

Standard for Green & Clean Hospital



ASSOCIATION OF HEALTHCARE PROVIDERS (INDIA)

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Published by:
Association of Healthcare Providers (India)
Ground Floor, Indian Medical Association House
Indraprastha Marg, New Delhi -110002, India

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Web : www.ahpi.in

Month and Year of Publication: January 2015, 1st Edition

Printed by;
Perfact Impression Pvt. Ltd.
2, Prem Nagar Market, Tyag Raj Nagar
New Delhi 110 003



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तुम्हारे स्वास्थ्य के लिए

Jagat Prakesh Nadda



लोक: , नुं ifjolj dY; k k e-h
Hjgr l j dly
Minister of Health & Family Welfare
Government Of India

Message

I am happy to learn that Association of Health and Providers, India (AHPI) has come out with GREEN & CLEAN Standard for Hospitals and which will be used by its vast number of member hospitals. It is widely Known that hospitals generate large quantities of infectious and hazardous waste. Hospitals also consume large amount of electricity for OT's ICUs, Diagnostic Centres and Wards, which generate greenhouse gas emissions. At the same time they need large quantity of water for medical services as well as for the land scabbing.

I understand that the GREEN & CLEAN Standards developed by AHPI provides guidelines to hospitals to optimise the energy consumption including electricity and water. It also provides guidelines for minimising use of paper including switching to Electronic Medical Records (EMR), which is one of the thrust areas of the Health Ministry.

I am also happy to learn that the Standard has specific focus on cleanliness, which coincides with the **SWACHH BHARTA ABHIYAN** launched under the leadership of Hon'ble Prime Minister. I hope that the Standard will be implemented by vast majority of hospitals in the country that will help them in improving the environment, cut down on waste, and help in improving affordability of healthcare services at large.

I wish AHPI all the success in their future endeavours

Place : New Delhi.

Date : 08.12.2014.


(Jagat Prakesh Nadda)

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Prakesh Javadekar



MINISTER OF STATE (INDEPENDENT CHARGE)
ENVIRONMENT, FORESTS AND CLIMATE CHANGE
GOVERNMENT OF INDIA



Message

I am indeed happy to learn that Association of Healthcare providers (India) has come out with GREEN & CLEAN Standards for Hospitals. GREENS & CLEEN in way is related to each other.

Government of India is committed to "SWACHH Bharat ABHIYAN" launched under the leadership of Hon'ble Prime Minister and it is nice to know standard has focus on keeping hospital CLEAN.

Hospital are known to be consuming large amount of electrical energy, which result into generating greenhouse gas emissions. Hospitals also require huge amount of water supply. Both these resources are precious. Hospitals also consume materials that could have toxic efforts, which includes MERCURY, CLEANING AGENTS and PESTICIDES etc. Hospitals also generate large quantities of Bio Medical Waste, which can have serious repercussions for environment and society at large.

I am happy that GREEN & CLEEN Standard for Hospitals, which has specially been developed for healthcare industry, will have huge impact in improving the environment. It will also help hospitals in conserving the energy, keeping them clean and help improving the affordability of healthcare services.

Ministry of Environment, Forests & Climate Change appreciate the initiative of AHPI and wish it all success in spreading the principals of GREAN & CLEAN among vast majoring of hospitals across the country.


(Prakesh Javadekar)

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PREFACE

Looking at the popular mandate for aggressive economic reforms, India is poised to be Healthcare is going to be emerging sector that will simulate economy and contribute to employment generation. Over 40-million new jobs are expected to be generated by 2020 in healthcare. Over and above healthcare industry assumes significant role in social equalizing, as it employs larger proportion of women workforce.

Healthcare industry has two major challenges. One concerns safety and other are afford ability. Safety comes through effective regulation and incentivizing quality, whereas afford ability is achieved by improving efficiency through optimal use of resources and cutting down of waste processes.

Association of Healthcare Providers (India), represents vast majority of Health Care Organizations. It is engaged in mission of building capacity in Indian health systems, with its motto; 'Advocating & Educating for Well Being of Common Man'. AHPI has come out with Green & Clean Standard for Health Care Organizations, which is first of its kind in Indian subcontinent.

Hospitals generate one of the most diverse and difficult to manage waste streams as compared to other organization. They generate hazardous waste as well as bio-hazardous waste. This waste is generated in close proximity of human beings and poses serious threat to the safety of hospital staff, patients, their associates and even communities around. It is therefore important that hospitals manage the environment addressing these concerns.

Environmentally sustainable hospitals can also help in lowering the cost of healthcare delivery. This happens as hospitals are encouraged to practice energy saving measures that include electricity, water, gases and other consumable, by adopting of environmentally friendly processes, eliminating unnecessary purchases, choosing environmentally friendly agents/re-agents, recycling etc. All such aspects are addressed within the standard.

The standard has been developed by the experts from hospital administration, pollution control boards and environment management systems. The standard covers all the processes; clinical as well as non-clinical and requires hospital to undertake regular waste management audit.

Cleanliness is integral part of being green and it plays key role in hospital safety through infection control. It is in this respect that certain important aspects of cleanliness have been integrated with green concepts and standard has so been named as GREEN & CLEAN HOSPITAL.



(Dr Girdhar Gyani)

Director General-AHPI

Standard for Green & Clean Hospital

Scope:

The standard for GREEN & CLEAN Hospital is intended to be used by vast majority of hospitals and nursing homes to establish a robust framework by way of structure, processes and outcomes, to comply with requirements for being an eco-friendly organisation. It can be adopted by all categories of health care organisations (HCOs), engaged in delivery of primary, secondary or tertiary level of health services. The standard is equally applicable for HCOs practicing ALLOPATHIC as well as AYUSH medicine systems.

