DEPARTMENT OF ENVIRONMENT
GOVT. OF NCT OF DELHI
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I.P. ESTATE, NEW DELHI-110002
PH: 23392306

F.No.DPCC/(12)(1)(285)lab(A)2020/2790-2810 Dated: 16/09/2021

To

1. Vice Chairman, Delhi Development Authority
2. Chairman, New Delhi Municipal Council
3. Principal Secretary, PWD, Govt. of NCT of Delhi
4. Commissioner, East Delhi Municipal Corporation
5. Commissioner, South Delhi Municipal Corporation
6. Commissioner, North Delhi Municipal Corporation
7. Director General, CPWD
8. Chief Executive Officer, Delhi Cantonment Board
9. Managing Director, DMRC

Subject: - Guidelines/Mechanism for using Anti Smog Gun in Construction and Demolition Projects having built up area more than 20,000 sq. metres.

Sir,

Kindly find enclosed Guidelines/Mechanism for using Anti Smog Gun in Construction and Demolition Projects having built up area more than 20,000 sq. Metres, as approved by GNCTD, for necessary circulation and implementation at construction sites/ projects under your jurisdiction please.

Yours faithfully,

Encl.: as above.

(K.S. Jayachandran)
Special Secretary (Environment)

Copy for kind information to:

1. SO to Chief Secretary, Delhi
2. Member Secretary, CAQM
3. Ms Nigam Agarwal, Director, Department of Environment, GNCTD
4. Sh. N.K. Gupta, Addl. Director (UPCD-1), Centre Pollution Control Board.
5. Sh. Raj Pal Singh, Additional General Manager (Engg), NBCC Office at Ground Floor, Office Block no. 4, Kidwai Nagar East , New Delhi -110023
6. Sh. Harish Kumar, Dy. Director, General Works, Central Public Works Department.
7. Sh. Abhishekh Raj, SE (Central), Public Works Department.
8. Sh. Vikas Singhal, DGM, Delhi Metro Rail Corporation.
9. Sh. Pankaj Kapil, SEE, (EIA Cell) Delhi Pollution Control Committee.
10. Sh. M.P. George Sr. Scientist, Incharge Air Lab, Delhi Pollution Control Committee.
11. PPS to Pr. Secretary (Environment), GNCTD
12. PS to Addl. Chief Secretary (Environment & Forests), GNCTD

Department of Environment

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Tele: 23392306

DPCC/ (12)/(1)/285-lab(A) 2020/2790-2810 **dated:** 16.09.2021

Subject : Guidelines/Mechanism for using Anti Smog Gun in Construction and Demolition Projects having built-up area more than 20,000 sq. metres.

1. Background

Generation of dust is the main concern for construction and demolition sites. Activities including excavation, demolition, storage-handling & transportation of construction materials and wastes etc. generate huge quantity of dust which ultimately contributes towards deterioration of ambient air quality, if no control or mitigation measures are adopted.

In this context it is to be mentioned that, the Hon'ble Supreme Court vide order dated 25.11.2019 in case of W.P (C) 13029 of 1985 directed CPCB to ascertain efficacy of "anti -smog Gun" for pollution control in Delhi and submit a report within ten days. In compliance with the same, CPCB along with Delhi Pollution Control Committee (DPCC) conducted studies on efficacy of anti-smog gun at two sites namely- Central Park Resorts, Gurugram (on 01.12.2019) and Anand Vihar, Delhi (on 02.12.2019) and submitted study report. Considering findings of the said report, Hon'ble Court vide order dated 13.01.2020 mandated use of anti-smog guns in all construction projects in Delhi-NCR having built-up area more than 20,000 sq. meters which mandatorily require environmental clearance. Further, MoEF&CC vide its letter dated 27.01.2020 (Q-18011/03/2018-CPA), referring the above order, requested CPCB to evolve a mechanism for using anti-smog gun in all construction projects in Delhi-NCR having more than 20,000 sq. meters built-up area and essentially requiring environmental clearance. Therefore mechanism evolved should be uniformly in all projects including out side Delhi. (NCR Region).

