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# Nepal Health Sector Program – (NHSP-II)

# Environmental Health Impact Assessment Plan

**Government of Nepal**
**Ministry of Health and Population**
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# Content

# Environmental Health Impact Assessment Plan of Nepal Health Sector Program – 2010-2015 (NHSP- II)

## *1. Background*

Environmental health plays a pivotal role in the endeavor to create and foster an environment that is safe to work, recreate and live. It is in fact one of the most essential elements and preconditions for sustainable development. Government of Nepal (GoN) is committed to bring about tangible changes in health- sector development process. The Nepal Health Policy 1991, Second Long-Term Health Plan 1997-2017 seeks equitable access to quality health care for all people. Nepal's Poverty Reduction Strategy Paper (PRSP) and Three Year Interim Plan 2007-2010 addresses social inclusion- aiming to bring the poor and marginalized groups into the main stream of development and emphasizes strategic cross-cutting approaches to: (a) redefining the role of the State, and limiting public inventions; (b) enlisting the private sector to play leading role together with NGO's in complementing government efforts in service delivery; (c) promoting community participation in and management of activities at the local levels; and (d) accelerating the decentralization process. The Medium Term Expenditure Framework (MTEF) accords highest priority to Essential Health Care Services (EHCS). It proposes a redirection of public spending towards EHCS and away from tertiary care and lower priority services.

United Nations Conference on Environment Development (UNCED), held in Rio de Janeiro in 1992 declared principles on the environment and development as an agenda for change during the 21st century which states as:

*"Nations shall enact effective environmental laws and develop national law regarding liability for the victims of pollution and other environmental damage. Where they have authority, nations shall assess the environmental impact of proposed activities that are likely to have a significant adverse impact."*

This declaration (also known as agenda 21) acknowledges the dependence of human health on healthy environment. It requires all countries to have programs to identify environmental health hazard and to reduce the risks. Principle 1 of the Rio Declaration clearly state that human beings are at the center of concern for sustainable development. They are entitled to a healthy and productive life harmony with nature.

In line with above declaration the GoN prepared the Nepal Environmental Policy and Action Plan (NEPAP)-1993 and Nepal Environmental Impact Assessment (EIA) guidelines were developed before Environmental Protection Act came into existence in 2001.The guideline require all concern authorities to prepare an EIA for any development project or activity that significantly affect the quality of the environment. It is mandated that the EIA should examine the biophysical, geophysical and socio-economic impact of

the project or activity and recommend majors to mitigate such impacts. The EIA can prospectively and retrospectively assess the projects in terms of the above criteria. Under Environment Protection Rule (EPR)-1997, projects are categorized as proposals requiring Initial Environmental Examination (IEE) and proposals requiring EIA. No person or entity is allowed to undertake or operate such projects without first securing an approval from the Ministry of Environment (MoE) or the concerned body. More than 200 types of developmental activities must follow the environmental assessment process. MoE reserve the right to accept or reject the EIA report of the prescribed proposal whereas the concerned ministries could approve the IEE report.

A high level committee called the Environmental Protection Council (EPC), currently renamed as Climate Change Council-2009 (CCC) Chaired by the Prime Minister has been formed in 1992 immediately after the restoration of multi party democracy in Nepal. The Minister of Health and Population is also the member in the committee. Hence, the importance of inter-sectoral coordination is greatly realized. Thus, a coordination committee at the MoHP representing the Ministry of Environment Science and Technology (MoEST), and the Ministry of Physical Planning and Works (MoPPW) can play a significant role to address specific health issues in EIA which has been ignored in the past.