Introduction:

We are aware about how the environment influences the human health through exposure to poor quality: air, water or even land. Adverse risk can come through physical, chemical or biological exposure. Hospital air quality and ventilation play important role in air concentration of pathogens which can result in adverse clinical outcomes. Many infections are acquired through physical contact and are result of improper hygiene or lack of cleanliness.

Hospitals function non-stop and in the process are known to generate huge amount of waste including infectious and hazardous solid waste. Hospitals consume huge water and electricity power. They operate air handling units, leaving environmental footprint in many ways, affecting staff, patients and community at large. Hospitals use toxic chemicals as cleaners, chemical sterilizers and as chemical reagents. Add to these are noise and radiation pollutions from variety of bio-medical equipment and radiological apparatus.

Hospitals are increasingly being referred to as place to cause stress among the patients and staff. The high grief exposure coupled with work pressure leads to higher stress among staff. In case of patients, stress comes more naturally. Eco- friendly hospitals by way of systematic interventions can provide soothing environment to limit the stress and even medical errors.

Hospital is place of healing. We need to ensure that it has robust systems in place, which mitigate the ill effects of environment, within the hospital premises and at the same time does not in any way impacts external surroundings adversely. GREEN & CLEAN standard provides necessary guidelines for effective environment, facilitating hospitals in managing bio-medical waste and in controlling infection. The standard aims at optimum utilization of resources like electricity, water and other consumables, helping hospitals in delivering,

safe and affordable healthcare to community.

In short, the GREEN & CLEAN hospital aims to mitigate ill effects of environment (GREEN) on patients and staff and even hasten the recovery process through infection free ambience (CLEAN). The compliance to this standard shall provide tangible economic benefits including the following;

1. Reduced raw material/ resource use
2. Reduced energy consumption
3. Improved process efficiency
4. Reduced waste management and disposal cost
5. Utilisation of recoverable resource
6. Reduced hospital acquired infection and therefore reduced patient length of stay.

Standard has been developed as framework, comprising of STRUCTURE-PROCESSES-OUTCOME. The hospital should develop basic environment management system addressing the requirements of the standard or suitably incorporate the requirements within the existing hospital system. The number of standards and objective elements are as per the table below;

Category	Standard	Objective Elements
Environment Management Requirement	1	3
Structural Requirement	4	34
Process Requirement	10	60
Outcome Requirement	1	3
Total	16	100

Note : The standard is CERTIFIABLE by AHPI Healthcare Certification Centre.

Standard for Green & Clean Hospital

Basic Environment Management Requirement

EMR-1	Hospital shall develop, document and implement basic environment management system to address the requirements covered in this standard.
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1. Hospital shall have documented policy towards GREEN & CLEAN concepts and ensure that it is communicated and implemented at appropriate levels within the hospital.
2. Hospital shall designate member of senior management to ensure compliance of the standard.
3. The Management shall review the outcomes of all the objective elements on regular basis and ensure timely corrective actions. The management shall also review the decisions taken by various committees in reference to adherence of the standard.

Structural Requirement

SR-1	Organization shall have a defined criteria for construction requirement
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1. The Hospital shall fulfill the norms of local statutory bodies, towards environment protection and safety.
Remarks: This shall include design, construction, renovation, expansion, and operation of health care facilities.
Guidance Note: Hospital shall follow National Building Code 2005 guidelines. Indian Public Health Standards (IPHS) 2011 (revised) guidelines for district hospitals can also be followed.
2. Hospital shall ensure that approved up-to-date drawings are maintained with the site layout, floor plans, and fire escape routes.
Remarks: The up-to-date layout plan should have an approval from Municipal Corporation / local bodies or Panchayat.
3. Hospital shall have a strategy for selection of site of construction.
Remarks: Hospital shall avoid development of inappropriate sites to reduce the environmental impact.

These sites shall include the following:

Greenfield sites are places that have never been built on before.

Brownfield sites are places that have been built on before but now are disused.

Grey field (are similar to brown field) sites are economically obsolescent, outdated, failing, moribund and/or underused real estate land.

Guidance Note: Environmental Impact Assessment by approved agency is recommended before starting the construction, Coastal Regulation Zone notification & the Biological Diversity Act requirements should be considered if applicable.

Environment Protection Act (EPA), 1986 - An Act to provide for the protection and improvement of environment and for matters connected there with. Managing Your Environmental Responsibilities: A Planning Guide for Construction and Development, EPA/305-B-04-003, can also be used as a good guiding reference.

4. Hospital shall ensure conservation and preservation of available natural resources.

Remarks: Hospital shall ensure optimization of the use of natural resources (water, land, soil etc.) during construction. Efforts shall be made to plan for rain water harvesting at the construction site.

Guidance Note: 'Rainwater Harvesting' is an important component for achieving the goals of 'Water Security, Shelter Security and Ecological Security' enunciated in the Hon'ble Chief Minister's 15 Point programme. The Kerala Municipality Building Rules, 1999, amended by a notification dated January 12, 2004 (Local Self Government Department Notification) includes mandatory rain water harvesting.

5. Hospital shall have a plan & monitoring mechanism during construction to reduce noise pollution, air pollution, soil erosion and airborne dust generation.

Guidance Note: Managing Your Environmental Responsibilities: A Planning Guide for Construction and Development, EPA/305-B-04-003. Air (P & C. P) Act, 1981 and the applicable rules there under and Noise Pollution (Regulation and Control) Rules, 2000.

6. Hospital management shall ensure that environmental aspect impact studies shall be carried out for hazard identification & risk assessment (HIRA) for material usage in construction.

Remarks: Hospital management shall ensure that the material used for construction is not harmful for the occupants, environment and neighbours.

