

**"Formulation of a Comprehensive National
Strategy and Action-Plan to Attenuate Major
Environment and Occupational Health Risks
Pertinent in Urban Setting"**

(Final Report)

Submitted by

Dr. Hari Bansh Jha

Mr. Hari Barakoti

Mr. Hari Krishna Adhikari

Ms. Shyamu Thapa Magar

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Professor Hari Bansh Jha
Team Leader

ABBREVIATIONS

| | |
|-------|---|
| BOD | Biological Oxygen Demand |
| CBS | Central Bureau of Statistics |
| CETS | Centre for Economic and Technical Studies |
| DDC | District Development Committee |
| DoHS | Department of Health Services |
| EIA | Environmental Impact Assessment |
| ENPHO | Environment and Public Health Organization |
| EPA | Environment Protection Act |
| GDP | Gross Domestic Product |
| INGO | International Non Governmental Organization |
| MoAC | Ministry of Agriculture and Cooperatives |
| MoH | Ministry of Health |
| MOHP | Ministry of Health and Population |
| MoI | Ministry of Industry |
| MOICS | Ministry of Industry, Commerce and Supply |
| MoPE | Ministry of Population and Environment |
| MOEST | Ministry of Environment, Science and Technology |
| MoPPW | Ministry of Physical Planning and Works |
| MoST | Ministry of Science and Technology |
| NHRC | Nepal Health Research Council |
| NPC | National Planning Commission |
| NEPAP | Nepal Environment Policy and Action Plan |
| NESS | Nepal Environmental and Scientific Services |
| NGO | Non Governmental Organization |
| OPD | Out Door Patient |
| TSP | Total Suspended Particulate |
| VDC | Village Development Committee |
| WHO | World Health Organization |

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EXECUTIVE SUMMARY

In Nepal, the planners and policy makers started realizing the importance of environmental and occupational health risk issues basically from the Sixth Plan (1980-85). However, there is no sign of any meaningful change in environmental and occupational health risks in the urban areas. This is also due to the fact that major environmental and occupational health risk factors had not been identified in the country and there was also a lack of strategic action plan to address such issues. Hence, the present study was carried out to: (a) Identify the major environmental and occupational health risk factors in urban settings; (b) Prepare strategic action-plan to attenuate public health risks caused by major environmental and occupational health and safety situations within the urban settings; and (c) Disseminate the prepared strategic action plan by organizing a dissemination workshop.

To achieve the above objectives, both the secondary and primary source materials were used for data collection. The secondary source information was collected from various publications of government and non-governmental agencies, international organizations and different other sources. Similarly, the primary source data were collected partly by interviewing the key resource persons and partly through observations made on the state of environmental and occupational health risks in four urban settings of the country, including in Kathmandu, Biratnagar, Birgunj and Nepalganj. Data, thus, collected through the secondary and primary sources were analyzed and were put in tabular form to make them presentable.

In course of the study, it was found that the protection of environment was essential for the growth of Gross Domestic Production (GDP), sustainable development of the national economy and poverty alleviation. Hence, the environmental and health policies, rules and regulations, and health guidelines and standards were developed for the improvement of environmental health situation in Nepal. Yet the environmental problems related to air, land, water and noise pollution are most precarious in urban areas like in Kathmandu, Biratnagar, Birgunj and Nepalganj for their adverse effect on the health of the people.

Of the different categories of pollutants such as air, water, land and noise, the air pollution is the most harmful as it enters into the body directly and affects the respiratory system and associated organs. The air quality in the urban areas is affected due to rapid growth in the number of motor vehicles, poor conditions of roads, inferior quality of automobile engines, adulterated fuel products and the emissions from the factories. Besides, the pollution level of most of the urban areas has aggravated due to rapid rate of growth of population and weak public institutions to manage the dense settlements with very little open space.

Moreover, the increasing level of water pollution in the urban areas account for diarrhoea and skin diseases. Industries discharge effluents in the rivers, cannels, and other water sources. The chemicals and wastes discharged from the industries degrade water quality and the environment. Most of the houses in the urban areas lack the sewage treatment

facilities and as such the sewage is directly discharged into the rivers. The ground water quality in the urban areas is also contaminated due to seepage of the discharged effluents from the industries and workshops. Similarly, the improper management of solid waste leads to environmental pollution affecting public health.

Mostly children and elderly people suffer from different diseases and their problems get aggravated by the rising tide of pollution. Children are mostly victims of air pollution and unsafe drinking water. Absentee rate among the children in several schools is high because of the lack of clean environment. The elderly people are at higher risks from pollutants as they loose their immunity and defense mechanism. They are victims of various respiratory, cardiac or other diseases and even a low level of pollutants among these people cause severe problems related to lung, heart and skin diseases.

Emission, effluent discharge and solid waste generated from industries affect all invertebrates and vertebrates directly and indirectly, and once assimilated into living plants and animals, the contaminants move quickly through the food chain, affecting the health of animals and humans.

Occupational environmental diseases are mainly caused in the industries by chemical agents, radiation, and physical hazards. The effects of exposure, in both natural and work settings, are greatly influenced by the exposure routes: primarily air pollution and water pollution, contaminated food, and direct contact with toxins

However, neither the employers nor the employees in most of the industrial establishment are serious about the need of clean environment. This is mainly due to the inadequate occupational health guidelines and standards and for their poor implementation. The workers engaged in different occupations are victims of diseases caused by pollution because the exposure time and rate of exposure to pollutants is very high. Each year, many of the employees working in industries have pre-matured death due to primary and secondary effect of exposed pollutants in the working environment.

