂ SO ₄	2.72	0.39	NM	1.401	0.358	0.54
PM emission	0.08	0.63	NM	0.51	0.018	0.017
Total PM emission load (Primary + Secondary)	2.8	1.02	NM	1.911	0.368	0.557

Assuming 100% SO₂ conversion as Secondary particulates and Scrubber.

6.0 RECOMMENDATION OF THE STATE BOARD

The major concern of Pet-Coke and Furnace Oil to be used as fuel in industry is high Sulphur concentration which lead to emission of SO₂ and NO_x. The ambient air quality data of last few years reveal that the parameters of SO₂ and No_x are well below the prescribed limits. However, keeping in view of the direction of the Hon'ble Supreme Court and Hon'ble National Green Tribunal and also to maintain the ambient air quality, **the State Pollution Control Board recommended use of following fuels for various sectors in general.**

6(A) FUEL FOR INDUSTRY

- i) Liquefied Petroleum Gas (LPG)
- ii) Liquefied Natural Gas (LNG)

- iii)** Piped Natural Gas (PNG)
- iv)** High Speed Diesel (HSD)
- v)** Bio Gas
- vi)** Bio-fuel (Bio-Ethanol etc.)
- vii)** Refuse Derived Fuel (RDF): To be used in Cement kiln & Waste to Energy plant or any other unit allowed by the Central Government/State Government.
- viii)** Biomass as fuel (like Pine Needles, Briquettes/Pellets of Pine Needles and other Biomass (including Lantana etc.): Cement Industries which are using Pet-Coke and Coal as a fuel will meet at least 0.1 % of their annual fuel consumption from forest based biomass like Pine Needles, Briquettes/Pellets of Pine Needles and other Biomass including Lantana etc. whether in briquette form or otherwise. This has also been stipulated in the Department of Environment, Science & Technology, Government of Himachal Pradesh Letter No. HPSPCB/EIA Notification (Consent Branch)/2018-14399-14433, dated-01-09-2018.
- ix)** Pet Coke subject to Specific Conditions :
 - a) In units such as Cement Plant or Lime kiln, Calcium carbide and Gasification for use as feed stock or in the manufacturing process only on actual user basis or in process where Sulphur is completely absorbed as per Office Memorandum issued by Ministry of Environment Forest & Climate Change (MoEF &CC) vide no. Q-18011/54/2018-CPA dated-10-09-2018.
 - b) Units having Boiler with capacity of 20 TPH or less, Pet-coke as a fuel may be allowed with a condition that, unit shall install the system for 90% recovery of SO₂ emission.
 - c) Unit having Boiler more than 20 TPH, Pet-Coke as a fuel may be allowed with a condition that, unit shall install the system for 90% recovery of SO₂ emission and unit shall install the continuous online emission monitoring system.
 - d) For those Units having furnaces based upon Pet-Coke fuel may be allowed with a condition that Unit(s) shall install the system for 90% recovery of SO₂ emission and unit shall install the continuous online emission monitoring system.
 - e) Use of Pet-Coke as a fuel is allowed to be used by other industries till 1.8.2019.

In case the Unit stick to use of Pet-Coke as fuel for their industrial operation after the time lines (01-08-2019) as given in TABLE-IV, Unit has to comply the conditions of Sr. No. b), c) & d) or the industry has to shift from Pet-Coke/Furnace Oil to alternate fuel/cleaner fuel as mentioned above in Sr. No. A (i) to A (viii) by modifying technology. In case of non-compliance, the Unit shall be closed without any notice after allowing time as per the details given below:

Table-IV		
Category	Time period for which Pet Coke or Furnace Oil as fuel may be allowed from 1st August, 2019	
Unit(s) irrespective of category falling in Critical Polluted Area (CPAs)/ Severely Polluted Areas (SPAs) based on the Comprehensive Environmental Pollution Index (CEPI) developed by CPCB.	One year	
Rest of Areas in H.P.	Red Category	Two Years
	Orange Category	Three Years
	Green Category	

x) Any other fuel notified/to be notified by the Central Government/State Government.

6 A (1) POLICY FOR FURNACE OIL

Units which are using Furnace Oil as fuel shall shift to HSD or any other cleaner fuel mentioned at Sr. No. 6 A (i) to A (viii) within stipulated timeline mentioned in Table-IV.

6(B) FUEL FOR TRANSPORTATION

- (i) Bharat Stage VI compliant petrol and diesel with 10 ppm Sulphur.
- (ii) Liquid Petroleum Gas
- (iii) Natural gas/Compressed Natural Gas (CNG)
- (iv) Biofuels
- (v) Any other fuel notified/to be notified by the Central Government/State Government.

6(C) FUEL FOR COMMERCIAL SECTOR (Restaurants/ Dhabas/ Hotels/ Canteens/ Hostel Canteens Etc.

- (i) Liquid Petroleum Gas
- (ii) Bio gas
- (iii) Biofuel
- (iv) Any other fuel notified/to be notified by the Central Government/State Government.

7. SPECIAL RECOMMENDATIONS

- (i) In no case Furnace Oil as fuel shall be allowed as per time mentioned w.e.f. 01-08-2019, which means that all existing units/under-construction/up-coming units shall have to follow this fuel policy or else shall close down the production.
- (ii) In no case fuel such as tyre/pyrolysis oil and LDO shall be allowed in HP.
- (iii) This Fuel Policy shall be subject to any direction/notification/modification/ guidelines issued/to be issued by the Supreme Court/ National Green Tribunal/any Court of Law/Central Govt./State Govt./CPCB/SPCB at any subsequent stage.
- (iv) As per the timeline (mentioned in Table-IV), all the units either have to comply the above conditions or shall close down the production.
- (v) Industrial units using Pet-Coke as fuel either have to comply Condition No. 6 (A) IX or may also have to switch over to cleaner fuels by altering their plant & machinery alongwith necessary pollution control devices to comply the ambient air quality norms as specified in Environment (Protection) Act, 1986.
- (vi) State Government shall review the Policy after the two years and may consider to revise the same in view of the results of the emission levels.