Guidance Note: HIRA study to prevent, prepare, mitigate, respond and recover from a myriad of hazards should be initiated. Emergency Management and Civil Protection Act, Ontario, provides guidance for risk assessment for natural, technological and man-made hazards.

The Chemical Accidents (Emergency Planning, Preparedness, and Response) Rules, 1996 can be a good reference point for preparedness and response, during operation of on-site and off-site Emergency Plans during chemical disaster.

SR-2	Organization shall have a defined criteria for facility requirement
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1. Hospital management shall ensure that it complies with the laid down and applicable legislations and regulations required for the facility.

Remarks: Hospital shall ensure optimal natural open space for the patients, families and staff members.

Guidance Note: National Building Code (NBC) 2005 and IPHS 2011 (revised) guidelines for district hospitals can be referred.

2. Hospital shall adhere to statutory norms to ensure facility, patient and staff safety in all areas

Remarks: Objective of facility safety is to provide employees with a safe and healthy workplace. A safe work environment ensures continued productivity by minimizing lost work days and work restrictions due to injuries.

Guidance Note: A good reference is Health Technical Memorandum (HTM) 2022 and NFPA's Medical Gas and Vacuum System Installation Handbook.

The organization shall adhere to statutory provisions of Indian Explosive Act, Gas Cylinder Rules and Static and Mobile Pressure Vessel (unfired) Rules.

Occupational Safety & Health Administration (OSHA) 1970 standards provide information on the rule making process for workplace health and safety.

OHSAS 18001 is an international occupational health and safety management system specification can also be referred to.

3. Hospital shall ensure optimal natural light in all facility areas.

Remarks: Hospital shall ensure that light pollution is not created. (Light pollution is excessive, misdirected, or obtrusive artificial light).

4. Hospital shall ensure effective site development planning and material containment within the construction site.

Remarks: Site development and boundary planning shall be done so that the neighbourhood is least impacted.

Guidance Note: Managing Your Environmental Responsibilities: A Planning Guide for Construction and Development, EPA/305-B-04-003.

Federal Environmental Requirements for Construction, EPA305-F-03-007, www.

epa.gov

5. Hospital structure shall provide proper sidewalk, free standing facility for public transport, parking to satisfy patient & staff requirement and roads to avoid impacting neighbourhood by its structure.

Guidance Note: Managing Your Environmental Responsibilities: A Planning Guide for Construction and Development, EPA/305-B-04-003

Federal Environmental Requirements for Construction: What Do You Need to Consider? EPA305-F-03-007, www.epa.gov

6. Hospital shall ensure contamination detection, monitoring and prevention plan within the facility

Remarks: Community is not contaminated by any kind of leakage and spills in air, material or water.

Guidance Note: Patient decontamination recommendations for hospitals, prepared by The Hospital and Healthcare System Disaster Interest Group & The California Emergency Medical Services Authority, EMSA #233, July 2005.

Environment (Protection) Act, 1986 and Rules

The Chemical Accidents (Emergency Planning, Preparedness, and Response) Rules, 1996

7. Hospital shall ensure that Heating, ventilation and Air-conditioning (HVAC) shall protect the environment & not contaminate the environment in any form.

Guidance Note: American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHARE) guidelines and Indian Society of Heating, Refrigerating and Air-conditioning Engineers (ISHRAE/RAMA/AHRI) Standard 365- 2009 can be good resource.

Environment (Protection) Act, 1986 and Rules

National Ambient Air Quality Monitoring Series; NAAQMS/2003-04

Guidelines for Ambient Air Quality, Monitoring, CPCB, April 2003

Carbon Dioxide Monitoring for Indoor Air Quality, Application Note: AN1/2012/04 are some of the reference documents like NABH OT Guidelines 2014 3rd edition.

8. Hospital shall ensure that it establishes criteria for evaluation & acceptance of the environment friendly material usage for the facility.

Remarks: Eco-friendly means earth-friendly or not harmful to the environment. This term most commonly refers to products that contribute to green living or practices that help conserve resources like water and energy. Eco-friendly products also prevent contributions to air, water and land pollution.

Guidance Note: Plastics Manufacture and Usage (Amendment) Rules, issued by Ministry of Environment and Forests, Notification on 17th June, 2003

9. Hospital shall ensure that required scavenging systems are installed for keeping the facility safe.

Remarks: Scavenging system is the collection and subsequent removal of waste anaesthetic gases. Anaesthesia Gas Scavenging System (AGSS) should be installed in all areas where anaesthetic agents are being used.

Guidance Note: BS EN 740:1999 can be followed for AGSS

10. Hospital shall ensure that cleaning of clinical areas like OT, ICU & other high risk area and cleaning of the facility is maintained all the time by establishing cleaning protocol and process for the entire building and all the areas in the hospital especially areas like Toilets, lifts, storages, kitchen, maintenance yard, roof top etc.

Remarks: self explanatory

11. A checklist can be prepared and schedule to be adhered in accordance to institutional priority.

Remarks: self explanatory

SR-3	The organization shall have a plan for optimum usage and conservation of water resources.
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1. Hospital shall have a plan for water usage for the whole facility which includes measurement, reduction and verification.

Remark: Water conservation shall encompass the policies, strategies and activities to manage fresh water as a sustainable resource, to protect the water environment, and to meet current and future human demand.

Water Footprint can be identified as a parameter for water performance monitoring as per ISO 14046. Water meters at different areas should be installed to measure the flow.

Guidance Note: Water (P & C. P) Act, 1974 and the applicable rules there under, Water (P & C. P) Cess Act, 1977 and the applicable rules.

2. Hospital shall have a plan and process for accountability and optimization of building water performance.

Remark: This shall improve the accountability of water performance in Hospital2

Guidance Note: A good reference is Handbook on Optimizing Water Treatment Plant Performance, 1998 and Energy Performance Optimization Guide, NRDC, Nov 2012.

