CHAPTER - V

CHAPTER –V

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions :

From the foregoing discussions and study the following ~~statements~~ can be concluded:-

- The traditional process of brick making is still prevalent in all the Kilns.
- There is poor process of registration in our ~~judicial~~ Government system for the ~~installation of~~ starting brick industry. Hence many kilns in Kolhapur are yet not registered.
- The workers in the industry are categorised on the basis of their works and have no fixed time schedules of their working hours.
- The workers were paid no fixed salaries. The female workers get low salary than their male counterparts.
- Child labour is also commonly practised in many of the brick kilns.
- Illiteracy is the commonly observed problem amongst almost all workers in industries. Due to which the industry owners gave ill treatment to them.
- Due to poor standard of living, the workers lived in slum areas and in unhygienic conditions.
- The release of poisonous gases like SO_2, NOx and both particulate matters in the air from the brick kilns resulted into degradation of ambient air quality.

- Due to incomplete combustion of coal, carbon monoxide is released in the air, which causes respiratory diseases especially among the workers, and nearby residents.

- In most industries, raw material soil is obtained from the topsoil from the fertile agricultural lands.(Plate III(a))

- Due to lack of awareness about the impact of degradation of soils on environment, the farmers sell the fertile topsoil to the brick kilns owners for ~~momentary good prices~~. monetary gains.

- It is also harmful to the sustainability of the ~~world.~~ agriculture

- Also the deposition of dust particles released from brick industries on the leaves of trees in the vicinity is detrimental to the vegetation.

5.2 Recommendations:

- **Stack fuel around bricks to facilitate preheating :**

Some fuel is mixed with the bricks throughout the kilns, either as sawdust mixed into the brick mass or as fuel channels in different levels of the kiln. By doing this, a combustion zone can be generated in the kiln that gradually moves upwards, using the residual heat in the lower, already burnt bricks for preheating of combustion air. The residual heat in the fuel gases is used for drying and preheating of the higher levels of crude bricks.

- **Improve brick drying before firing :**

Extended drying time reduces fuel requirements. Even drying throughout brick stacks reduces defective firing of bricks. For the drying of brick mostly use alternative technique like solar energy.

- **Improve of air flow control :**

Stopping all air leaks and controlling the kiln opening size allows better control of air ~~low~~ flow speed and direction to improve combustion.

- **Switch over to propane or natural gas fuel :**

If available and competitively priced, these fuels have significantly less emissions and can increase production quality and speed.

- **New kiln design :**

Vertical Shaft Brick Kilns (VSBK) allow increased production rates and significantly decreased emission. This could help to reduce air pollution to a greater extent.

- **Location of brick Kiln :**

According to the Maharashtra Pollution Control Board Circular (dated 18/02/1997), the site of the brick Kiln should be at a safe distance from human settlement, village and highway (about 500 metres). MoEFs, as per its guidelines, has suggested 500 metres as safe distance for setting up an industrial unit.

- **Use of low ash coal ground in brick kilns :**

Low-ash coal ground below 10 mm size should be used in brick kilns. Mechanical stockers should be used for feeding coal for its optical use.

- **Prevention of spread of dust particles in air :**

Ash layer on kiln top should be covered with fired bricks or roof tiles. 'Pucca' internal roads should be constructed and water should be frequently sprayed over dusty areas to prevent the dust pollution in the vicinity of brick industries.

- **Responsibility of environmentalists :**

Use of firewood for brick burning, leads to large scale tree felling, and air pollution created by the industry in the form of dust, smoke, and odour should be stiffly opposed by the environmentalists.

- **Responsibility of Social workers :**

Incidence of child labour and ill treatment to the illiterate workers in the brick industries should evoke considerable uproar from social workers. Local NGOs to take responsibility of educating the brick kiln children.

5.3 Action Plan:

➢ Due to the sheer magnitude of this problem, a major thrust needs to be given for developing technologies aimed towards large scale application like bricks, road and other construction activities.

➢ The laboratories have been developed for ~~lab level of~~ developing technology for different products other than the traditional bricks. However, it is not merely enough to develop alternative technologies at a lab level. The need is to upscale the technology and popularise these products by establishing their commercial viability.

➢ It is necessary to demonstrate the technologies by making cost effective prototypes on a large scale, jointly with the local industry.

➢ Workshops have to be conducted by the labs (CRRI, CBRI, CPRI, etc.) in association with the industries to disseminate the findings.

➢ For brick development, Central Building Research Institute, Roorkee.(CBRI) and Central Road Research Institute, New Delhi (CRRI) should take lead along with the brick manufacturers.

➢ Brick manufacturers should interact with these organisations for improving the technical characteristics as well as techno-commercial features. So that users are motivated to try bricks and building materials made out of raw materials other than the traditional ones.

➢ In India, there are total nine research centres engaged in researches based on development of new technologies of brick manufacturing. Of these

two of them are located in Delhi, two of them in West Bengal, one in Roorkee in Uttar Pradesh, one in Bhopal in Madhya Pradesh, one in Bihar, and one in Bangalore in Karnataka. But there is no such research centre in Maharashtra.

- On the funding front, TIFAC has a very novel scheme to promote and support development of new technologies, namely the Home Grown Technology (HGT) Programme. This aims at stimulation and development of lab level technologies upto pilot plant scale level or viability proving levels.

- TIFAC partly funds projects by way of soft loans upto the extent of 50% of the technology development cost for up-scaling a lab level technology to Semi Commercial Level or Pilot Plant Scale.

5.4 Public Awareness:

- Seminars should be conducted in order to provide knowledge to the brick industry workers.

- Public at large to be made aware of the environmental problems related to housing in general and brick making in particular through electronic and print media.

- The industry owners should be made aware about the rules and regulation in order to prevent the air pollution and soil degradation and keep an anchorage on their illegal malpractice. be kept by the govt. agencies

- The industry workers should be made literate about their rights and health and should be provided with the knowledge about environment.

- The industry workers should be trained for handling the new developed technologies.

- The life conditions in general of the brick kiln workers to be improved immediately at all cost with support from the industry, government and society.

Land and air is the gift of nature, which cannot be produced manually in any laboratory. So it is our responsibility that we must be careful about the quality of soil and air for the present and future generations.