

# Waste Management

Required

## WM Prerequisite 1 Waste Management Plan

### Intent

Institute a waste management plan to establish a framework of policies and procedures with a goal of zero waste.

### Health Issues

U.S. hospitals generate approximately 6,600 tons of waste per day, with non-hazardous solid waste representing up to 80% of the total. All waste is preventable to a certain extent. And, the majority of non-hazardous solid waste can be recycled, composted, or otherwise diverted from landfill or incineration. Since the 1998 Memorandum of Understanding between the U.S. EPA and the American Hospital Association mandating reduction in total waste volumes, hospitals have initiated ambitious waste prevention, sorting and recycling programs. Recycling protects natural resources and reduces greenhouse gas emissions by reducing demand for virgin materials and reducing the amount of waste sent to landfills and incinerators.

In response to the 1996 EPA finding that medical waste incineration was a major source of dioxin emissions in the United States, many hospitals have dramatically reduced the volume of medical waste and transitioned from incineration to alternative treatment technologies, where possible. A responsible plan for managing materials reduces the potential for accidental employee exposure, improper material segregation and environmental contamination.

### Credit Goals

- Develop and implement a Waste Management Plan in compliance with the Waste Management Sections of the Joint Commission Environment of Care Standard 3.10 coordinating the facility's various waste policies into a single framework including but not limited to: a definition of the facility's waste streams, source reduction, solid waste management, construction and demolition debris recycling, segregation, recycling, reuse, spill response, mercury elimination, composting, low level radioactive waste monitoring, hazardous materials, pharmaceuticals, universal waste, employee education, donation policy and others as identified in the GGHC Waste Management section.
- The Waste Management Plan must include the following:
  - A tracking and reporting mechanism for waste and material weight or volume and associated cost information, as detailed in GGHC WM Prerequisite 2 Waste Generation Profile and Measurement.
  - Logistics for receiving, handling, returning, storing, spill response, and safe disposal of hazardous materials, recyclables and waste.
- Set clear expectations for facility-wide responsibility regarding required participation in environmental programs that cross several department lines.
- Provide departmental access to the plan and educate new and existing employees through annual staff education programs.

## WM Prerequisite 1 continued

### Waste Management Plan

- Establish and maintain a process for continuous review and updates of the plan on an annual basis with documentation in a committee structure, or equivalent decision-making body.

*Note: An Environmental Management System (EMS) may be used to comply with this Prerequisite when waste management is addressed.*

### Suggested Documentation

- Compile a Waste Management Plan in accordance with Credit Goals.
- Annually demonstrate plan updates and review by showing commitment of Senior Leadership and through meeting minutes, records, or equivalent documentation over the past twelve-month period.
- Compile waste information tracking and reporting documentation on a minimum quarterly basis, demonstrated through tables and meeting minutes.

### Reference Standards

U.S. Environmental Protection Agency (EPA) Environmental Management System (EMS), <http://www.epa.gov/ems/> An Environmental Management System (EMS) is a set of processes and practices that enable an organization to reduce its environmental impacts and increase its operating efficiency. This Web site provides information and resources related to EMS for businesses, associations, the public, and state and federal agencies.

Joint Commission Environment of Care Standard 3.10, <http://www.jointcommission.org>

### Potential Technologies & Strategies

- **Credit Synergies:** *Coordinate implementation of this Prerequisite with GGHC IO Prerequisite 1: Integrated Operations & Maintenance Process; GGHC CM Prerequisite 2: Chemical Management Policy and Audit; GGHC WM Prerequisite 2: Waste Generation Profile and Measurement; GGHC WM Prerequisite 3: Solid Waste Land Disposal; GGHC WM Credit 1: Solid Waste and Material Management; GGHC WM Credit 2: Regulated Medical Waste Reduction; GGHC FS Credit 6.1: Food Donation and Composting; GGHC FS Credit 6.2: Food Services Recycling; and, GGHC EP Credit 1: Solid Waste Prevention in Purchasing.*
- Refer to the Waste Management Sections of the Joint Commission Environment of Care Standard for additional information on setting up a Waste Management Plan. <http://www.h2e-online.org/jcaho.htm> or <http://www.practicegreenhealth.org>
- Identify opportunities for standardization among hospitals within the same health system.
- Provide Waste Plan for all new employees and annually.
- “Zero Waste” refers to a redefinition of waste streams. In a “zero waste” system, potential waste is reduced at its source through purchasing practices, and the eventual waste streams of a facility or organization are either returned to the natural world or recycled/reused in the manmade environment.

## WM Prerequisite 1 continued

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### Waste Management Plan

#### Resources

American Society for Healthcare Environmental Services™, *An Ounce of Prevention: Waste Reduction Strategies for Health Care Facilities*, 1993.

Practice Greenhealth's "Ten Steps to Environmental Sustainability with Practice Greenhealth" webinar (both recorded and offered monthly via <http://www.practicegreenhealth.org>)

Practice Greenhealth's "Creating the Environmental Imperative in Healthcare: a Guide for Healthcare Executives," <http://www.practicegreenhealth.org>

Practice Greenhealth's Waste Profiler, <http://www.practicegreenhealth.org>

U.S. Environmental Protection Agency (EPA), WasteWise, <http://www.epa.gov/epaoswer/non-hw/reduce/wstewise/index.htm>

Zero Waste Standards, <http://www.zwia.org/standards.html>

Required

**WM Prerequisite 2****Waste Generation Profile & Measurement****Intent**

Establish baseline generation rates of all waste categories to enhance environmental goal setting and performance tracking.

**Health Issues**

U.S. hospitals generate approximately 6,600 tons of waste per day, with non-hazardous solid waste representing up to 80% of the total. All waste is preventable to a certain extent. And, the majority of non-hazardous solid waste can be recycled, composted, or otherwise diverted from landfill or incineration. Since the 1998 Memorandum of Understanding between the U.S. EPA and the American Hospital Association mandating reduction in total waste volumes, hospitals have initiated ambitious waste prevention, sorting and recycling programs. Recycling protects natural resources and reduces greenhouse gas emissions by reducing demand for virgin materials and reducing the amount of waste sent to landfills and incinerators.