Water (P & C. P) Act, 1974 and 1977 and the applicable rules there under.

3. Hospital shall have a water conservation strategy.

Remarks: Hospital shall have an alternate source of water available at the facility. Water balance shall be based on the law of conservation of mass, which should be implemented to optimize withdrawal, consumption and discharge.

4. Hospital shall have a plan for usage of potable water.

Remarks: Potable water is defined as water which is fit for drinking. The parameters which need to be evaluated are; colour, turbidity, pH and the organoleptic (aesthetic) parameters (taste and odour) along with coliform counts.

Hospital shall ensure disinfection of water: use of Chlorine 0.2 ppm.

Hospital shall ensure softening of water, wherever required.

Guidance Note: INDIAN STANDARD SPECIFICATIONS FOR DRINKING WATER, IS: 10500, DRINKING WATER SPECIFICATION: IS: 10500, 1992 (Reaffirmed 1993)

5. Hospital shall have a plan for recycling of water.

Remark: Water recycling is reusing treated wastewater for beneficial purposes such as landscape irrigation, toilet flushing, and replenishing ground water basin.

Guidance Note: Water (P & C.P) Act 1974 and 1977.

6. Hospital shall obtain consent from PCB for waste water treatment

Guidance Note: National guidelines on bio medical waste management, under Bio Medical Waste (Management & Handling) Rules 1998.

7. Hospital shall have a plan for installing an aerobic/oxygenated sewage treatment system where effluents can be used for irrigation.

Remarks: Effluent treatment plant should remove biological or chemical waste products from water, thereby permitting the treated water to be used for other purposes.

Guidance Note: National guidelines on Bio medical waste management, under Bio medical waste (Management & Handling) Rules 1998

8. Hospital shall have an ongoing educational program for efficient usage and conservation of water for all stakeholders (staff, patient and visitors).

Remark: Education content should be prepared for all faculty and staff. Booklets, brochures and boards can be used for Information Education and Communication (IEC) for public.

SR-4	The organization shall have a plan for optimum usage and conservation of energy resources.
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1. Hospital shall have a plan for installation of energy system compliant to statutory norms.

Guidance Note: Electricity Act 2003 & Electricity Rules 2005.

PJM Manual 18B: Energy Efficiency Measurement & Verification Revision: 01 Effective Date: March 1, 2010 prepared by PJM Forward Market Operations

2. Hospital shall develop an energy conservation plan.

Remark: Energy conservation refers to reducing energy consumption through using less of an energy service. This is the most cost-efficient way to reduce energy use.

Guidance Note: Energy Conservation Act, 2001 (52 of 2001) is a good reference note. It deals with Designated Consumers, Standards and Labeling of Appliances, Energy Conservation Building Codes, Creation of Institutional Set up (BEE) and Establishment of Energy Conservation Fund.

PJM Manual 18B: Energy Efficiency Measurement & Verification Revision: 01 Effective Date: March 1, 2010 prepared by PJM Forward Market Operations

3. Hospital shall have a strategy for optimization of energy usage and saving.

Remarks: Energy optimization refers to systematic controlled reduction in the voltages received by an energy consumer to reduce energy use and power demand.

Guidance Note: A good reference is Energy Performance Optimization Guide, NRDC, November 2012.

PJM Manual 18B: Energy Efficiency Measurement & Verification Revision: 01 Effective Date: March 1, 2010 prepared by PJM Forward Market Operations

4. Hospital shall have proper accountability for measurement and verification of all energy usage

Remarks: Self explanatory

Guidance Note: Energy Conservation Act, 2001 (52 of 2001) is a good reference note. It deals with Designated Consumers, Standards and Labeling of Appliances, Energy Conservation Building Codes, Creation of Institutional Set up (BEE) and Establishment of Energy Conservation Fund

5. Hospital shall develop a plan for usage of renewable energy.

Remarks: Renewable energy is defined as energy that comes from resources which are naturally replenished on a human timescale such as sunlight, wind, rain

and geothermal heat. This shall be planned for self-supply to reduce impact on environment. Hospital can focus more on generation of solar energy, biogas etc.

Guidance Note: Strategic Plan for new and renewable energy sector for the period 2011-17, Ministry of New and Renewable Energy, 2011.

National Policy on Biofuels, Ministry of New and Renewable Energy, GOI.

6. Hospital shall have a plan for refrigerant management so it does not impact the environment

Remark: Refrigerant management plan includes existence of practices that maximize recovery and recycling of ozone-depleting substances (both chlorofluorocarbons [CFCs] and hydrochlorofluorocarbons [HCFCs] and their blends) during the servicing and disposal of air-conditioning and refrigeration equipment.

Hospital shall ensure phasing out of the ODS (Ozone depleting substances) as refrigerant.

Guidance Note: Ozone Depleting Substances (Regulation and Control) Rules, 2000.

Electricity Act 2003 & Electricity Rules 2005

Environment Protection Act, 1986

7. Hospital shall ensure energy audits of the building.

Remarks: An energy audit is an inspection, survey and analysis of energy flows for energy conservation in a building, process or system to reduce the amount of energy input into the system without negatively affecting the output(s).

Guidance Note: Bureau of Energy Efficiency under Ministry of Power, GOI.

Electricity Act 2003 & Electricity Rules 2005.

8. Hospital shall have a policy of using energy efficient equipment and this policy shall be in congruence with the purchase policy.

Remarks: Energy Efficiency is defined as percentage of total energy input to a machine or equipment that is consumed in useful work and not wasted as useless heat

Guidance Note: A good reference point is Energy Star, a joint program of the EPA and US Department of Energy, offering a catalogue of energy-efficient products.