The Nepal Health Sector Program II (NHSP- II) - 2010/11 to 2014/15 is being developed. Six Thematic Sub Groups (TSGs) have been formed as below to assist the main thematic group 'Cross Cutting Issues':

- Health Education and Communication
- Environmental Health and Hygiene
- Humanitarian Response and Disaster and Emergency Management
- Gender, Social Inclusion and Rights
- Population
- Nutrition

The main reform actions identified under NHSP-II are (a) prioritized allocation of resources and efforts to ensuring access to EHCS, especially for the poor and vulnerable; (b) decentralized management of health services delivery; and (c) promoting Public-Private-People Partnerships (PPPP) to increase access to and quality of services. The working group on NHSP-II extensively addresses the thematic cross-cutting environmental issues in health. They have also identified the importance of inter-sectoral collaboration and participation of civil society organizations for efficient and effective management of environmental health issues.

## *2. Problem and Gap in Environmental Health*

Environmental health in broader perspective includes all aspect of human life. It is the major concern for human survival and constitutes both cosmic and terrestrial concerns however our main thrust is on the later one since we can have some level of control over it. Human health is the consequence of our daily activities in the community we live in, the food we eat, the water we drink and the air we breathe. The current concern of

Climate Change is also an issue of man-made environment concerned with development activities of the global community. The recent outbreak of diarrheal disease in far-western Nepal claimed heavy loss of life and illness. Similarly, the flooding from de-railed Koshi River in the eastern Nepal claimed heavy loss of life and property. There are other environmental health issues related to air pollution (Ambient and indoor), water contamination, catastrophic man-made and natural disasters and other type of solid and liquid waste management issues including the management of human excreta has been dealt elsewhere. This document is basically focused on the issues of environmental health hazards associated with the development activities including the wastes produced by primary, secondary, tertiary public and private health care facilities, which is specifically infectious. Healthcare waste in developing countries particularly derived from two major sources: emergency relief donations (leftover from international donor response to either a humanitarian crisis or a natural disaster) and long term healthcare services. Healthcare services intended to reduce health problems & to prevent potential health risks, however, often generate waste potentially harmful to public health and the environment.

The knowledge base on collection, handling and disposal of Health Care Wastes (HCWs) abounds in international arena, however it is grossly lacking in the national context. There is very limited knowledge on how these wastes are managed despite the fact that the government is committed to it. There are very few studies related to the adverse health impact and infectious waste management in Nepal. In the recent years, the standards, guidelines and manuals have been produced and implemented however the effectiveness of its use has rarely been assessed. The gaps can be summarized as follows:

- EIA is usually done by the MoE is not represented by the public health expert from MoHP and it does not cover health aspect. The concept of EHIA as per the policy decision of 2059 is not effectively carried out.
- Handling, collection and management of infectious waste from health care facilities is an important issue which is not adequately recognized by the stakeholders and still a neglected part. In several situations the infectious wastes (solid, liquid, sharps and radioactive substances) treated just like a normal waste and disposed indiscriminately.
- Infectious waste handlers are basically sweepers; attendants are basically people with low education and socio-economic standards. There is no adequate skill based training and follow up for them to orient with the system.
- Most of the health care facilities are located in urban areas and operating without adequate infrastructure. The waste management mechanism of the municipality is not satisfactory and undermines the magnitude of the problem. They are taking it as a general waste and not recognized the infectious nature of the waste
- The standards have been set, manuals have been produced but practical solutions to these problems have been lacking due to various reasons.
- Incinerators often questioned in Nepal, but without appropriate solution – autoclaving is not an appropriate solution though it is effective. Seventy to 80 percent autoclaves are not functional (expert opinion).

Environmental Health Impact Assessment (EHIA) is still in developing stage in Nepal. Environmental health issues were not adequately addressed in Health Sector Strategy. It

was mostly addressed under the Ministry of Environment, Ministry of Physical Planning and Works in the form of IEE and EIA. The importance of health aspect on EIA was greatly realized in the later part of the project implementation. Nepal Health Research Council (NHRC) in 2004 further elaborated the initial document on Environmental Health Impact Assessment (EHIA)-2001, and developed an EHIA guideline based on the case studies of EHI case study reports with respect to health and made recommendations based on health consequences rating criteria for mitigating measures.

