



## CENTRAL POLLUTION CONTROL BOARD

(Ministry of Environment & Forests, Govt. of India)

'Parivesh Bhawan', East Arjun Nagar  
Delhi-110 032

### Expression Of Interest (EOI)

### **Last Date is extended upto 28-03-2014**

Central Pollution Control Board (CPCB) invites "expression of interest (EOI) from reputed institutes/Organizations for carrying out technical studies for control of environmental pollution in various sectors.

The details and downloading of Performa for Financial & Technical Bids, please visit CPCB website [www.cpcb.nic.in](http://www.cpcb.nic.in). Bids (Financial & Technical) may be submitted in separate sealed envelopes to Assistant Secretary, Central Pollution Control Board, Parivesh Bhawan, East Arjun Nagar, Delhi – 110032 within 21 days from the release of advertisement (in case it falls on holiday, the next working day shall be the last date of submission).

Member Secretary

# CENTRAL POLLUTION CONTROL BOARD

## DELHI

### ***Notice inviting Expression of Interest (EOI) for “Health Exposure Study of Petrol Pump Personnel due to Benzene Pollution in Delhi”.***

#### **1.0 Background**

Central Pollution Control Board (CPCB) is an apex body in the field of pollution control in the country. Benzene is a known hematotoxic, Neurotoxic, and carcinogenic agent. Chronic exposure to benzene has potential to cause various adverse health effects on humans, like chromosomal damage, immune suppression, aplastic anemia, myelodysplastic syndrome, leukemia, non-Hodgkin’s lymphoma and cancer of lung and naso-pharynx. CPCB proposes to undertake a study on “Health Exposure Study of Petrol Pump Personnel due to Benzene Pollution in Delhi“. Petrol pump workers are chronically and directly exposed to benzene while refueling of the vehicle with petrol and diesel nearly 8-10 hours a day. Therefore, this study has been proposed to assess the level of benzene in the air at petrol pumps and quantify its exposure and adverse health impacts on the workers.

#### **2.0 Objectives**

The present study envisages the following objectives:

- ❖ To collect data by questionnaire survey at petrol pumps and its workers in Delhi twice a year (summer and winter) at about 20 locations, including monitoring of ambient benzene levels.
- ❖ To assess the level of benzene in work zone at the petrol pump and quantify the exposure on the workers.

- ❖ To assess the exposure to benzene on the workers using suitable biomarkers (metabolites in urine, blood and excretions), with proven methods and tools.
- ❖ To study pulmonary and systemic effects of the exposure on the occupationally exposed group with possibility to link to chromosomal aberrations, if any.
- ❖ Comparing and co-relating data with age, gender, socio-economic matched controls using statistical tools.
- ❖ To suggest preventive measures for controlling inhalation of benzene by workers.

### 3.0 Scope of Work

The scope of work for project ‘Health Exposure Study of Petrol Pump Personnel due to Benzene Pollution in Delhi’ shall be as below:

### 3.1 Proposed yearly activities

The study shall be carried out in the phased manner as follows:

Year	Activities
<b>I<sup>st</sup> Year</b>	Ambient air benzene monitoring at 20 petrol pumps
<b>II<sup>nd</sup> Year</b>	Data collection, interpretation, evaluation, interim report preparation and its presentation
<b>III<sup>rd</sup> Year</b>	Repeat exercise of first year and second year activities
<b>IV<sup>th</sup> Year</b>	Submission of final report

### **3.2 Study Population**

- ❖ 20 locations: minimum 20 petrol pumps shall be monitored so as to get 200 exposed subjects.
- ❖ 200 (Exposed): occupationally exposed petrol pump workers.
- ❖ 100 (background): individuals living under similar conditions, socio-economic status, age and gender.
- ❖ 50 (control): age, gender, socio-economic status matched individuals from rural areas

### **4.0 Schedule for completion of tasks**

A maximum of Four years time is allotted for the submission of final report to the Central Pollution Control Board from the date of commencement of the project.

### **5.0 Expected outcomes**

- ❖ Detailed report on exposure of benzene and its assimilation in human body.
- ❖ Co-relation with background objectives using internationally acceptable statistical tool.
- ❖ Suggesting remedial methods.
- ❖ At least 03 publications with high impact factor.
- ❖ Enrollment of one CPCB official for Ph. D.