In response to the 1996 EPA finding that medical waste incineration was a major source of dioxin emissions in the United States, many hospitals have dramatically reduced the volume of medical waste and transitioned from incineration to alternative treatment technologies, where possible. Focusing waste reduction efforts on hazardous material use, management, recycling and proper disposal reduces disposal fees, increases regulatory compliance and worker safety, and reduces harmful emissions such as particulate air pollution and the release of mercury and other heavy metals generated by incineration.

**Credit Goals**

- Collect waste stream data and establish a tracking mechanism through invoice review and waste and recycling vendor reporting to establish a current baseline identifying the types and amounts of waste stream categories in weight or volume per month and cost per month for a minimum one year period. Characterize major waste streams including, at a minimum: regulated medical waste, solid waste, hazardous waste and recyclables. Calculate the percentage represented by each waste stream to help determine the focus of the waste reduction program. .
- Annually set waste segregation and reduction goals in alignment with GGHC WM Credits 1-3.
- Standardize vendors (where beneficial) and operations, and set up a data collection procedure, based on new data on materials and wastes.
- Identify waste data baseline and convert to adjusted patient day using the following calculation:  

$$(\text{Total Patient Revenue}/\text{In-patient Revenue}) \times \text{Total Patient Days} = \text{Adjusted Patient Days}.$$

*Note: Calculating data into adjusted patient day allows facilities to benchmark within their system, regionally or nationally. This equation normalizes data across facility type.*
- At a minimum of quarterly, report waste profile to Joint Commission's Environment of Care (EOC) committee or equivalent decision-making body to measure the impact of the segregation programs, to continuously improve waste prevention and recycling efforts and to identify areas of continued focus.

## WM Prerequisite 2 continued

### Waste Generation Profile & Measurement

#### Suggested Documentation

- Compile waste stream data and the waste tracking mechanism, including percentage calculations and adjusted patient day in accordance with Credit Goals.
- Annually demonstrate plan updates, goal setting and review of progress through compiled meeting minutes, records or equivalent documentation from the previous twelve-month period in accordance with Credit Goals.

#### Reference Standards

There is no reference standard for this credit.

#### Potential Technologies & Strategies

- **Credit Synergies:** *Coordinate implementation of this Prerequisite with GGHC IO Prerequisite 1: Integrated Operations & Maintenance Process; GGHC CM Prerequisite 2: Chemical Management Policy and Audit; GGHC WM Prerequisite 1: Waste Management Plan; GGHC WM Prerequisite 3: Solid Waste Land Disposal; GGHC WM Credit 1: Solid Waste and Material Management; GGHC WM Credit 2: Regulated Medical Waste Reduction; GGHC FS Credit 6.1: Food Donation and Composting; GGHC FS Credit 6.2: Food Services Recycling; and, GGHC EP Credit 1: Solid Waste Prevention in Purchasing.*
- Using the Practice Greenhealth (formerly Hospitals for a Healthy Environment or H2E) national benchmark data, develop action plans to address waste prevention, recycling, reuse and segregation improvement strategies.
- Join Practice Greenhealth's (formerly Hospitals for a Healthy Environment or H2E) free monthly webinar, "Ten Steps to Getting Started With Practice Greenhealth," <http://www.practicegreenhealth.org> in Webinar section.
- Use Practice Greenhealth (formerly Hospitals for a Healthy Environment or H2E) Data Collection Tool to facilitate data coordination, analysis, benchmarking and reporting.
- Through working with Accounts Payable and Purchasing, ensure that all waste and recycling vendors are accounted for and that every waste material removal is included in the baseline profile.
- Consider developing baseline waste data for the Food Services Department in order to directly measure the impact of food waste prevention, donation, composting and recycling in the Food Services Area.
- Consider developing baseline waste data for the Operating Room (Surgical Services) in order to directly measure the impact of waste prevention, donation, reprocessing, reuse, recycling, fluid management and segregation practices, specific to the operating room.
- Provide the Waste Management Plan developed for GGHC EM Prerequisite 1: Waste Management Plan to all new employees and annually to ensure education of all staffers on waste and recycling protocol.
- Include a tour of waste and recycling storage areas in New Employee Orientation.

## WM Prerequisite 2 continued

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### Waste Generation Profile & Measurement

#### Resources

American Society for Healthcare Environmental Services™, *An Ounce of Prevention: Waste Reduction Strategies for Health Care Facilities*, 1993.

Practice Greenhealth's "Ten Steps to Environmental Sustainability with Practice Greenhealth" webinar (both recorded and offered monthly via <http://www.practicegreenhealth.org>)

Practice Greenhealth's "Ten Steps for Senior Healthcare Executives,"  
<http://www.practicegreenhealth.org>

Practice Greenhealth's Waste Profiler, <http://www.practicegreenhealth.org>

Sehulster LM, et al. Guidelines for environmental infection control in health-care facilities. 2003 Recommendations from CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC). Chicago IL; American Society for Healthcare Engineering/American Hospital Association; 2004, <http://www.cdc.gov/ncidod/hip/enviro/guide.htm>

State Regulator Locator, <http://www.practicegreenhealth.org>

U.S. Environmental Protection Agency (EPA), WasteWise, <http://www.epa.gov/epaoswer/non-hw/reduce/wstewise/index.htm>

U.S. Environmental Protection Agency (EPA), Environmental Management System, (EMS) <http://www.epa.gov/ems/> An Environmental Management System (EMS) is a set of processes and practices that enable an organization to reduce its environmental impacts and increase its operating efficiency. This Web site provides information and resources related to EMS for businesses, associations, the public, and state and federal agencies

Required

## WM Prerequisite 3

### Solid Waste Land Disposal

#### Intent

Prevent contamination of the land associated with improper disposal of toxic, hazardous, infectious or radiological substances.