Council of Australian Government (COAG) policy on National Strategy on Energy Efficiency, Oct 2008.

Electricity Act 2003 & Electricity Rules 2005

9. Hospital shall have an ongoing educational program on conservation of energy

resources for staff, patient and / or family member.

Remarks: Training and development calendar should be prepared and feedback of each training programme should be taken for adequate evaluation.

Process Requirement

PR-1	The organization shall have a process for purchase and procurement
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1. Hospital shall have a good building management plan in place.

Remarks: The plan should include total cost of ownership approach strategies around Procurement, Reduction, Use- Phase Management, Responsible Reuse, and Responsible Recycling.

Guidance Note: For good building management plan refer to Guidelines for The Construction Establishment And Maintenance Of Private Hospital And Day Procedure Facilities, Australia, 3rd edition 1998.

2. Hospital shall have an asset management plan.

Remark: An Asset Management Plan (AMP) is a tactical plan for managing an organization's infrastructure and other assets to deliver an agreed standard of service.

Guidance Note: A good guidance document can be Guidelines for Infrastructure and Asset Management Plan Template, draft v6 for pilot council review, Sept 2006

Essentials of asset management, a Zetes white paper, www.zetes.com

3. Hospital shall ensure that there is a documented purchase plan.

Remark: A good purchase plan shall have a process for the project and plan for the most effective management of procurement. Hospital shall include purchase of environment friendly materials which can be reused or recycled as per manufacturers' recommendations.

Hospital shall have an evaluation criterion of the supply chain with regards environment performance

Guidance Note: A good reference note is Essentials of Asset Management, a Zetes white paper and U.S. Department of Health and Human Services Medicare Hospital Value-Based Purchasing Plan Development.

4. Hospital shall ensure to procurement of environment friendly products.

Remarks: The product purchased shall be be less toxic, minimally polluting, more energy efficient, safer and healthier for patients, workers, and the environment. The product shall contain higher recycled content, have less packaging and be

fragrance-free.

Eg: Predictive digital thermometer, use of PVC-free packaging, PTCA Balloon Catheter for various types of therapies

Guidance Note: Environment (Protection) Act, 1986 and the Rules

North American Green Purchasing Initiative (NAGPI), A Buyer's Guide, www.cec.org/nagpi

5. Hospital shall have a purchase plan in line with infection control, cleaning processes and administrative (cost) policies.

Guidance Note: Environment (Protection) Act, 1986 and the Rules and North American Green Purchasing Initiative (NAGPI), A Buyer's Guide, www.cec.org/nagpi

6. Hospital shall establish a purchasing programme (environmentally preferable) and ensure that procurement of cleaning and other janitorial products supports the programme.

Remarks: Hospital shall ensure procurement of material for cleaning (housekeeping) that are environmentally benign or that are less toxic than other products, while still maintaining the high level of cleanliness required within the facility.

Guidance Note: Environmentally Preferable Purchasing Programme, 1993 and North American Green Purchasing Initiative (NAGPI), A Buyer's Guide, www.cec.org/nagpi

7. Hospital shall have a purchasing policy that reduces purchase of mercury containing equipment unless it is approved by Hazardous Materials Committee (or equivalent).

Remarks: Hospital shall ensure that no equipment contains toxic chemicals, especially mercury. In addition to biological materials like blood, body fluids and microbiological cultures, mercury, nuclear isotopes, medical gases, LPG gas are examples of hazardous material

Guidance Note: Hazardous Materials could be identified as per part II of Manufacture, Storage and Import of Hazardous Chemical (Amendment) Rules, 2000.

Eliminating Mercury in Hospitals, Environmental Best Practices for Health Care Facilities November 2002, JCAHO. Environment of Care Standards, 1.3, 2.3, 4.0.

8. Hospital shall have plan for end-of-life management for purchased or inherited equipment till final disposition, including take-back, refurbishment, resale, and responsible donation or recycling.

Remarks: End of Life Management defines waste as substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of – Basel Convention¹ on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (the 'Basel Convention').

Hospital shall ensure product register guidance of the ideal end of life usage of the equipment.

9. Hospital shall develop and implement an office supply and product purchasing policy (environmentally preferable) and educate employees on the environmentally preferable office products.

Remarks: Hospital shall have periodic calibration of office equipment with respect to environment friendly purchasing and market availability of those products.

Hospital shall have a furniture purchase plan by using environmentally preferred material and in line with infection control and cleaning processes.

Hospital shall ensure that furniture is less toxic, less harmful and environment friendly.

Guidance Note: Eliminating Mercury in Hospitals, Environmental Best Practices for Health Care Facilities, November 2002, JCAHO. Environment of Care Standards, 1.3, 2.3, 4.0

10. Hospital shall ensure that sets goal are enumerated for the elimination of harmful chemicals products. At a minimum, the chemicals policy shall require the development of a plan of action to address classes of chemicals of concern and HAZMAT (Hazardous Material) shall be carefully evaluated.

Remarks: Hospital shall ensure that sets goal are enumerated for the elimination of harmful chemicals products. At a minimum, the chemicals policy shall require the development of a plan of action to address classes of chemicals of concern.

Guidance Note: Guide to Choosing Safer Products and Chemicals Implementing Chemicals Policy in Health Care.

North American Green Purchasing Initiative (NAGPI), A Buyer’s Guide, www.cec.org/nagpi

11. Hospital shall have a purchasing policy for vehicles after evaluating the type, size and the number of vehicles required to meet the needs of the facility.

Remarks: Emission performance of the vehicles shall be evaluated on regular intervals. Hospital shall own, contact or lease low emitting and fuel-efficient or alternative fuel (e.g. Biodiesel, compressed natural gas or liquid propane) vehicles.

