C H A P T E R - V

CONCLUSIONS

The purpose of any survey is to collect the information systematically, classify the observations, look at the data from all possible angles, propose mathematical models to represent the case under study, use computational techniques to assess the derived parameters and finally to have overall view in a consistent matter. Statistical procedures are available for data processing whereby undesirable biases can be safely eliminated. The resultant deductions are available for applications in various ways, viz. (a) the comparison of the worked out system with existing system so as to improve upon the existing techniques, (b) working out new procedures and techniques, putting them to use, allowing them to generate data and going to perfection and (c) to generate altogether new systems. One of the important uses of such studies is that the model can be converted into a prototype system which can further be adopted to evolve the technique. In the present project it has been brought to the level of assessment of the city municipal waste in incineration or pyrolysis technology. Our next object is to work out the nature of the possibility of using Kolhapur Municipal waste as a source of pyrolysis gas and to present the worked out details for development of incineration or pyrolysis process for waste disposal.

As revealed by the survey of collection, transportation and disposal of solid waste produced in Kolhapur Municipal area, the collection and transportation of solid waste method is outdated and have to be upgraded so as to avoid direct contact of labours with the solid waste by introducing wheelburrows into the collection and transportation system. To increase the efficiency of available transportation facilities the compactors have to be introduced. The landfill method which is presently practiced in Kolhapur city, is unsuitable and unhygienic.

As observed from the laboratory studies, the solid waste produced in Kolhapur Municipal area is less suitable for composting method of disposal due to larger amount of inerts present in the waste. Apart from this, since the waste has to be carried away to the outskirt of city, haul cost and nonavailability of barenland make the composting and landfilling technique unsuitable. Same is the case with biogas technique because of lesser fraction of biodegradable component in waste and longer period of the process.

The laboratory experimental results show that adoptation of either incineration or pyrolysis technique as a means of disposal of solid waste produced in Kolhapur Municipal area is more suitable than other methods. The products obtained in the pyrolysis experiments show potential as source of pyrolysis gas and char with acceptable calorific value organic condensate which is a chief source of many organic chemicals and finally the inert residue which in substantial amounts can be utilized as filler material in road making and building construction.

Following few modifications have to be introduced into pyrolysis system to get maximum returns :

(1) Removal of stones by manual sorting and ferrous materials by magnetic separation to increase the efficiency of disintegration.

(2) Introduction of rotary kiln pyrolyzer to get uniform and efficient pyrolysis of solid waste.

(3) Increasing the temperature of pyrolysis to 700°-800°C to hinder the formation of CO_2 and to enhance the production of CO which is chief source of energy.

(4) Circulation of pyrolysis gas containing CO_2 through pyrolysis chamber to convert CO_2 into CO by effectively utilizing the carboneous char.

On the basis of representative results formal calculations of available energy from this source are presented in the earlier chapter With the advent of technology and with advancement of time the technology has to be oriented by giving a thought to raw materials of production. It goes without saying that municipal waste which has not got any other use can be considered as a suitable raw material as a nonconventional energy source. These studies may be further collaborated by studying in detail. The pyrolytic condensate as a source of chemicals which will give a complete picture of the usefulness of the proposed technique. The author proposes to continue investigations in his further studies to investigate this aspect as well as the study of municipal solid waste from similar township so as to arrive at more valid generalisations. In this context we will modestly say that this can be looked upon as a case study and not a generalisation.