#### Health Issues

Health care facilities have the potential to contaminate the land by improperly disposing of a wide variety of substances including pharmaceuticals, hazardous chemicals and heavy metals, infectious waste, radiologicals and other wastes that require special disposal. Improper disposal can expose sanitary workers to hazardous substances. Once deposited in an inappropriate landfill, these substances can contaminate air, surface- and ground-water and surrounding land, potentially exposing people and wildlife in the surrounding community. Moreover, water treatment plants do not remove or destroy many of these substances, potentially leading to population-wide exposures to low levels of toxic, hazardous, or radiological substances through drinking water systems. Health care facilities should develop waste minimization, segregation and disposal programs that meet all applicable regulatory requirements and prevent contamination of the surrounding community. Facilities should also select waste contractors that treat or handle waste in the most environmentally responsible manner available while meeting all applicable government regulations.

#### Credit Goals

- Verify that contractors selected for solid, medical or hazardous waste treatment are licensed and permitted by the state.
- Ensure contract language with waste contractors requires full compliance with applicable state disposal rules for applicable waste types.
- Select contractors and technologies for medical, hazardous and mixed waste treatment that meet Maximum Achievable Control Technology (MACT) standards. Verify company compliance with environmental standards utilizing EPA's ECHO Compliance Database.
- Ensure contract language with waste contractors requires verification that chemotherapeutic agents, regulated medical waste, pathological waste, sharps, hazardous materials and low level radioactive waste are properly transported.

#### Suggested Documentation

- Compile and annually update records of solid, medical or hazardous waste treatment contractors' licensures, permits, and compliance with Maximum Achievable Control Technology (MACT) standards in accordance with Credit Goals.
- Compile and annually update documentation of contracts in accordance with Credit Goals.
- Track and annually review contract language preventing improper shipping and final disposal of chemotherapeutic agents, regulated medical waste, pathological waste, sharps, hazardous materials and low level radioactive waste in accordance with Credit Goals.

## WM Prerequisite 3 continued

### Solid Waste Land Disposal

#### Reference Standards

U.S. Environmental Protection Agency (EPA) NESHAPS. Maximum Achievable Control Technology (MACT) Standards, <http://www.epa.gov/combustion/>

U.S. Environmental Protection Agency (EPA) Enforcement and Compliance History Online (ECHO), <http://www.epa-echo.gov/echo/>

#### Potential Technologies & Strategies

- **Credit Synergies:** *Coordinate implementation of this Prerequisite with GGHC IO Prerequisite 1: Integrated Operations & Maintenance Process; GGHC FM Credit 5.4: Performance Measurement: Emissions Reduction Reporting; GGHC CM Prerequisite 2: Chemical Management Policy and Audit; GGHC WM Prerequisite 1: Waste Management Plan; GGHC WM Prerequisite 2: Waste Generation Profile and Measurement; GGHC WM Prerequisite 3: Solid Waste Land Disposal; GGHC WM Credit 1: Solid Waste and Material Management; GGHC WM Credit 2: Regulated Medical Waste Reduction; GGHC FS Credit 6.1: Food Donation and Composting; GGHC FS Credit 6.2: Food Services Recycling; and, GGHC EP Credit 1: Solid Waste Prevention in Purchasing.*
- Conduct site tours at all Treatment, Storage and Disposal facilities to ensure regulatory compliance.
- Implement waste segregation programs facility-wide to prevent mixing of waste types.
- Review regulated medical waste (RMW) definitions for the state where the facility is located and develop and implement a RMW minimization plan in accordance with the regulatory body's definition.
- Establish regular contact (at a minimum annual) and build relationships with waste vendors, haulers, landfills and transfer stations.
- Keep a contact list of appropriate regulatory contacts on hand for each waste stream. When in doubt, ask regulators for help interpreting the best response to a situation.

#### Resources

Practice Greenhealth (formerly Hospitals for a Healthy Environment or H2E), Hazardous Waste Regulations-State Locator Tool, <http://www.practicegreenhealth.org> or <http://cms.h2e-online.org/hz.html>

Practice Greenhealth (formerly Hospitals for a Healthy Environment or H2E), Regulated Medical Waste Regulations-State Locator Tool, <http://www.practicegreenhealth.org>, <http://cms.h2e-online.org/ee/rmw/state-rmw-regulations/>

Practice Greenhealth (formerly Hospitals for a Healthy Environment or H2E), Universal Waste Regulations-State Locator Tool, <http://www.h2e-online.org/uw.html>

U.S. Nuclear Regulatory Commission, <http://www.nrc.gov/>

1-3 points

**WM Credit 1.1-1.3****Solid Waste & Material Management: Waste Prevention & Reduction****Intent**

Reduce solid waste disposal in land, air and water through prevention, reuse, recycling, donation and composting.

**Health Issues**

U.S. hospitals generate approximately 6,600 tons of waste per day, with non-hazardous solid waste representing up to 80% of the total. All waste is preventable to a certain extent. And, the majority of non-hazardous solid waste can be recycled, composted, or otherwise diverted from landfill or incineration. Since the 1998 Memorandum of Understanding between the U.S. EPA and the American Hospital Association mandating reduction in total waste volumes, hospitals have initiated ambitious waste prevention, sorting and recycling programs. Recycling protects natural resources and reduces greenhouse gas emissions by reducing demand for virgin materials and reducing the amount of waste sent to landfills and incinerators.

In response to the 1996 EPA finding that medical waste incineration was a major source of dioxin emissions in the United States, many hospitals have dramatically reduced the volume of medical waste and transitioned from incineration to alternative treatment technologies, where possible. Focusing waste reduction efforts on hazardous material use, management, recycling and proper disposal reduces disposal fees, increases regulatory compliance and worker safety, and reduces harmful emissions such as particulate air pollution and the release of mercury and other heavy metals generated by incineration.