Guidance Note: Motor Vehicle Act 1988 and The Central Motor Vehicle Rules 1989

PR-2	The organization shall have a process for material planning and management
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1. Hospital shall have documented policy and procedures for the selection of

environment friendly materials and resources used during construction or renovations.

Remarks: This shall also include interior furnishings and furniture.

Guidance Note: Healthy Hospitals Healthy planet Healthy people - Addressing climate change in health care settings

North American Green Purchasing Initiative (NAGPI), A Buyer's Guide, www.cec.org/nagpi

- Hospital shall purchase or use materials which have less environmental impact in all areas (construction, structure of facility, furnishing, food, cleaning agents etc.)

Guidance Note: Federal Environmental Requirements for Construction, What Do You Need to Consider? EPA305-F-03-007, www.epa.gov

- Hospital shall use materials which help in toxic waste reduction.

Remarks:

- Hospital shall prefer usage of material which can be easily recycled.

Remarks: self explanatory

- Hospital shall try to eliminate usage of mercury, lead and carcinogenic items.

Guidance Note: Eliminating Mercury in Hospitals, Environmental Best Practices for Health Care Facilities, November 2002, JCAHO, Environment of Care Standards, 1.3, 2.3, 4.0

PR-3	Hospital shall have a process for indoor and outdoor environment management
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- Hospital shall demonstrate initiative by maintaining good indoor and outdoor environment.

Remarks: Hospital shall have walkways, greenery, landscaping, waste management, environment friendly transport etc.

Guidance Note: Green Guide for Health Care (GGHC) Version 2.2, 2008 Revision

- Hospital shall have a plan for maintaining good indoor air quality, lighting and ventilation.

Remarks:

Guidance Note: WHO, 1987. Air Quality Guidelines for Europe, World Health Organization, Regional Office for Europe, European series, No 23, Copenhagen, Denmark.

WHO, 2002. Health Effects of Indoor Air Pollution in Developing Countries. 41 pp.

National Ambient Air Quality Monitoring Series: NAAQMS/ 2003-04, Guidelines for Ambient Air Quality, Monitoring, CPCB, April 2003

Carbon Dioxide Monitoring for Indoor Air Quality, Application Note: AN1/2012/04

Air (P & C. P) Act, 1981 and the applicable rules there under

3. Hospital shall ensure use of low emitting materials used in the facility.

Remarks: Usage of material that contain none or reduced amounts of persistent bio accumulative and toxic chemicals (PBTs), Volatile Organic Compounds (VOCs), Semi-volatile Organic Compounds (SVOCs), Halogenated Fire Retardants (HFR), Heavy Metals phthalates, Perfluorochemicals (PFCs) and other chemicals that can cause harm to installers, staff, patients and visitors.

Guidance Note: Environment (Protection) Act, 1986 and the Rules

4. Hospital shall have a policy for correctly labelling and properly storing all chemicals as per manufacturers' recommendations.

Remarks: HAZMAT shall be identified at each location with proper signages and segregation. MSDS (Material Safety Data Sheet) shall be displayed for all HAZMAT ar each location.

Guidance Note: MSIHC Rules 2000

5. Hospital shall have no smoking policy to ensure tobacco free zone.

Remarks: Self explanatory

6. Hospital shall have a plan to ensure chemical and pollutant source control

Remarks: Hospital shall ensure that pesticides and other chemicals used on the exterior of the facility are applied safely by a trained professional and that only the amounts required are used.

Guidance Note: MSIHC Rules 2000

PR-4	Organization shall have a process for housekeeping and cleaning agents with defined criteria considering performance / people / planet and pricing
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1. Hospital shall have housekeeping and cleaning policies and procedures in accordance with the size and complexity of the services and shall be aligned with green hospital standards.

Remark: Hospital shall have a selection procurement committee which gets guidance from Infection Control Committee. The hospital shall have procedures to assist the housekeeping personnel to carry out their assigned duties while practicing

infection control activities.

Guidance note: A good reference is CDC Guidelines for Disinfection and Sterilization in Health Care Facilities, Quality Manual for ISO 9001:2008.

- Hospital shall have defined criteria for selection of housekeeping products.

Remark: Criteria for selection shall refer to use of NON HAZARDOUS CLEANING AGENTS. These are agents that reduce environmental pollutants; dialysis / haemodialysis cleaning agent should be non-formalin, and where no alternatives are available like storing pathological specimens in formalin, Hospital shall otherwise not use formalin products. Hospital shall ensure reduction of Volatile Organic Compound (VOC) emissions inside and outside buildings.

Guidance Notes : A good reference point is criteria for selection in Environmental Best Practices for Health Care Facilities | November 2002 , JCAHO Environment of Care Standards 1.3,2.3,4.0.

Guidelines for Buying Environmentally Preferable Products.

- Hospital shall have a protocol for Cleaning of Products, Materials and Equipment (environmentally Preferable)

Remark: Hospital shall procure cleaning products and materials that are environmentally benign or that are less toxic than other products while still maintaining the high level of cleanliness required in the facility.

Hospital shall prohibit products that are manufactured with carcinogens, mutagens and teratogens aerosols; asthma-causing agents (asthmagens), respiratory irritants, and chemicals that aggravate existing respiratory conditions. Usage of aldehyde products for fumigation and fogging should be banned.

Guidance Note: A good reference is CDC Guidelines for Disinfection and Sterilization in Healthcare Facilities, 2008

Guidelines for Buying Environmentally Preferable Products

Environment (Protection) Act, 1986 and the rules

- Hospital shall have an ongoing induction training programme for all the housekeeping staff for the cleaning of all the areas in the hospital.

Remarks: Hospital shall have an annual training programme for all the staff.