### **6.0 Eligibility Criteria**

The Expert agencies including Private firms and their consortium/Reputed Institute including CSIR lab or IITs/International reputed firms, Academic Institutions, Autonomous Bodies and other reputed organizations should fulfill the following criteria:

- (a) Knowledge experience of work in the field of Occupational Health Management and monitoring in India or abroad for at least 5 years.
- (b) Manpower of at least 5 persons having qualified in Environmental Engineering/ Science and medicine with more than 5 years experience in the field of Occupational health. Out of above 5 persons at least 2 should have more than 10 year experience in health exposure studies.
- (c) Shall have facilities for testing of related biological samples (mandatory) and environment monitoring (desirable).

## 7.0 Payment schedule and penalty and other clauses

Year	Payment (in % of the total budget)
I <sup>st</sup> Year	30%
II <sup>nd</sup> Year	25%
III <sup>rd</sup> Year	25%
IV <sup>th</sup> Year	20% (Balance)

- ❖ Bidder will raise invoice for payment in accordance to deliverables and timelines. CPCB will process payments on receipt of invoice with the actual verification of the work being done.
- ❖ If there is any cost overrun due inflations etc. during the project period, CPCB will not bear the same and the agency /institution running the project have to bear the cost overrun.
- ❖ The time schedule cannot be extended for more than 06 months that too has to be with a prior permission with CPCB.

- ❖ Fund utilization certificate has to be submitted every year.
- ❖ Bidder has to provide to CPCB at agreed frequencies, a written interim report at the end of 2<sup>nd</sup> year and final report at the end of 4<sup>th</sup> year of the progress of the work being performed along with midterm appraisal and pre-final observations.
- ❖ A detailed methodology (parameter wise) for carrying out the project has to be submitted.
- ❖ Either party will endeavor to fulfill the above commitments to the best of their ability. However, Bidder will not be responsible for non-fulfillment of contracted commitments due to forces and factors beyond its control which are not restricted to acts of God like fire, floods, earthquakes etc. civil disturbances, strikes, sabotage etc.

## **8.0 Arbitration**

On all aspects where the above clauses of agreements are silent, for special cases of deviation from these clauses, the decision mutually agreed upon relating to or arising out of agreement, such dispute should be resolved amicably by mutual consultation. Arbitration, if required for which will be effected by Chairman, CPCB in accordance with Arbitration and Conciliation Act 1996, which will be binding on both parties.

## **9.0 Submission of EOI**

Interested institutions may submit the detailed project proposal with available expertise, infrastructure and instrumentation. Detailed budget with justification shall also be enclosed with the proposal.

Bids (Financial & Technical) may be submitted in separate sealed envelopes to Assistant Secretary, Central Pollution Control Board, Parivesh Bhawan, East Arjun Nagar, Delhi – 110032 within 21 days from the release of advertisement (in case it falls on holiday, the next working day shall be the last date of submission).

**METHODOLOGY**

The sequence of steps for undertaking monitoring, investigation, assessment, proposing preventive measures of inhalation for the petrol pump personnel, collection of data through questionnaire and preparation of detailed project reports to be carried out in a phased manner based on the methodology as proposed below:

- ❖ Benzene monitoring.
- ❖ Assessment of benzene exposure by monitoring of relevant metabolites using suitable biomarkers (in blood and urine).
- ❖ Pulmonary effects:
  - Questionnaire survey and personal interview
  - Lung function tests (Spirometer)
  - Evaluation of cellular lung reaction by cytological and cytochemistry test (light microscope, fluorescence microscope)
- ❖ Systemic effects
  - Hematological effects (routine hematological parameters)
  - Assessment of Immunotoxicity (fluorescence activated cell sorter, FACS)
  - Assessment of Genotoxicity (fluorescence microscope, Single cell Gel Electrophoresis, PCR, DNA kit)
- ❖ Assessment of Antioxidant activity (Spectrophotometer)
- ❖ Assessment of neurobehavioral changes (Questionnaire survey)
- ❖ Statistical Analysis by standard statistical tools.