**Credit Goals**

- Measure, track and report annual reduction in total solid waste as indicated in the table below. Incorporate steps/policies into the facility's Waste Management Plan (GGHC WM Prerequisite 1) to eliminate, minimize, recycle, substitute, donate and safely dispose of wastes to reduce overall waste generation. Policies shall address, at a minimum, the types of products that are recycled or otherwise diverted, specifications for the collection and storage containers, frequency of pick up, vendor information and in-house contact information.

*Note: Construction and Demolition debris of any kind are excluded from this calculation.*

Credit 1.1 (1 point)	Achieve 15% waste diversion or 25 pounds of Non-regulated Medical Waste per adjusted patient day in waste.
Credit 1.2 (2 points total)	Achieve an additional 20% waste diversion to achieve 35% waste reduction rate (1 point in addition to 1.1) or achieve 20 pounds of Non-regulated Medical Waste per adjusted patient day.
Credit 1.3 (3 points total)	Achieve an additional 15% waste diversion to achieve 50% reduction rate (1 point in addition to 1.2) or 15 pounds of Non-regulated Medical Waste per adjusted patient day.
Note: For an innovation point achieve the following:	Continue decreasing the waste generation rate by 2% per year towards achieving zero waste status, defined as 90% diversion.

## WM Credit 1.1-1.3 continued

### Solid Waste & Material Management: **Total Waste Prevention & Reduction**

*\*Note: see GGHC WM Prerequisite 2 for adjusted patient day baseline calculations.*

*(Total Patient Revenue/In-patient Revenue) X Total Patient Days = Adjusted Patient Days.*

*Calculating data into adjusted patient day allows facilities to benchmark within their system, regionally or nationally. This equation normalizes data across facility type, although others prefer percentage of overall waste.*

*\*\*Note: Baseline is the amount of wastes generated per category as outlined in WM Prerequisite 2.*

AND

- Conduct site inspections at minimum on contract renewal for all final waste treatment, storage and disposal facilities for solid waste (landfill), medical waste, hazardous waste, radioactive substances, and mixed waste, and include in contract language a requirement that companies notify the health care facility of any significant change in treatment technology, process or final disposal location that requires permit modification.
- Avoid municipal waste incineration for all waste streams, except where required. (See GGHC WM Credit 2.2: Regulated Medical Waste Reduction.)

#### **Suggested Documentation**

- Compile and annually review documentation tracking waste diversion over the baseline established in GGHC WM Prerequisite 2: Waste Generation Profile. Include quarterly summary reports on the total waste produced, with hauler documentation and calculations of the amount of each type of waste that has been disposed of, recycled, or otherwise diverted.
- Compile annually update, and incorporate in the Waste Management Plan (GGHC WM Prerequisite 1) applicable written policies for waste prevention, reuse and recycling programs and avoidance of municipal waste incineration for all waste streams in accordance with Credit Goals.
- Compile receipts, purchase order or invoices for all contracted waste diversion services such as recycling pick up and removal.
- Compile documentation of site inspections for all final waste treatment, storage and disposal facilities for solid waste (landfill), medical waste, hazardous waste, radioactive substances, and mixed waste in accordance with Credit Goals.

#### **Reference Standards**

There are no reference standards for this credit.

## WM Credit 1.1-1.3 continued

### Solid Waste & Material Management: **Total Waste Prevention & Reduction**

#### Potential Technologies & Strategies

- **Credit Synergies:** *Coordinate implementation of this Prerequisite with GGHC IO Prerequisite 1: Integrated Operations & Maintenance Process; GGHC CM Prerequisite 2: Chemical Management Policy and Audit; GGHC WM Prerequisite 1: Waste Management Plan; GGHC WM Prerequisite 2: Waste Generation Profile and Measurement; GGHC WM Prerequisite 3: Solid Waste Land Disposal; GGHC WM Credit 1: Solid Waste and Material Management; GGHC WM Credit 2: Regulated Medical Waste Reduction; GGHC FS Credit 6.1: Food Donation and Composting; GGHC FS Credit 6.2: Food Services Recycling; and, GGHC EP Credit 1: Solid Waste Prevention in Purchasing.*
- Calculate the percentage recycled in comparison to the overall waste stream, inclusive of hazardous, regulated medical waste and nonregulated solid waste.
- Calculate furniture, fixtures and equipment salvaged from renovations as part of the total solid waste diversion plan.
- Educate staff on the waste reduction program and the importance of waste stream segregation using training posters, videos, signage, memos and newsletters.
- To convert a waste calculation from volume to weight: Density of waste x Volume of waste = Weight of waste, where density equals weight per unit volume. For more information on converting between weight and volume, visit [http://www.tceq.state.tx.us/comm\\_exec/forms\\_pubs/pubs/rg/rg-008.html](http://www.tceq.state.tx.us/comm_exec/forms_pubs/pubs/rg/rg-008.html)
- Prevent waste at the source, wherever possible. Include waste management expertise from Environmental Services/Housekeeping (or equivalent) on the facility's environmentally preferable purchasing committee or supply chain to assist with waste prevention activities. See GGHC EP Credit 1: Solid Waste Prevention in Purchasing.
- Identify service providers and vendors in region to implement the simplest source segregation and recycling programs. Single stream or commingled programs (mixed materials, like glass, metal and plastic) can reduce the number of bins, increasing the waste diversion rate through simplicity and maximizing collection rates.
- Review the following materials to ensure there is a plan for proper management from a waste volume perspective:
  - Recycling: paper, plastic, glass, metal, construction and demolition, blue wrap, shrink wrap, etc.
  - Universal Wastes: batteries, bulbs, ballasts, other mercury containing equipment, electronic waste, etc.
- Operational strategies include substitution of disposable food service products and Operating Room instruments and linens; substitution of reusable for disposable gowns; and, reduction in packaging waste through specific contractual terms with supply vendors.
- "Zero Waste" refers to a redefinition of waste streams. In a "zero waste" system, potential waste is reduced at its source through purchasing practices, and the eventual waste streams of a facility or organization are either returned to the natural world or recycled/reused in the manmade environment.
- Research whether the facility is subject to a state or local law requiring certain levels of recycling.
- Consider educational and employee engagement strategies such as using posters and container signage to promote recycling or shared saving initiatives, parties, promotional events, give aways, etc.