## 3. *Strategic Approach and Mitigation measure*

Environmental impacts associated with the health sector program should be identified. Some components are more directly associated with the adverse environment impact whereas some are less or not at all related to it. In terms of health sector program implementation, the following three key components of environmental impacts should be identified:

- HCW Management including the management of radioactive substances.
- Use of hazardous insecticides/pesticides
- Construction related environmental issues

Expansion of healthcare service delivery is expected to increase the generation of HCW. Improper handling and disposal of HCW has several environmental issues associated with it. It poses significant threat to both the people and the environment. The threat ranges from increasing the risk of spreading infections to increasing exposure to toxic emission from poor treatment and disposal practices. Therefore HCW management has been identified as one of the important element in health sector requiring EHIA.

Use of different types of insecticides for prevention and control of vector borne diseases particularly malaria and Kala-azar vector control is commonly practiced in high endemic areas in Nepal like many other countries in SEARO region. The use of such substances poses health risk to local residents, eco-system and person handling such substances. The range of healthcare service to be strengthened and expanded also includes control of vector borne disease requiring use of insecticides/ pesticides. Health risks arising from improper use of such toxic substances is therefore identified as an issue subjected to EHIA.

The program envisages expanding the health care service network, which is expected to involve construction of new facilities of different levels at different locations in the country. Besides the private sector, the MoHP itself is huge organization responsible for producing and managing a large quantity of HCW through the existing network of more than 5 central level hospitals, 3 regional hospital, 11 Zonal Hospitals, 82 District Hospitals, 208 Primary Health Care Centers (PHCs), 675 Health Posts (HPs), 3127 Sub-Health Posts (SHPs), 15,248 PHC Out-reach Clinics (ORCs) and 15,532 EPI ORCs in the country (DoHS, Annual Report 07/08). Construction activities if not managed properly, often leads to environmental impacts such as air, water, noise and land pollution as well as ecological degradation. The extent of such impacts largely depends upon the location of such facilities as well as the construction practices followed. Therefore, environmental

issues arising from construction activities are identified as an issue requiring further assessment.

### *a. HCW Management including radioactive substances.*

Health care wastes include anatomical, pathological and clinical infectious/ hazardous organic and inorganic waste including radioactive substances There are several kinds of health care waste (HCW), which have been divided into different categories such as health care general (solid) waste (HCGW), health care risk (solid) waste (HCRW) and health care liquid waste (HCLW). According to WHO guidelines it can be divided into the following sub-categories:

- Infectious waste (general infectious waste, including e.g. bandages and cotton and paper tissue with blood etc)
- Pathological waste (including e.g. body parts, foetus and placentas)
- Sharps (including e.g. used injection needles, scalpels and ampoules)
- Pharmaceutical waste (including e.g. outdated and spilled medicines, vaccines)
- Genotoxic waste (including waste from cancer treatment)
- Chemical waste (including discarded solid and liquid chemicals from e.g. laboratories, insecticides)
- Waste with high content of heavy metals (including e.g. broken mercury thermometers, chemicals for developing x-ray photos)
- Pressurised containers
- Radioactive waste (including solid, liquid and gaseous waste that contains radioactive isotopes).

HCW management is the one of the important critical environmental health issue associated with the program. It is a nation-wide problem and has severe implication in term of damaging the environment and affecting the health of people. The waste is disposed off in unscientific manner. Most wastes generated in healthcare facilities can be treated as regular municipal solid wastes (MSW). But a varying portion of HCW requires special attention, including sharps (e.g. needles, razors, scalpels). Othe HCW are pathological waste, other potentially infectious waste, pharmaceutical waste, biological waste and hazardous wastes. Collectively these wastes are normally called as "hazardous HCW" or "special HCW". In the recent years nosocomial infections from hospitals are widespread and becoming more important as a public health problem with increasing economic and human impact (WHO).