PR-5	The organization shall have a process for management of waste
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- Hospital shall comply with all biomedical waste management rules.

Remark: Hospital shall ensure biological waste should be disposed as recommended by national regulations. Biomedical waste must be properly managed and disposed

of to protect the environment, general public and workers, especially healthcare and sanitation workers who are at risk of exposure to biomedical waste as an occupational hazard.

Guidance Note: Refer to BMW Rules 1998, and SPCB, Environment (Protection) Act, 1986

National Guidelines on Bio medical Waste Management, under Bio medical waste (Management & Handling) Rules 1998

2. Hospital shall have a process to review and improve the waste management plan preferably through a committee consisting of all stake holders.

Remark: The Hospital Waste Management Advisory Committee shall periodically review the implementation of the rules and recommend amendment. Hospital Waste Management Committee shall establish a policy that seeks to reduce overall waste generation. It shall ensure that all medical waste is properly segregated at the point of origin into properly labeled receptacles, i.e. avoid mixing infectious and other medical waste with general garbage; ensure that staff is aware of and trained in the requirements of the waste plan.

Hospital Waste Management Committee shall ensure that plastics, anything containing PVC, batteries, mercury containing products and materials treated with flame retardants are not incinerated along with other medical waste as they release toxic and carcinogenic compounds into the air when incinerated

Guidance Note: Infection Control Committee can be a part of Waste Management Advisory Committee.

3. Hospital shall have a protocol for collection, transportation, storage and handling of all kinds of waste.

Remark: Hospital shall have a waste management plan for all waste including recyclable, hazardous, bio medical and e -waste and materials. Waste shall be tracked along with a reporting mechanism for its weight or volume and associated cost information.

Guidance Note: ISO 14051 may be identified as a guidance document.

WFN garbage Collection, Law no. 2005-6, Protocol for Disposal of Bio Medical Waste.

National Guidelines on Bio medical waste management, under Bio Medical Waste (Management & Handling) Rules 1998.

4. Hospital shall have documented policies and procedures to achieve zero waste through composting and/or recycling and the operations and procurement shall align with the same goal.

Remark: Zero waste maximizes recycling, minimizes waste, reduces consumption

and ensures that products are made to be reused, repaired or recycled back into nature or the marketplace.

Guidance Note: A good reference to achieve zero waste is UCLA Zero Waste Plan, World Health Organization publication on Safe Management of Wastes from Health Care (Geneva, 1999),

National Guidelines on Bio Medical Waste Management, under Bio Medical Waste (Management & Handling) Rules 1998.

World Health Organization publication Safe Management of Wastes from Health Care (Geneva, 1999),

Center for Disease Control, Standards for Management of Infectious Wastes, Atlanta, GA

5. Hospital waste management plan shall have documented policies and procedures to prevent contamination of the land associated with improper disposal of toxic, hazardous, infectious or radiological substances.

Remark: Hospital shall make efforts to prevent land pollution. Land pollution is defined as any physical or chemical alteration to land which causes its use to change and render it incapable of benefits thereon.

Guidance Note : National Guidelines on Bio Medical Waste Management, under Bio Medical Waste (Management & Handling) Rules 1998.

Hazardous Wastes (Mgt., Handling & Transboundary Movement) Rules, 2008

6. Hospital shall have a defined process to select contractors for solid, medical or hazardous waste treatment and shall ensure periodic review.

Remark: Hospital shall verify selected contractors who are licensed and permitted by the state.

Guidance Note: A good reference is solid waste management. A Guide to Competitive Contracting For Collection Guide No. 16, August 1996.

Solid Waste Management Privatization Procedural Manual Medical Waste Collection, Treatment and Disposal.

7. Hospital shall ensure that a solid waste facility is in place.

Remark: Solid wastes are described as residual products which have potential for soil and groundwater contamination

Guidance Note: A good reference is Solid-Waste Management A Guide to Competitive Contracting For Collection Guide No. 16, August 1996.

Solid Waste Management Privatization Procedural Manual Medical Waste Collection, Treatment and Disposal

8. Hospital shall ensure that liquid waste management is in place

Remarks: Hospital shall have an effluent treatment plant in accordance with the guidelines of State Pollution Control Board. The hospital shall ensure that a sewage treatment plan is in place and waste water is treated before it is released the water in municipal drains or reused.

9. Hospital shall have clear defined roles and responsibilities of all staff members towards participation in environmental programme.

Remarks: A matrix can be designed for all stakeholders.

10. Hospital shall have an educational program for new and existing employees regarding its waste management plan.

Remark: Hospital shall conduct orientation classes on biomedical waste management for all staff members

PR-6	Hospital shall have a process for food purchasing that supports human and ecological health
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1. Hospital shall have sustainable food purchasing policies and procedures.

Remarks: A sustainable food purchasing policy shall enable the institution to move from isolated projects, sustained by the interest and involvement of a few people, to an institutional framework for understanding and making change towards a more sustainable food system.

Guidance Note: City of Minneapolis Local and Sustainable Food Purchasing Policy (DRAFT) May 2011.

Sustainable Food: A guide for hospitals Ben Bradshaw Minister of State for Health, April 2009

2. Hospital shall have a policy for food service-ware which shall also be environmentally preferable material.

Remark: Selection of environment friendly food service ware shall ensure use of less energy and generates much lower levels of air and water pollutants. It also ensures less solid waste in its production, use and disposal.

Guidance Note: Choosing Environmentally Preferable Food Service Ware. Reusable and Sustainable Bio-based Products, Health Care Without Harm. Retrieved. July 26, 2009.

3. Hospital shall develop and implement a purchasing programme for non-food service ware.

Remarks: All paper-based items - napkins, paper towels, wipes, tray liners etc. shall be procured such that they fulfil environmentally preferred material criteria.