**WM Credit 1.1-1.3** continued

**Solid Waste & Material Management: Total Waste Prevention & Reduction**

- Consider this table for waste segregation guidance

Waste Type	Definition	Target as % of Total Waste	General Disposal Methods	Typical Cost for Disposal
<b>Waste Reduction Programs (recycling, reuse, source reduction)</b>	Reducing: using less product in the first place - generating less waste. Reusing: materials exchanges - using a product until it is no longer usable! Recycling: Refuse which is re-processed into new products.	Beginner: 10-15% Intermediate: 15- 25% Expert: 25– 35% Star >35%	Most recyclables are shipped off-site for processing and subsequent reuse.	Cardboard and paper should generate a revenue; Glass and plastics typically cost Objective: total cost of program should beat landfill costs (i.e. avoided landfill costs pay for the program)
<b>Infectious Waste (RMW, bio-hazard)</b>	Solid or liquid wastes that have a <u>significant</u> potential for transmitting infection or require special handling due to state regulations, and some federal regulations.	Beginner: 15-20% Intermediate: 12-15% Expert: 8– 12% Star <8%	Treatment- like autoclave then landfill  10% of <u>total</u> RMW is path waste that may require incineration	Off-site treatment: \$0.26 - \$0.38 per lb; \$520 – \$760 per ton
<b>Hazardous Chemical Waste</b>	Solid or liquid waste containing flammable, toxic, corrosive or reactive chemicals. Also includes a “special hazards” category (ex. - radioactive). And “listed” wastes.	Varies regionally, but deserves focus if less than 1%. Too little hazardous waste can be an indicator of improper disposal	Managed according to OSHA, EPA and local and state regulations and shipped off site for proper disposal.	Up to \$5000 per ton depending upon material
<b>General Solid Waste</b>	Solid wastes that are <u>not</u> hazardous, infectious or recyclable. May include packaging, plastics, food, and general refuse.	Beginner: 70-75% Intermediate: 60-70% Expert: 50-60% Star <50%	Landfill or municipal solid waste incinerator	Wide range depending upon area of country: \$0.02 - \$.50 per lb.: \$33-\$100 per ton

## WM Credit 1.1-1.3 continued

### Solid Waste & Material Management: **Total Waste Prevention & Reduction**

#### Resources

The American Hospital Association (AHA) and the United States Environmental Protection Agency (U.S. EPA) signed a Memorandum of Understanding identifying goals to reduce the impact of health care facilities on the environment, including specific waste reduction goals.

<http://www.h2e-online.org/about/mou.htm>.

American Society for Healthcare Environmental Services™, *An Ounce of Prevention: Waste Reduction Strategies for Health Care Facilities*, 1993.

California Integrated Waste Management Board, *Hospital Waste Reduction*, February 1999,  
<http://www.ciwmb.ca.gov>

OSHA Bloodborne Pathogens Standard, 1991,  
<http://www.osha.gov/SLTC/bloodbornepathogens/index.html>

Practice Greenhealth's "Ten Steps to Environmental Sustainability with Practice Greenhealth" webinar (both recorded and offered monthly via <http://www.practicegreenhealth.org>)

Practice Greenhealth's "Ten Steps for Senior Healthcare Executives,"  
<http://www.practicegreenhealth.org>

Practice Greenhealth's Waste Profiler, <http://www.practicegreenhealth.org>

Sehulster LM, et al. Guidelines for environmental infection control in healthcare facilities. 2003 Recommendations from CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC). Chicago IL; American Society for Healthcare Engineering/American Hospital Association; 2004. available at: [www.cdc.gov/ncidod/hip/enviro/guide.htm](http://www.cdc.gov/ncidod/hip/enviro/guide.htm)

U.S. Environmental Protection Agency (EPA), MATT designation,  
<http://www.epa.gov/oar/oaqps/takingtoxics/p2.html>

U.S. Environmental Protection Agency (EPA), WasteWise, <http://www.epa.gov/epaoswer/non-hw/reduce/wstewise/index.htm>

Zero Waste Standards, <http://www.zwia.org/standards.html>

1 point

## WM Credit 1.4

### Solid Waste & Material Management: Recycling & Reuse of Facility Alterations & Additions

#### Intent

Reduce amount of waste associated with renovations and alterations through deconstruction, material reuse, donation and recycling.

#### Health Issues

The U.S. EPA estimates that more than 30% of municipal solid waste is generated by construction and demolition activities. Typical construction projects generate approximately 2.2 pounds of waste per square foot, which equates to over 110 thousand tons of construction waste annually based on current rates of over 100 million square feet of annual average health care construction. A 1998 study by the New York State Department of Health found that women living near solid waste landfills have a four-fold increased chance of bladder cancer or leukemia, based on data from 38 landfills, while a 1989 study by the U.S. EPA found elevated cancers of the bladder, lung, stomach and rectum in counties with the highest concentration of waste sites. Municipal solid waste incinerators emit hydrocarbons, heavy metals, dioxins and furans, acid gases, sulfur dioxide, nitrogen oxides and particulates, exposure to each of which poses risks to human health. Diversion of construction and demolition (C&D) debris through salvaging and recycling extends the life of existing landfills and reduces demand for virgin resources thereby curbing unhealthy air and water emissions resulting from resource extraction, manufacturing with virgin feedstocks and from landfill and incineration operations.

#### Credit Goals

- Develop and implement a process (both written and in practice) to conduct a walk-through of areas prior to renovation to identify wastes, materials, deconstruction opportunities, supplies and equipment for reuse, donation or proper cleanup and disposal in preparation for the renovation. Set up a system to coordinate responsible parties to reduce waste and conserve financial and natural resources prior to area demolition.
- Include in the Waste Management Plan (as defined in GGHC WM Prerequisite 1) a waste diversion program covering materials for facility renovations, demolitions, refits and new construction additions. This applies only to base building elements permanently or semi-permanently attached to the building itself that enter the waste stream during facility renovations, demolitions, refits and new construction additions. Examples include, but are not limited to, building components and structures (wall studs, insulation, doors, windows); panels; attached finishings (drywall, trim, ceiling panels); carpet and other flooring material; adhesives; sealants; paints and coatings.