HCWM is an issue associated with all kinds of healthcare facilities including healthcare related laboratories, academic and research institutions etc. Such facilities are spread all over the country. Thus impacts associated with improper HCW management is expected to affect the entire country. Therefore the issue is rated "High" in scale. It is very hard to avail a reliable estimate of total quantity of HCRW in Nepal. Two surveys have been done in the paste, the first one in 1997 and second one in 2001 taking a few sampled hospitals in Kathmandu valley and produced different estimates. These estimation are based on the assumption that there is a set pattern of hospital occupancy rate and

approximate amount of waste produced by each patient per day (in-patient scenario) or per person per day (in the OPD scenario).

**Table: Survey on health care waste quantities in Nepal, 1997 & 2001**

| Source | HCW | HCRW | Remarks |
|---|---|---|---|
| TU/DCMFH, 1997 | 0.54 kg/patient/ | 0.16 kg/patient/ | Average of 11 HCF in Kath. |
| ENPHO, 2001 | 1.7 kg/person/day | 0.48 kg/person/day | Average of all HCF |

Under the given assumption they came up with the estimates that the health sector alone is producing HCRW more than 5,530 kg per day and a total of 2 018 450 kg per year

The impacts associated with improper management of HCW can damage the environment and affect the health of people both directly or/and indirectly. The stakeholders the get impacted due to improper HCW management are many which include, hospital staff including the workers who handle such wastes; the patients and attendants due to improper handling and storage of wastes within the healthcare facilities; the municipal workers due to improper containerization of HCW; the general public due to improper transport, treatment & disposal. Unless waste reduction measures are enforced and implemented, the generation of HCW is expected to continue as it is at the present. Thus, likelihood of impacts being caused from HCW management is high and therefore should be rated "High"

***Mitigation measure***

The present practice of HCW management in all most all the healthcare facilities in the country is not satisfactory despite the government effort to streamline it. The standards and guidelines on EHIA are appreciable however the problems range from lack of awareness to technical and financial constraints. Developing and implementing a strategy and action plan is therefore considered as the mitigation measure for this critical issue. The EHIA has therefore recommended in broader perspective so as to develop a strategy and Action Plan to achieve gradual improvement in HCWM.

Stake holders meeting deem necessary to review and develop appropriate strategy. The meeting/workshop will review the current status and be instrumental in the:

- Formulation of a vision & policy.
- Creation of appropriate institutional framework
- Building awareness and capacity at various levels
- Creating appropriate legal/regulatory framework
- Targeting phased implementation of HCWM programs in healthcare facilities
- Encouraging private sector participation in HCWM
- Making budgetary provision for HCWM

The HCWM Action Plan requires significant efforts at various levels ranging from creating awareness at grass root level to formulating policy/regulation to improve

HCWM. Accordingly a time bound action plan has been developed in line with the recommended strategy. The key activities included in the action plan are the following:

- Establishment of a HCWM coordinating agency at the center
- Making specific budgetary allocation of HCWM in the overall health budget
- Enacting HCWM legislation
- Developing of HCWM policy and guidelines
- Dissemination of HCWM policy and guidelines to all level
- Awareness and capacity building at various levels
- Detailed feasibility study of various technical options
- Establishment of a funding mechanism for HCWM activities
- Establishing a HCW Information Management System
- Implementing HCWM program
- Monitoring and evaluating the HCWM program

Cost associated with implementation of the Action Plan should be estimated. This should be done specifically under the various levels of health care facilities specific to the nature and type of HC wastes such as:

- The Tertiary Care Hospitals – includes Central Hospitals, Regional Hospitals, Zonal Hospitals, Teaching Hospitals and Private hospital/Nursing Homes providing specialized services
- District Hospitals, Primary Health Care Centers and Private Clinics
- Alternative health care facilities such as Ayurveda, Homeopathy and others
- Grass-Root level Health Care Facilities such as HPs, SHPs and ORCs

The implementation of the Action Plan and actual improvement in HCW management and its progress should be monitored and analyzed.