In this regard, CPCB convened a meeting on 26.02.2020 of the various stakeholders including smog gun manufacturers/sellers, construction project proponents to deliberate upon the matter. Further, Report of the high level committee constituted by GoI and CPCB's Report on efficacy of anti-smog guns and other relevant literature were considered for preparation of 'Mechanism for using anti-smog gun in construction projects in Delhi-NCR having more than 20,000 sq. meters built-up area essentially requiring environmental clearance'.

Subsequently in December 2020, an Expert Committee was constituted by Government of Delhi under the Chairmanship of Special Secretary, Department of Environment, GNCTD and comprising of the members from CPCB, CPWD, NBCC, PWD, DMRC, DPCC and Officers from Department of Environment, GNCTD. Meetings of the Committee were convened on 31.12.2020 and 13.01.2021 and issues were discussed at length. Manufacturers of ASGs were also invited for presentations on 13.01.2021.

Present Guidelines/Mechanism for using anti-smog gun in construction and demolition sites having built up areas more than 20, 000 sq. metres, are prepared based on earlier guidelines prepared by CPCB and subsequent interaction made with the Experts and ASG manufacturers during December 2020- January 2021.

2. Working Principle

Anti-smog gun (ASG) is a device spewing fine nebulised water droplets (atomized water droplets) through high pressure propellers in air making a canopy effect and helping particles from air get increased mass and settled by inertia. ASG uses high pressure water fogging with turbo air flow which creates a ultra-fine fog consisting of very fine water droplets (30-50 micron size). These tiny water droplets absorb the smallest dust particles in the air, yet fall to the ground without wetness.

Anti-smog gun also called spray gun, mist gun or water cannon is suitable for suppressing or settling down localized dust in a work-zone. It is found to be suitable for controlling industrial dust in mining, grinding, coal or. mineral handling and stone crushers.

3.0 Factors Governing Deployment of ASGs

3.1 Nozzle and propeller configurations

ASGs come with different nozzle and propeller configurations. Normally, coarser nozzles (about 50 µm water droplets) are used in construction sites, mining areas or other industrial applications; however the same can be customized for controlling dust in urban areas having a capability to spray water mist by using 10 – 15 µm nozzles. Sizes and the water spraying capacity may be tailor made for different purposes.

3.2 Water Supply to ASGs

Availability and quality of water are also important factors. ASG customized for urban areas typically uses 40 to 250 liters of water per minute. This amount may vary depending upon the type & specifications of ASG.

Sourcing and quality of intake water happens to be an important factor which needs to be pre-planned. Water to be used should be free from coliforms, viruses and bacteria. If necessary, disinfection of water may be practiced. Outlet of water tank may be fitted with filters to prevent entry of undesirable solids which may clog nozzles. Use of treated waste water is not advised in active work-zones where construction workers are expected to be present.

The anti-smog gun typically has a water tank attached to it. It is advised Project proponent, depending on constraints of movement/shifting of the whole machine set-up including water tank and fixtures, may go for installing separate water tanks at each identified work zone so that only gun could be shifted as per requirement and could be coupled with the already installed water tanks.

3.3 Zone of influence

Water throw distance is an important criterion for successful application of this device. Manufacturers produce anti-smog guns in the range of 30-100mtrs water through distance. Smog guns having throwing capacity of 50 mts shall cover an area of about 7000-7800 sq.m. at a time and having throwing capacity of 100 mts shall cover an area of about 27000 to 31000 sq.m. The ASG can be rotated vertically by an angle of -5° to 40°±5 ° . Effective height of throwing water from a 50 m radius ASG would be maximum about 40 to 50 m. The canon can rotate by 320° (manually or by remote control).

3.4 Types of Smog – Guns

Anti-smog guns are of different types and forms like manual smog guns, semi-automatic smog guns and automatic smog guns. It may be mounted over a simple manually movable trolley or mounted on a truck thereby differing in costs, manoeuvrability and ROW/operational space. Different types of technology based ASGs are available there having more efficiency.

3.5 Frequency of Operation

Anti-smog gun is generally required to be operated for around 30 minutes for suppressing dust in that zone. However, frequency may vary with seasons, type of construction activities going on and site conditions.

3.6 Fuel / Power supply

It is suggested to use feeder electric power for operation of anti-smog guns at site and avoid use of Generator sets based on fossil fuels and truck power as

much as possible. Capacity, size and other features of the machine may be best selected by the project proponents depending on size of the project, area to be covered, site conditions, scope of shifting and moving the machine in specific site conditions, availability and ease of supplying water, etc.