*Note: Materials considered furniture, fixtures and equipment (FF&E) are not considered base building elements and are excluded from this credit. See GGHC WM Credit 1.1-1.3 for the solid waste calculation including FF&E. Mechanical, electrical and plumbing components and specialty items such as elevators are also excluded from this credit.*

## WM Credit 1.4 continued

### Solid Waste & Material Management: Recycling & Reuse of Facility Alterations & Additions

- Divert minimum 50% of waste, calculated by weight or volume, generated annually by all facility alterations and additions from disposal to landfills and incineration facilities through recycling and reuse. If the facility undergoes outside contracted projects, the calculation shall either include all of these projects in the calculation or exclude them all.

*Note: An innovation point is available to facilities that divert minimum 70% of waste, calculated by weight or volume, generated by facility alterations and additions from disposal to landfills and incineration facilities through recycling and reuse.*

*Note: See the "Facility Alteration & Additions" section in the Introduction to the GGHC Operations section for a definition of the scope of construction projects to be included in the credit calculation.*

### Suggested Documentation

- Document and annually review the success of the pre-construction walk-through program in accordance with Credit Goals, including walk-through dates, follow up, responsible individuals and impact on the project's waste diversion percentage.
- Document and annually review evidence that the waste diversion program meets a minimum 50% annual threshold in accordance with Credit Goals.
- Compile ongoing documentation of contract language requiring applicable contractors and subcontractors to participate in the recycling, reuse and donation program.

### Reference Standards

There are no reference standards for this credit.

### Potential Technologies & Strategies

- **Credit Synergies:** *Coordinate implementation of this Prerequisite with GGHC IO Prerequisite 1: Integrated Operations & Maintenance Process; GGHC CM Prerequisite 2: Chemical Management Policy and Audit; GGHC WM Prerequisite 1: Waste Management Plan; GGHC WM Prerequisite 2: Waste Generation Profile and Measurement; GGHC WM Prerequisite 3: Solid Waste Land Disposal; GGHC WM Credit 1: Solid Waste and Material Management; GGHC WM Credit 2: Regulated Medical Waste Reduction; GGHC FS Credit 6.1: Food Donation and Composting; GGHC FS Credit 6.2: Food Services Recycling; and, GGHC EP Credit 1: Solid Waste Prevention in Purchasing.*
- Incorporate waste management policies applicable to any facility alteration and addition projects occurring on the site into the Waste Management Plan.
- Withhold the responsible party's pay check before the area is relinquished, to ensure proper attention is given to coordinate proper segregation of waste materials prior to departure. For example, if a grant has ended for a research study, the responsible party has to be part of the walk through to identify proper segregation and removal of hazardous, infectious or otherwise regulated materials so they are safely and legally discarded.
- Identify licensed haulers and processors of recyclable materials.

## WM Credit 1.4 continued

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### Solid Waste & Material Management: Recycling & Reuse of Facility Alterations & Additions

- Identify markets for salvaged materials.
- Employ deconstruction, salvage and recycling strategies and processes.
- Document the cost for recycling, salvaging and reusing materials.
- Incorporate source reduction on the job site as an integral part of the plan to reduce solid waste.
- Investigate salvaging/recycling lighting fixture pans when retrofitting.
- Consider recycling:
  - Cardboard
  - Metal
  - Brick
  - Acoustical board and tile
  - Concrete
  - Plastic
  - Clean wood
  - Glass
  - Gypsum wallboard
  - Carpet
  - Insulation
- Designate a specific area on the construction site appropriate for either on-site or off-site sorting of materials.
- Record efforts throughout the construction process.
- Identify construction haulers and recyclers to handle the designated materials.
- Reuse unpainted gypsum board waste as a soil amendment if appropriate to project soil conditions.
- Note that salvage may include donation of materials to charitable organizations such as Habitat for Humanity.
- Pay particular attention to lead in C&D debris, which is often used as components of Radiation Protection Systems. Separate sheet lead radiation protection, lead lined gypsum board products, and lead-lined doors and frames for reuse, salvage or reprocessing. Salvage all lead-lined glazing products for reuse or reprocessing.

### Resources

Associated General Contractors of America. *Constructing an Environmental Management System: Guidelines and Templates for Contractors*, <http://www.agc.org>

Building Materials Reuse Association. Scroll down for link to their directory which lists organizations/companies around the country that can assist with salvage and deconstruction on old hospitals (and other buildings) being taken down or remodeled. <http://www.ubma.org/>

Construction and Demolition Waste Recycling Information, California Integrated Waste Management Board (CIWMB), <http://www.ciwmb.ca.gov/ConDemo/Materials/>.

## WM Credit 1.4 continued

### Solid Waste & Material Management: Recycling & Reuse of Facility Alterations & Additions

Construction Industry Compliance Assistance, How to find C&D regulations in your region and find a Construction and Demolition recycler; Construction Assistance; Compliance Assistance, including Construction and Demolition Debris State Resources, <http://cicacenter.org/solidregs.html>

Construction Waste Management Database, US Government Services Administration (GSA), <http://www.wbdg.org/ccbref/cwm.php>. Free online service for those seeking companies that recycle construction debris in their area.

