CONCLUSIONS AND RECOMMENDATIONS

The study covered the environmental aspects of a representative sample of 15 plants from six firms of the large scale sector of the Indian fertiliser industry. This study has identified the key issues in environmental protection in the production of fertilisers, the national and international norms and guidelines regarding pollution control in fertiliser industry, the extent to which these issues are tackled in operating plants in the country and the problems encountered in environmental management in fertiliser plants.

The study revealed that the firms have been successful in maintaining the characteristics of the effluents and emissions discharged from the plants within the limits of the stipulations of the regulatory authorities. Most of the environmental issues in the units are addressed exactly on the lines in the developed countries and follow guidelines that are compatible to similar international norms and practices. With regard to the discharged effluents and emissions similar results on the quality criteria are also achieved. In comparison with the best available practices for efficient pollution control in the industry, there is scope for further improvement. A change in this direction which involve additional investments is not a priority agenda before the Managements of the units, for the present, due to lack of financial incentive in this regard. Hence, for further improvements in this area, a policy guided approach is necessary.
Based on the above analysis, guidelines of a national environmental policy, which will foster development of fertiliser industry in the country to boost agricultural output without degrading the environment, is proposed. The following are the elements of the above Environmental Policy.

**Vision on Environment, Health and Safety (EH & S) in Fertiliser Processing**

Existing operations and continued growth and development of the fertiliser industry in the country are an essential requirement for increasing agricultural productivity especially because of the developing nature of our economy. The industry is characterized by major environmental impacts and safety concerns. In order to facilitate the above growth perspective, a conducive Environment, Health and Safety (EH&S) policy support for the industry at the Government level is required.

**Commitment of the Top Management**

The first and foremost guiding principle of an environmental policy facilitating growth of the industry is the unstinted commitment, involvement and action oriented approach of the top management of the organisation in achieving the set environmental goals. This commitment will ensure maintaining and enhancing a company-wide organisational structure and culture that recognises and encourages the full and active participation of all employees in the systematic management of health, safety, and environmental issues. Binding rules regarding the organisation and management of any task being related to health, safety and environmental matters shall be established at Chief Executive level.
Develop EH & S Policy Statement

Every fertiliser company shall be required to formulate an Environment, Health and Safety policy statement depending upon the nature and scale of its operation and specifying its current thinking and aspirations of the future. They shall adopt a national pollution prevention policy that encourages source reduction and environmentally sound recycling as a first option, but that also recognizes safe treatment, storage and disposal practices as important components of an overall environment protection strategy.

The company shall implement, and continuously improve health safety and environment management systems and develop standards that reflect best industry practices to minimize the risk of disturbances in consequence of its operations as well as minimized consumption of raw materials and energy.

Set Environmental Targets

The environmental targets, i.e., the qualitative and quantitative changes that are to be brought about to bring in more environment friendliness in the industry and acceptance to the community around are to be analysed. Steps that are envisaged for minimizing environmental impacts, reducing emissions of toxic gases and those causing global warming and improving the current levels of employee health, safety and pollution prevention are to be specified. Attempts for improving energy efficiency, resource productivity and use of renewable source of energy and raw material need special mention in the policy. The target must also address achieving zero accidents at work places, reducing incidents of work related diseases and overall reduction of the risk exposure to the employees as well as the community.
around. The target shall focus achieving sustainable development and eco-efficiency as a new business perspective for the industry through production and innovation integrated environmental protection, responsible product stewardship and aiming total quality improvements.

**Incorporate State of Art Control Strategies**

The National policy shall provide for the use of legal, financial and social instruments which influence the behavior of companies, citizens, public bodies and authorities for achieving the objectives of the policy. Existing and innovative control mechanisms such as statutory provisions, stipulations of the various regulatory bodies may be used. Fertiliser industry may be asked to go for the currently best available technology for pollution abatement. During the interim phase current strategy of monitoring comparison with set standards and penal action wherever required shall continue. Plants shall be operated to standards that comply with the requirements of appropriate national and international legislation and codes of practice.

**Ensure Effective Risk Management**

It is necessary that the management shall ensure that potential health, safety, and environmental risks associated with the activities are assessed early to minimize and manage adverse effects and to identify opportunities for improvement.

**Upgrade Staff Training**

Necessary and state of art training may be given to the concerned people responsible for environmental management. This should include keeping them abreast of the new developments, technologies and practical tools, accident
investigation, environmental impact prediction, selecting appropriate protective equipment, implementing emergency response plans as and when necessary and so on. They may be trained to learn from previous incidents and similar experiences. They must be made conversant in the corporate environmental management systems and the proposed action plan for its implementation. In short, necessary capabilities must be available inhouse with all organizations to tackle probable emergency situations that are likely to arise.

**Ensure Regular Monitoring**

The policy shall call for regular and meticulous environmental performance monitoring to keep track of the environmental burden imposed by the company and watch the direction of its progressing trends. Quantitative as well as qualitative approaches may be used for this purpose. Emissions, waste streams, hazardous waste, disturbance, resource depletion etc., shall be addressed accordingly. Commitments towards targets for Responsible Care and social responsibility may also have to be assessed.

The current operations should be regularly and systematically assessed and audited for the purpose both of identifying and correcting any element which may put human beings, property or the natural environment at risk of nuisance or damage and of establishing a basis of safety related improvements of processes and products.

Any new process and product as well as any new information of existing processes and products should be thoroughly analysed with regard of their health, safety and environmental implications.
The concerned authorities should be kept well informed of the operations and of their health, safety and environmental implications. Any incident entailing a risk of environmental disturbances or of conflict with existing regulations should be promptly reported to the proper authority.

**Provide Public Information**

Necessary provision may be made for sharing information on health safety and environment with the public is to be incorporated in the policy. The policy shall provide for involvement of the community and working with active environmental groups in the region in bettering the environmental situation and thereby enhancing public perception of the industry.

Through candid and personally formulated information, the public should be made acquainted with the operations of the company, its as such, related benefits and risks as well as the measures taken to minimize those risks. Uncertainty and anxiety among them should be addressed attentively. Care for the safety and health of the employees and the public should be given priority.

**Publish Annual Environmental Reports**

The policy shall call for annual environmental status reports along with the financial performance reports. The feedbacks on these reports from the concerned stakeholders may be used for continued improvement of existing systems. The policy document shall be integrated with the National Environmental Plan of the Country.