### *b. Use of hazardous Insecticides/Pesticides*

Use of hazardous insecticides poses health risks to both the people handling such substances as well as to general public. A higher concentration of such substances in the air is likely to cause health problems to people in the affected area. Similarly, spraying/handling of such substances without following proper procedures pose health risks to persons using/handling such substances. The issue is further assessed against the impact evaluation criteria as follows.

Use of insecticides/pesticides are expected to be limited to the improper handling and use of insecticides/pesticides are the staff who handle such substances; the general public in the affected area due to higher exposure to such substances. However, a review of the typical insecticides/pesticides being used by the Govt. revels that none of the substances fall into the extremely hazardous category of substances as per WHO's classification. The use of insecticides/pesticides is expected to be limited since it is used during epidemic and as a preventive measure, in the epidemic/high endemic areas.

Impacts associated with improper handling/use of insecticides/pesticides is overall evaluated to be moderate since the substance being handled/used do not fall under the extremely, hazardous category (as per WHO's classification).

***Mitigation measure***

As already discussed in earlier sections, the type of insecticides being used at present by the Department of Health services for control of vector borne diseases do not fall under the extremely hazardous category of substances as per WHO's classification. The Epidemiology and Disease Control Division of Department of Health services have developed specific guidelines and procedures for handling & use of such substances. These guidelines and procedures have been developed mostly in line with WHO's (ref: discussion with Epidemiology and Disease Control Division) requirements, adapted to the country's situation. These guidelines have been disseminated at all levels and periodic training programs are conducted for the working staff in this regard. During actual use of such insecticides, the working staff is supervised by officers from the Epidemiology and Disease Control Division. The Division has developed supervision protocol/checklists to ensure that such activities are undertaken in a proper manner. Issues associated with handling and use of insecticides therefore are not considered to be significant.

The insecticides used for vector control are required to be changed periodically in view of the increased resistance of insects to a particular insecticide. The decision to select the new insecticide, when required, is normally taken by the Epidemiology and Disease Control Division. While selecting new insecticides, it needs to be ensured that the information about the new insecticides including its harmfulness is disseminated to the staff as well as the public. It needed guidelines and procedures including the training contents need to be updated to reflect such changes.

### *c. Construction Related Environment Issues*

Environmental issues associated with the construction activities have been evaluated against the evaluation criteria as follows.

Construction activities would be restricted to area that is not covered under healthcare services and for those areas where improvement to the existing facilities are required. The impacts will be localized and hence issues associated with construction activities are rated 'moderate' on scale.

Unless good construction management practices are followed, construction activities can cause serious environmental pollution, ecological degradation and health and safety concerns to both workers and the public. The stakeholders that get impacted due to construction activities generally include the workers, the local residents and the environment.

Though the type and nature of construction activities in the Nepal Health Sector Program does not envisages large mega construction activities at present but can be anticipated in near future which can cause significance environmental impacts.

***Mitigation measure***

Environmental issues associated with construction activities have been voiced and it is significant. There are number of studies that raise the issue of health hazards related to the scale of construction under takings in the recent years. Close collaboration with the Ministry of Physical Planning and Works and mega/imperial builders is required

## *4. Conclusion and recommendation*

HCWM turns out to be the single most critical environmental issues in the health sector. There is poverty of research related to the nature and practice HCWM in Nepal. Hence:

- There is a need to carry out a study covering all sources generating HCW in the country, including large and small hospitals, health clinics, health posts and sub-health posts, nursing homes, veterinary clinics etc.

- The strategic approaches and mitigation measures should be included in the NHSP-II under the priority headings and the costing should be done with appropriate distribution of the responsibility

- The HCWM Strategy and Action Plan are considered a proxy to the evironmental Management Plan. While implementing individual HCWM projects involving treatment and disposal, such projects would need to comply with applicable regulatory provisions.

- In order to formulate very precise and appropriate strategies of HCWM in Nepal a careful desk review and case studies are required with adequate time frame.

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