“Deconstruction – The First Step in Green Building”, Waste-Match. NY Wa\$teMatch fosters environmentally sound economic development by doing research on solid waste reduction and resource recovery practices and by cultivating new opportunities in sustainable business. <http://wastematch.org/>

Institution Recycling Network document “Recycling Construction and Demolition Wastes – A Guide for Architects and Contractors.” The site also includes sample specifications for Construction and Demolition Recycling. These specifications can be included in Requests for Proposals and contract language to assure that recycling will be part of the project. They allow the specification writer to identify what materials are to be recycled, and include planning, reporting, and recordkeeping requirements. The site also shares case studies demonstrating the cost effectiveness. <http://www.wastemiser.com/resources.html>

King County – Sample specification as well as other useful data, <http://www.metrokc.gov/dnrp/swd/construction-recycling/documents.asp>

Massachusetts Department of Environmental Protection – Construction & Demolition Waste Plan, <http://www.mass.gov/dep/recycle/cdhome.htm>

Recycling and Waste Management During Construction, City of Seattle, <http://www.metrokc.gov/procure/green/wastemgt.htm>.

StopWaste.org - StopWaste.Org is the Alameda County, CA Waste Management Authority and the Alameda County Source Reduction and Recycling Board operating as one public agency. <http://www.stopwaste.org/home/index.asp?page=292>

U.S. Environmental Protection Agency (EPA), Construction and Demolition Debris Page, <http://www.epa.gov/epaoswer/non-hw/debris-new/index.htm>

Waste Spec: Waste Specifications for Construction Waste Reduction, Reuse and Recycling, Triangle J Council of Governments, July, 1995, <http://www.tjcog.dst.nc.us>

Whole Building Design Guide, Construction Waste Management Database. The Whole Building Design Guide provides government and industry practitioners with one-stop access to up-to-date information on a wide range of building-related guidance, criteria and technology from a 'whole buildings' perspective. <http://www.wbdg.org/tools/cwm.php>

1-2 points

**WM Credit 2.1-2.2****Regulated Medical Waste Reduction****Intent**

Reduce disposal of regulated medical waste to landfills, incinerators and alternative treatment plants through improved segregation, change of work practices and use of emerging technology.

**Health Issues**

U.S. hospitals generate approximately 6,600 tons of waste per day, with non-hazardous solid waste representing up to 80% of the total. All waste is preventable to a certain extent. And, the majority of non-hazardous solid waste can be recycled, composted, or otherwise diverted from landfill or incineration. Since the 1998 Memorandum of Understanding between the U.S. EPA and the American Hospital Association mandating reduction in total waste volumes, hospitals have initiated ambitious waste prevention, sorting and recycling programs. Recycling protects natural resources and reduces greenhouse gas emissions by reducing demand for virgin materials and reducing the amount of waste sent to landfills and incinerators.

In response to the 1996 EPA finding that medical waste incineration was a major source of dioxin emissions in the United States, many hospitals have dramatically reduced the volume of medical waste and transitioned from incineration to alternative treatment technologies, where possible. Focusing waste reduction efforts on hazardous material use, management, recycling and proper disposal reduces disposal fees, increases regulatory compliance and worker safety, and reduces harmful emissions such as particulate air pollution and the release of mercury and other heavy metals generated by incineration.

**Credit Goals****WM Credit 2.1 (1 point)**

- Develop a facility policy for regulated medical waste disposal in collaboration with infection control and environmental services that is based on and references the definition of regulated medical waste (RMW) established by Authorities Having Jurisdiction (AHJs). AHJs for RMW may include the U.S. Occupational Safety and Health Administration (OSHA) Bloodborne Pathogen Standard or state-level environmental agencies or departments of health. Defer to the most stringent standard having jurisdiction and comply with CDC/HICPAC's 2003 Guidelines for Environmental Infection Control.. Ensure that specific details covering products such as syringes, specimen bags, ampules, vials, trace chemotherapeutic waste, etc., are covered by the policy.
- Provide RMW segregation training for all new and existing employees, at the departmental level and annually.
- Demonstrate that the regulated medical waste (RMW) stream (by weight or volume) is less than 10% of the total waste stream – calculated over a minimum 12 month period after establishing a baseline, as outlined in with GGHC WM Prerequisite 2.
- Annually provide Department of Transportation training for all employees preparing RMW for removal.
- Annually provide written RMW education information in newsletters and brochures targeted to physicians and other clinical staff, including agency staff.

## WM Credit 2.1-2.2 continued

### Regulated Medical Waste Reduction

- For the first twelve months, report RMW generation rate and percentage of overall waste stream at least quarterly to the Joint Commission's Environment of Care (EOC) committee or equivalent decision-making body. (See GGHC WM Prerequisite 2: Waste Generation Profile.) Thereafter, report annually.

### WM Credit 2.2 – (1 point in addition to WM Credit 2.1)

- Demonstrate that incineration is used only to dispose of the fraction of the regulated medical waste stream required by regulations to be incinerated. Segregate waste streams to ensure that no mercury or batteries are present in the portion of regulated medical waste stream bound for incineration or any other treatment technology. When considered non-infectious (or when feasible under regulations), avoid incineration of any halogenated compound, including PVC plastic and brominated flame retardants.
- Incorporate steps into the facility's Waste Management Plan (as outlined in GGHC WM Prerequisite 1) to implement maximum achievable control technology (MACT) alternatives to incineration.

*Note: Pyrolysis and plasma-arc are not considered an acceptable alternative to incineration.*

### Suggested Documentation

#### WM Credit 2.1

- Track and annually review the definition of RMW, the RMW policy and RMW sources and reduction (by weight) over a minimum of one-year period as part of the Waste Management Plan outlined on GGHC WM Prerequisite 1. Use the baseline defined in GGHC WM Prerequisite 2: Waste Generation Profile to calculate compliance with Credit Goals.
- Compile and annually update staff training records and RMW information included in clinical newsletters and brochures in accordance with Credit Goals.
- Compile quarterly updates of the facility's RMW generation rate and percentage of overall waste stream to the Joint Commission's Environment of Care (EOC) committee or equivalent decision-making body through meeting minutes, records, or equivalent documentation over the past 12-month period.

#### WM Credit 2.2

- Document and annually review on-site alternative (non-incineration and non-pyrolysis) medical waste treatment technologies and a description of the technology selected OR maintain a contract with a provider for off-site alternate (non-incineration and non-pyrolysis) technology waste treatment.

