

**UNIVERSITY GRANTS COMMISSION  
BAHADUR SHAH ZAFAR MARG  
NEW DELHI – 110 002**

**Annual/ Final Report of the work done on the Major Research Project**

1. **Project Report No. 1<sup>st</sup> /2<sup>nd</sup> /3<sup>rd</sup> / Final:** FINAL
2. **UGC Reference No:** File No. 43- 209/ 2014 (SR) (MRP-MAJOR- CHEM- 2013-25775)      dated: 23/July/2015 & 28/August/2017
3. **Period of report:** From 01/07/2015 to 30/06/2018
4. **Title of the Research Project:** Characterization of fine particulates in indoor microenvironment
5. **(a) Name of the Principal Investigator:** Prof. Ajay Taneja  
**(b) Dept.:** Chemistry  
**(c) University/ College where work has progressed:** Department of Chemistry, Dr. Bhimrao Ambedkar University, Khandari Campus, Agra, U.P.- 282002
6. **Effective date of starting of the project:** 01/07/2015
7. **Grant approved, and expenditure incurred during the period of the report:**
  - (a) **Total amount approved Rs. 12,70,830**
  - (b) **Total expenditure Rs. 12,21,254**
8. **Report of the work done:**
  - i. **Brief objective of the project:** To provide quantitative information on the mass concentration of fine particulate in typical microenvironments (domestic homes classified on the basis of location & income) with analyzed temporal variability and size distribution providing overview of their formation, chemical composition, morphology and bioavailability.
  - ii. **Work done so far, and results achieved and publications, if any, resulting from the work:**

The work has been done with objectives achieved. The results have been given in the bound copy of final report. (**Annexed as Project completion report**).

Six publications (Five research papers and one book chapter) have been produced out of this project, that are (Offprints attached)

- Himanshi Rohra, Rahul Tiwari, Puja Khare & Ajay Taneja, Indoor-Outdoor Association of particulate matter and bounded elemental composition within coarse, quasi-accumulation and quasi-ultrafine ranges in residential areas of northern India, *Science of the Total Environment*, 631-632: 1383-97 (2018) [IF=5.1]
- Himanshi Rohra, Rahul Tiwari, Neha Khandelwal & Ajay Taneja, Mass distribution and health risk assessment of size segregated articulate in different microenvironments of Agra, India- A case study, *Urban Climate*, 24: 139-152 (2018) [IF=1.3]
- Himanshi Rohra & Ajay Taneja, Indoor Air Quality scenario in India- An outline of household fuel combustion, *Atmospheric Environment*, 129: 243-255 (2016) [IF-3.841]
- Rahat Parveen. Renuka Saini & Ajay Taneja, Chemical characterization and health risk assessment of soil and airborne particulates metals and metalloids in populated semiarid region, Agra, India, *Environ Geochem Health*, DOI 10.1007/s10653-016-9822-4 (2016) [IF-2.079]
- Poorti Varsheny, Renuka Saini & Ajay Taneja, Trace element concentration in fine particulate matter (PM2.5) and their bioavailability in different microenvironments in Agra, India: a case study, *Environ Geochem Health*, 38: 593-605 (2016) [IF-2.079]
- Atar S. Pipal, Himanshi Rohra, Ajay Taneja & P.G. Satsangi, Particulate matter and its consequences in ambient air: The current scenario, *Advances in Environmental Research*, Vol 50. Edited by Justin A. Daniels. ISBN 978-1-63485-477-1, Nova Science Publishers, New York, 1-27 (2016)

iii. **Has the progress been according to original plan of work and towards achieving the objective. If not, state reasons:** Yes, the project has been according to original plan of work with major objectives achieved. Some of the minor objectives were dropped because of release of less funds, but they didn't affect the basic research proposal.

iv. **Please indicate the difficulties, if any, experienced in implementing the project:** Inappropriate cut in proposal funds lead to difficulties in carrying out all the objectives.

v. **If the project has not been completed, please indicate the approximate time by which it is likely to be completed.:** The project has been completed.

vi. **If the project has been completed, please enclose a summary of the findings of the study. One bound copy of the final report of the work done may also be sent to University Grants Commission;** A detailed summary of the findings of the study is Annexed as **Project completion report.**

vii. **Any other information which would help in evaluation of work done on the project.**

- (a) **Manpower trained:** Yes, two Ph.D. students have been trained
- (b) **Ph.D. awarded:** Nil; **M.Phil awarded:** 03
- (c) **Publication of results:** 5 publications and one book chapter
- (d) **Other impact, if any:** Presentations in conferences and workshops
- Environmental Air Determinants Importance of Including Indoor Settings in National Conference on Environmental Pollution Burden and Strategies for control 27-28 March 2018 in Isabella Thoburn (IT) college, Lucknow (**Key Note address**)
  - ‘Socio-economic & location effect on fine particulate in residential homes of Agra, India’ in International Conference of the Public Health Foundation of India and Pacific Basin Consortium on Environmental Health & Sustainable Development, 14-16<sup>th</sup> November 2017, New Delhi (**Poster Presentation**)
  - ‘Mass Segregation of Particulate Matter and Heavy Metals between Coarse and Accumulation Range in Diverse Indoor Microenvironments of Agra, India’ in 5<sup>th</sup> International conference of ICC in Bali, Indonesia, 7-9 June, 2017 (**Oral Presentation**)
  - Air Pollution studies in Agra and Challenges Ahead in Indo-US workshop on Combating Air Pollution in North India organized by IIT Delhi and RTI International USA 25-26 May, 2016 in Hotel Vivanta-Taj, Lucknow. (**Oral Presentation**)
  - Indoor air pollution case studies in National Seminar on Environmental Protection and Sustainable Development Issues and Challenges (EPSDIC) 22-23 September 2016 in Sir C R Reddy Autonomous College ELURU, Andhra Pradesh (**Invited Talk**)

**SIGNATURE OF THE**

**PRINCIPAL INVESTGATOR**

**REGISTRAR**