Guidance Note: Greening Your Purchase of Food Service-ware Environmental Protection Agency. Retrieved July 26, 2009.

4. Hospital shall develop and implement a food waste reduction programme.

Remarks: A food waste reduction programme shall encourage businesses to contribute to a more sustainable economy by building waste reduction into design and delivery new and improved products and services. Hospital can have donation programme for usable food.

Guidance Note: Preparatory Study on Food Waste Across EU27 Technical Report – Oct, 2010

Putting Surplus Food To Good Use – EPA, United States Environment Protection Agency

5. Hospital shall facilitate recycling of food.

Remarks: Recycling of food shall reduce solid waste disposal in landfills. It can also save a lot of money and cause less impact on the environment.

Guidance Note: Technical Guidelines for Food waste Recycling Projects in Housing Estates, Environment Protection Department, July 2013

Turning Food Waste into Compost or Energy, Pierce County Coalition for Environmental Health Priorities

6. Hospital shall minimize toxic chemical use in food services preparation and service areas, including cleaning chemicals and pest management.

Remark: Hospital shall use environmentally preferable cleaning products to clean food preparation and food service areas (cafeterias), kitchen equipment, surfaces and dishware.

Guidance Note: U.S. Environmental Protection Agency (EPA), Efficacy Data Requirements for Sanitizing Rinses (for previously cleaned food-contact surfaces). Jan. 30, 1979.

U.S. Environmental Protection Agency (EPA), 40 CFR Parts 152, 156, and 158. Exemption of certain pesticide substances from Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements. Amended 1996. Federal Register 1996;61:8876-9.

7. Hospital shall have a process for evaluation of the suppliers, which fulfils environmental impact material criteria.

Remark: Environmental impact materials are the unwanted byproducts of economic activities which alter environmental conditions such as the acidity of soils, the nutrient content of surface water and the radiation balance of the atmosphere.

Guidance Note: Assessing the Environmental Impacts of Consumption and

Production Priority Products and Materials. United Nations Environment Programme (UNEP), 2010

8. Hospital shall have a green cafeteria plan.

Remark: Hospital shall have public cafeteria services which shall eliminate usage of bottled water and encourage the use of reusable containers and public drinking fountains.

Guidance Note: Buying for a Better World: A Guide for Sustainable Procurement in the UN UNEP, (2011).

9. Hospital shall have an educational programme for patient and staff to encourage consumption of food that support and human and ecological health.

Remark: Hospital shall use educational posters and sessions about food that support human and ecological health

PR-7	Hospital shall have an educational and training programme for all stakeholders
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1. Hospital shall have an educational programme for staff, integrating environmental programme and its impact on human health.
2. Hospital shall have an infection control training programme emphasizing specially on maintenance of clean environment, neighbourhood to avoid infections.
3. Hospital shall also have awareness and training programme for Hand washing for all the staff, visitors and patients in the hospital.
4. Hospital shall define a training and assessments tools for all the teams to establish a sustainable process to maintain the standards.

PR-8	Hospital shall have innovations in operation to contribute to green practices
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1. Hospital shall define key organizational stakeholders and involve them in ongoing cross discipline decision-making processes, procedures, protocols and continuous improvement plans.
2. Hospital shall demonstrate a cross discipline approach in operations and maintenance decision-making to ensure implementation of safe, healthful, environmentally sensitive methods and materials.
3. Hospital shall also demonstrate a reward and incentive plan for beneficial environment friendly initiatives.

PR-9**Hospital shall have a community and neighbourhood benefit programme**

1. Hospital shall develop a communication and an educational programme integrating safe and clean environment practices and its impact on human health.

Remarks: This shall include awareness and education of patients, visitors, and the community.

2. Hospital shall have training material for educating patients and the community by developing educational posters, newsletters for a patient education campaign.

Remarks: Public health education campaign in language understood by the staff and community.

3. Hospital shall demonstrate initiative in creating and enhancing awareness among patients, visitors, service providers, vendors and the community about environmental sustainability and its human health benefits.

PR-10**Hospital shall ensure usage of new techniques and designs to maintain green standards**

1. Hospital shall innovate or demonstrate usage of new technique / s and designs to ensure the reduction of environmental impact in every process.

Guidance Note: Green Guide for Health Care (GGHC) Version 2.2, 2008 Revision

2. Hospital shall develop the concept of "Health care without harm".

Guidance Note: Green guide for health care (GGHC) Version 2.2, 2008 Revision

5. Hospitals shall follow strict maintenance standards for critical areas within the premises.

Guidance Note: Green Hospital Maintenance Standards, Chris Hatt. 2009

4. Hospital shall adopt innovative green technologies to minimize environmental impact.

Guidance Note: Green Guide for Health Care (GGHC) Version 2.2, 2008 Revision

5. Hospitals shall make efforts through new techniques and designs to reduce VOC emission to the maximum possible extent.

Guidance Note: Development of National Emission Standards for Petrochemicals, CPCB, Sept 2008

Outcome Requirement

OR-1	Hospital shall establish monitoring, review & verification of procedures to maintain the standards.
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1. Hospital shall have indicators to optimize usage of energy and water.

Guidance Note: Green Hospital Score Card developed by Ontario Health Association. The performance is measured on energy, waste, water, pollution prevention and corporate leadership, planning and management.

Energy Performance Optimization Guide, NRDC, Nov 2012.

2. Hospital shall have indicators to measure the waste generation as per the category (hazardous, recyclable, bio medical, e waste etc.)

Guidance Note: Bio medical wastes (Mgt. & Handling) Rules 1998

3. Hospital shall have continuous green standard Improvement projects.

Guidance Note: Green guide for health care (GGHC) Version 2.2, 2008 Revision