### Reference Standards

CDC/HICPAC's Guidelines for Environmental Infection Control, 2003,  
[http://www.cdc.gov/ncidod/dhqp/gl\\_environmentinfection.html](http://www.cdc.gov/ncidod/dhqp/gl_environmentinfection.html)

U.S. Occupational Safety and Health Administration (OSHA) Bloodborne Pathogen Standard (1910.1030),  
[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=10051](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10051)

## WM Credit 2.1-2.2 continued

### Regulated Medical Waste Reduction

#### Potential Technologies & Strategies

- **Credit Synergies:** *Coordinate implementation of this Prerequisite with GGHC IO Prerequisite 1: Integrated Operations & Maintenance Process; GGHC FM Credit 5.4: Performance Measurement: Emissions Reduction Reporting; GGHC CM Prerequisite 2: Chemical Management Policy and Audit; GGHC WM Prerequisite 1: Waste Management Plan; GGHC WM Prerequisite 2: Waste Generation Profile and Measurement; GGHC WM Prerequisite 3: Solid Waste Land Disposal; GGHC WM Credit 1: Solid Waste and Material Management; GGHC WM Credit 2: Regulated Medical Waste Reduction; GGHC FS Credit 6.1: Food Donation and Composting; GGHC FS Credit 6.2: Food Services Recycling; and, GGHC EP Credit 1: Solid Waste Prevention in Purchasing.*
- Use state regulations to frame the facility definition of Regulated Medical Waste, recognizing that while state by state definitions exist, much of the regulations are open to interpretation and require a team approach to the facility's Regulated Medical Waste definition. For example, in a laboratory, all disposable devices should be laid out and identified for disposal as sharps, Regulated Medical Waste, autoclave and regular waste disposal. Many of these determinations are based on the perceived risk and whether something is deemed a "sharp."
- Reducing medical waste volumes lowers disposal costs, while proper waste stream management allows for safer, effective disposal methods.
- Assess all RMW-generating locations and maximize reduction opportunities. Assess each location for detailed function.
- Track RMW generation rate as a performance indicator under Joint Commission Hazardous Material and Waste Management Plan.
- Consider incentivizing workers to improve segregation of RMW through promotions like movie tickets, cash, etc., that share the savings generated by the RMW program.
- Provide adequate training for all staff to ensure only appropriate discards are disposed of in appropriate puncture and leak proof receptacles.
- Assess and implement proper placement of RMW receptacles to discourage inappropriate disposal. Affix a label to the lid of all RMW containers, clearly identifying what kind of waste should be deposited.
- Install engineering controls for suction canister evacuation in operating rooms and other high volume areas.
- Consider employing reusable sharps containers and reusable surgical containers and fluid management systems as a means to reduce RMW. Develop contract language or policy to ensure reusable containers are properly cleaned prior to re-use.
- In collaboration with infection control and safety committees, assess the potential to utilize single-use device reprocessing in accordance with the U.S. Food and Drug Administration Enforcement Priorities for Single-Use Devices Reprocessed by Third Parties and Hospitals (<http://www.fda.gov/cdrh/comp/guidance/1168.pdf>) as a means to reduce RMW and generate cost savings while ensuring patient safety.
- Conduct RMW rounds periodically, inspecting waste segregation practices. Document on-the-spot retraining, where necessary.
- Work with the communications department to develop training and educational information such as posters and educational memos targeted to RMW reduction.

## WM Credit 2.1-2.2 continued

### Regulated Medical Waste Reduction

#### Resources

Health Care Without Harm, Non-Incineration Medical Waste Treatment Technologies, August 2001, <http://www.noharm.org>

Katami, Takeo, et al (2002) "Formation of PCDDs, PCDFs, and Coplanar PCBs from Polyvinyl Chloride during Combustion in an Incinerator" *Environ. Sci. Technol.*, 36, 1320-1324.

Minnesota Technical Assistance Program (MNTAP), Suction Canister waste Reduction, <http://www.Mntap.umn.edu/health/91-canister.htm>

Practice Greenhealth (formerly Hospitals for a Healthy Environment or H2E), 10-Step Guide to Regulated Medical Waste Reduction, <http://www.practicegreenhealth.org> or <http://www.h2e-online.org/pubs/tensteps/Rmw10steps.pdf>

Practice Greenhealth (formerly Hospitals for a Healthy Environment or H2E), Alternative Treatment Technology *Stat Green* Success Story, <http://www.h2e-online.org/pubs/STATGreen/July2005.pdf>

Practice Greenhealth (formerly Hospitals for a Healthy Environment or H2E), Regulated Medical Waste page, <http://www.practicegreenhealth.org> or <http://www.h2e-online.org/tools/waste-inf.htm>

Practice Greenhealth (formerly Hospitals for a Healthy Environment or H2E), Single Use Device Reprocessing Page, <http://www.practicegreenhealth.org> or <http://cms.h2e-online.org/ee/waste-reduction/waste-minimization/single-use-device-reprocessing/>

Regulated Medical Waste State Regulations locator, <http://www.hercenter.org/rmw/rmwlocator.html>

Suction Canister Waste Reduction, <http://www.mntap.umn.edu/health/91-canister.htm>

Thornton, Joe, PhD., "Environmental Impacts of Polyvinyl Chloride Building Materials, Healthy Building Network, Washington, DC, 2002, p. 56. (Analysis of salt and organochlorine content and dioxin formation in combustion)

U.S. Environmental Protection Agency (EPA), Resource Conservation Recovery Act (RCRA), <http://www.epa.gov/rcraonline/>.

U.S. Occupational Safety and Health Administration (OSHA), Bloodborne Pathogens Standard, <http://www.osha.gov/SLTC/bloodbornepathogens/>

Wagner, J., Green, A. 1993. Correlation of chlorinated organic compound emissions from incineration with chlorinated organic input. *Chemosphere* 26 (11): 2039-2054