The intensity of the diseases among the workers largely depends on the level of pollution among the different categories of industries. While the vegetable ghee and distillery industries account for major percentage of pollution, the dairy and beer industries cause least of pollution. Most of these industries, however, discharge effluents and emission to the environment without any appropriate treatment.

Environmental factors play critical roles in spreading non-infectious diseases. For example, exposure to carbon monoxide in the environment has long-term effect on the heart and vision. Similarly, lead in drinking water impairs children's mental abilities and increases blood pressure in adults. Occupational exposure to coal dust, cotton dust, and asbestos predisposes workers to black lung, brown lung and several other respiratory diseases. Respiratory diseases like asthma, bronchitis, throat infection, skin diseases, etc. are related to air pollution; whereas the gastro-intestinal diseases such as typhoid, cholera, diarrhoea and hepatitis "A" are linked to contaminated drinking water. The increased level of noise might cause insomnia, ulcers and hypertension.

Survey conducted in the past shows that asthma/bronchitis diseases are major cause of deaths in Nepal. Of the total reported cases of death, asthma/bronchitis alone accounts for 6.9 per cent deaths; followed by deaths from cholera/diarrhoea (4.5 per cent), pneumonia (4.2 per cent), heart disease (2.9 per cent) and typhoid (1.0 per cent). It is quite clear the huge urban populations have lost their life due to asthma and bronchitis caused by air pollution.

The pollution level in the urban settings and urban health risks can be controlled by implementing Strategic Action Plan as recommended below:

Recommended Strategic Action Plan

| Strategic Action Plan | Responsible Institutions | Time Frame |
|---|---|-------------------|
| 1. Constitute a Steering Committee comprising of high level officers from MoEST, MoICS, MoHP and other concerned agencies with secretariat at MOHP/NHRC to take care of occupational health situation | MOHP/NHRC | Immediate |
| 2. Strengthen institutional capacity at different levels (local: municipal, central) to take care of occupational health situation prevailing in Nepalese urban settings | MoHP/MoICS | Continous |
| 3. Develop monitoring mechanism at all levels to monitor the indicators of occupational health hazards | MoHP/MoICS | Immediate |
| 4. Develop rules and regulations to control industrial pollution completely to a level not causing adverse affects to health | All stakeholders like MoHP, MoEST MoICS | Immediate |
| 5. Enforce the existing rules to control industrial pollution e.g. air pollution, water pollution, land pollution, noise pollution, etc. | MoEST/MoICS | Immediate |

| | | |
|---|---|--|
| <p>6. Develop more specific rules and regulations to take care of occupational hazards due to environmental pollution</p> <p>7. Develop human resources at different levels to take care of occupational health e.g. facility level, local level, central level, etc.</p> <p>8. Improve citizen participation in environmental compliance and enforcement</p> <p>9. Prioritize occupational health issues within national development strategies</p> <p>10. Enhance government commitment to promote the occupational health status through prevention and control, especially for the health of the poor and to tackling the constraints and inefficiencies in health systems and institutions</p> <p>11. Increase government commitment to mobilize resources to improve access and provision of health care for the poor</p> <p>12. Better coordination with national partners/stakeholders/donors and improve predictability of aid by harmonizing partner objectives and capacities to support country</p> | MoHP/MoICS MoHP MoHP/MoICS NPC/MoICS MoHP/MoICS NPC/MoF All stakeholders, including Government bodies, I/NGOs | Immediate Dec 2007 Longterm Short Term Continuous Long Term Continuous |
|---|---|--|

| | | |
|---|---|----------------------------------|
| <p>level priorities</p> <p>13. Include occupational Health issues in Development of multi-sectoral health investment plans</p> <p>14. Promote research activities and create awareness among the target population about the need to improve environmental conditions of the urban areas so as to reduce the burden of diseases and also to encourage measures for occupational safety of the urban industrial workers.</p> | <p>and Donor Agencies</p> <p>MoHP/MoICS</p> <p>All stakeholders, including Government bodies, I/NGOs and Donor Agencies</p> | <p>Long Tem</p> <p>Long Term</p> |
|---|---|----------------------------------|

Chapter One

INTRODUCTION

1.1 Background

In Nepal, there is a growing realization on the part of the planners and policy makers to address issues related to environmental and occupational health risks. Accordingly, the concerned organizations have made certain efforts to improve the situation in these sectors. But the efforts are so meager that there is no sign of the environmental and occupational health risks getting diluted particularly in the urban areas. The problem is precarious also due to the fact that the major environmental and occupational health risk factors have not been identified. In addition, there is no strategic action plan as such to attenuate public health risks caused by environmental and occupational health risk factors. So an attempt was made in the study to fill this void and help the planners and policy makers of the country to reduce the magnitude of environmental and occupational health risks in the urban settings.

1.2 Objectives

The overall objective of the study was to identify the major environmental and occupational health risk factors with a view to making strategic action plan to attenuate public health risks in urban settings. Specific objectives of the study were to:

1. Identify the major environmental and occupational health risk factors in urban settings;
2. Prepare strategic action-plan to attenuate public health risks caused by major environmental and occupational health and safety situations within the urban settings; and
3. Disseminate the prepared strategic action plan by organizing a dissemination workshop.

1.3 Methodology

In order to achieve the above objectives, both the secondary and primary source materials were used for data collection. A variety of techniques were developed for gathering such information.

1.3.1 Secondary Source Information

While collecting the secondary source materials, all available literature on the environment and occupational health issues were collected and reviewed. The secondary source data were collected from different sources, including books, articles, and published and unpublished source of information.

1.3.2