



MIT (USA) - SRGC Joint Research Project on

Municipal Waste Management in Muzaffarnagar City

Memorandum of Understanding

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Between

Massachusetts Institute of Technology, Cambridge, USA (The First Party)

And

Shri Ram Group of Colleges, Muzaffarnagar, (UP), INDIA (The Second Party)

This Memorandum of Understanding (MOU) sets for the terms and understanding between Massachusetts Institute of Technology (MIT), Cambridge, USA and Shri Ram Group of Colleges (SRGC), Muzaffarnagar, (UP), INDIA for **Tata Waste Systems Project (2015 – 2017)**.

Management of waste in an environmentally sustainable manner is a challenging task. Rapid economic growth is leading to urbanization and industrialization generating waste which is adversely affecting the environment. Converting the wastes into some useful product seems to be of utmost importance for the economically, socially and environmentally sustenance.

Therefore, this MOU will be serving the following Goals:

- Enable Muzaffarnagar's transition into a model for the productive management of municipal & industrial waste.
- Create the tools to guide effective design of waste value chains for any Indian context. Demonstrate methods (technologies and operational strategies) to value addition to waste in India.
- Create a living laboratory for waste systems improvement in Muzaffarnagar city.

The above goals will be accomplished by undertaking the following Specific activities:

SRGC Side:

SRGC will establish a team comprising of faculty members and students from Bio Sciences, Engineering and Management. First of all, SRGC team will identify the study wards in Muzaffarnagar city and bulk generators with the discussion with MIT team. SRGC team will collect the baseline data for study wards as well as for large generators. Baseline data will be comprising of households demographic and waste audit data. School awareness program will be initiated in some of the selected schools by SRGC team with the discussion with MIT team. SRGC team will start source segregation and composting at SRGC campus. Initial bulk generator and ward level experiments will be done by SRGC team. The viability of biogas or other food waste to energy will be checked by SRGC team with the consultation of MIT team.

MIT Side:

MIT team will help in identifying the test wards in Muzaffarnagar city and bulk generators. The complete segregation guide along with waste audit data sheet and demographic questionnaire will be

provided by MIT team. MIT team with the SRGC team will analyze the baseline data collected by SRGC team. MIT team then will develop an analytical model of system costs and performance. The flow of waste in the city will be analyzed. Small scale installation plan of waste to energy technology like bio gas or other food waste to energy will be provided by MIT team. Specific implementation strategies will also be explored and selected.

Communication:

- i. MIT and SRGC team: through Skype call in every two weeks.
- ii. MIT(USA) team shall be visiting SRGC (India) in the fall and summer every year.

Reporting:

MIT Principal Investigators: Prof. Randolph Kirchain and Prof. Jeremy Gregory

SRGC Principal Investigators: Dr. Ashwani Kumar and Dr. M. Asif

Funding:

Required Fund will be made available by TATA Centre for Technology & Design, through Massachusetts Institute of Technology, Cambridge, USA (The First Party) for purchasing the instruments, consumables/non-consumables items and manpower on demand by Shri Ram Group of Colleges, Muzaffarnagar (The Second Party). The initial budgetary allocation for the Project is \$(US) 24000 for project operation in India by SRGC.

Duration:

This MOU shall become effective upon signature by the authorized officials from the Massachusetts Institute of Technology, Cambridge, USA and Shri Ram Group of Colleges, Muzaffarnagar. It will remain in effect until modified or terminated by any one of the partners by mutual consent. In the absence of mutual agreement by the authorized officials from SRGC and MIT, this MOU shall end with the completion of project i.e. upto March 2017. The period may be extended further with mutual consent.

Partners Information:

MIT:

Prof. Randolph Kirchain and Prof. Jeremy Gregory

(Principal Research Scientist, TATA Centre for Technology & Design)

Massachusetts Institute of Technology, Cambridge, USA

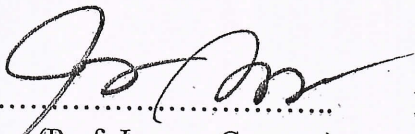
Telephone:

Fax:

E-mail: kirchain@mit.edu, jgregory@mit.edu

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(Prof. Randolph Kirchain)

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(Prof. Jeremy Gregory)

Date: 15.01.2015

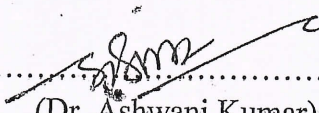
SRGC:

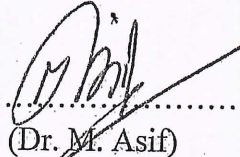
Dr. Ashwani Kumar and Dr. M. Asif (Shri Ram Group of Colleges, Muzaffarnagar, UP, INDIA)

Phone: 0131-2661633

Fax: 0131-2620890

E-mail: ashwani_biotech@yahoo.co.in, asifhcst@gmail.com

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(Dr. Ashwani Kumar)

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(Dr. M. Asif)

Date: 15.01.2015