3.7 Advisory for use of Anti-Smog-Gun

It is advised that depending upon the size of the construction project, project proponent should use the anti-smog-guns. Following issues may be considered :

<table>
<tr><th>Issues</th><th>Guidelines</th></tr>
<tr><td>Capacity and nos. of ASG to be used</td><td>

Construction and Demolition sites having built up area of 20, 000 sq. m and above (actual under construction) should have 02 nos. of ASGs. (with atleast one movable ASG)
One ASG having throwing distance capacity 70-100 m and 01 no. of ASG having throwing distance capacity 30-50 m.
This will also take care of water & power saving, stand-by machine and use during small dust generating activities.
Requirements of installations on wind-ward side and leeward side shall also be fulfilled.

Suggested number of ASG to be installed as per built-up area:
<table>
<tr><th>Sl. No.</th><th>Built-up area</th><th>No. of Anti-smog gun required</th></tr>
<tr><td>1</td><td>Up to 20,000 sqm</td><td>1</td></tr>
<tr><td>2</td><td>20,000 – 40,000 sqm</td><td>2</td></tr>
<tr><td>3</td><td>40,000 – 60,000 sqm</td><td>3</td></tr>
<tr><td>4</td><td>60,000 – 80,000 sqm</td><td>4</td></tr>
</table>

For linear projects throwing distance should be as per requirement.

</td></tr>
<tr><td>Source of water</td><td>

Municipal Supply Water or
Class A and Class B Water without conventional treatment but only after disinfection so as to make water free from coliforms , viruses and bacteria [details of Class A and B are presented in “Designated Best Use Water Quality Criteria” developed by CPCB].

</td></tr>
</table>

	▪ Criteria is available on website of CPCB. ▪ Use of treated sewage be avoided.
Amount of water to be used	▪ Best quality nozzles (with droplet size from 10-50 µm) and optimum hydraulic pressure be used to generate atomized water droplets. The size of droplets is crucial for dust control, so nozzle must be certified by original Equipment manufacturer for droplet size. ▪ Environmental Clearance granted by MoEFCC, SEIAA and CTE granted by SPCBs / PCCs shall take this factor into account for estimating total water consumption.
Source of fuel for the engine Source of fuel for the moving van (if applicable)	▪ Care shall be taken that there will be minimum noise and emission into air during operation of ASG. ▪ Hence, wherever possible, conventional electric supply must be obtained and used for operation. ▪ Alternatively, use of CNG, LPG operated Gensets be encouraged. Fossil fuels shall only be used in emergent conditions when aforementioned sources of powers are not available and subject to verification by SPCBs/PCCs and Local Authority.
Time span of use	Normally for 30 minutes as a continuous operation in every 2-3 hours. However, operation shall depend upon site conditions, types of construction activities going on at the site and local environmental conditions to ensure there is no windblown dust.
Energy Meter	Energy meter should be installed at ASG for checking/monitoring use of ASG at site.
Other	Logbook on operation & maintenance on use of ASG and associated facilities be maintained.

4.0 Modalities for implementation:

a) Inventorization of existing & proposed Construction Sites (>20000 sqm) by concerned SPCBs/PCCs.

b) Directions to be issued to the individual project proponent for installation of smog-gun(s) at each project site (> 20000 sqm) covering prominent dust generating activities such as excavation, demolition, storage-handling & transportation of construction materials by the SPCBs/PCCs.

c) The project proponent to select the capacity, size and other features of the machine to ensure proper coverage of the site based on the factors enumerated in section 3.0 to the satisfaction of concerned SPCBs/PCCs.

d) The project proponent to make necessary on-site arrangements for water, power and movement of smog guns subject to verification by the concerned SPCBs/PCCs. Water and power consumptions pertaining to operation of anti-smog gun need to be recorded on daily basis.

e) For proposed new projects, conditions related to deployment of smog guns may be included in the EC issued by concerned authority.

f) Inspection of C&D sites must be carried out by SPCBs/PCCs to verify that anti-smog guns are being used at C&D sites. Assessment and validation of adequacy of required control measures for dust control are to be conducted by SPCBs/PCCs. Accordingly, necessary modification in the Consent shall be made which will also include submission of maintenance records.

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