

Health Care Waste Diversion & Destruction



Presented by: Jayne Pilot, EP(CEA) (EMSLA), CPEA, CEO

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Medical waste is a potent power source

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Medical waste is a potent power source

WOODBINE
"The Best Investment Strategy"

ISO 9001 Quality
ISO 14001 Environment
ISO 50001 Energy
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ISO 22000 Food Safety

ISO 19011 Auditing

Waste 2 Energy

Partners for the Planet

Speaker JAYNE PILOT

DRIVING SUSTAINABILITY TO BUSINESS SUCCESS

HER HEALTH
Expert warns that we should be more concerned about this issue
Disposing of medical waste

Vancouver BlueLine
International waste start-up

BFI

Waste Resource Calculator

DispelLumber

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25+ years Environmental

AIR & WASTE MANAGEMENT ASSOCIATION

HEALTH PROTECTION

Healthcare is in business to:

- protect patients
- to reduce health problems

At the same time, these facilities

- create waste containing harmful micro-organisms when disposed of incorrectly, can be dangerous to public health

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Waste from Health Care Facilities

Sources:

hospitals, nursing homes, laboratories, mortuary, autopsy, animal research and blood banks.



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Medical Waste Regulation

Medical waste is managed under MOECC
Guideline C-4, November 2009



The management of biomedical waste in Ontario

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Types of Medical Waste

Infectious waste includes:

- Sharps (needles-hypodermic, suture, glass, scalpel blades)
- Human or Animal Tissue
- Body Fluids infected with pathogens, Cytotoxic Waste, Medical Dressings and Swabs
- Contaminated articles such as Urine Containers, dialysis tubing & incontinence



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Needles - “Sharps”

Dangerous and can cause serious damage to the human body as a needle, know as a sharp, can poke someone and give them a dangerous disease that can lead to life threatening causes.

There are many different types of needles and some of them consists of:

needles, syringes, blades, clinical glass & other clinical items capable of causing a cut or puncture.



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Waste from Health Care Facilities

Wastes not classed as biomedical waste from healthcare facilities:

Can contain potentially harmful micro-organism from:

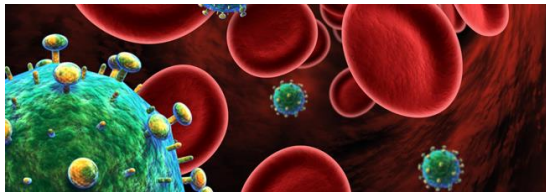
- dressings, incontinent products, blood spotted bedding/wipes, and cleaning materials.



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Infectious Disease's



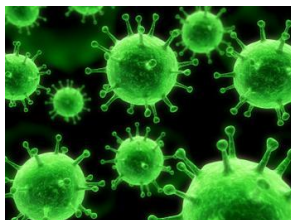
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Micro-organisms - Risks

“Health-care waste contains potentially harmful micro-organisms which can infect hospital patients, health-care workers and the general public.”



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**The Conference Board of Canada Report,
*Health Matters: An Economic Perspective.***

The Chief Public Health Officer's Report on the state of public health in Canada 2013 outlined that healthcare-associated methicillin-resistant *Staphylococcus aureus* infection rate increased more than **1,000% from 1995 to 2009** and about **80% of common infections are spread by healthcare workers, patients and visitors.**



**Infectious Disease
The Never-ending Threat**

**Canada's Population aging and prevalence of chronic diseases is rising.
Need for Disease Management**

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Ontario facing an Epidemic of Chronic Disease

“Infectious Disease-The Never-ending Threat”, reported by the Chief Public Health Officer on the State of Public Health in Canada, 2013, stated

- more than 200,000 patients get infections every year, while receiving healthcare in Canada and
- 8,000 die as a result.

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Disease management



- threats of new & stronger viruses
- infectious diseases resistant to antibiotics and chemical disinfectants.

“The existence in health-care facilities of bacteria resistant to antibiotics and chemical disinfectants may also contribute to the hazards created by poorly managed health-care waste.”



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Health Issue Media Reports Increasing



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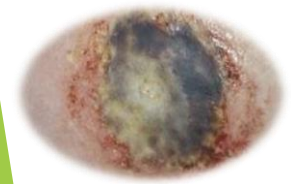
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Flesh-Eating Disease



Mother from Windsor, Ontario developed flesh-eating disease called “Necrotizing Fasciitis”, after giving birth died May 2015.



Health Canada online information site say Flesh-eating disease's are estimated between:

- **90 to 200 cases a year in Canada, caused by Group A strep**
- **20 to 30% are fatal.**

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Blood Infection



A Brampton mother who after giving birth to her second child in April 2015 died of a Group A streptococcal blood infection.

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Ebola Virus Risk in Ontario



The Chief Medical Officer of Health in **April 2015**, issued a Directive #4 regarding waste management for the Ebola Virus in Ontario.

“I am therefore of the opinion that there exist an immediate risk to the health of persons anywhere in Ontario from EVD”



Rating's

1 in Every 25 Patients has an Infection

“Infections that spread in a hospital, nursing home, or other healthcare setting, at any given time, about 1 in every 25 patients has an infection related to their hospital care”

The National Centre for Emerging and Zoonotic Infectious Diseases (NCEZID)

“Devastating effect on Lives of Ontarians”

“Ten Pathogens that Cause the Most Health Problems”

Infectious Diseases – CTV News

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“Nearly 5,000 Ontarians die every year from infectious diseases”

A study was released by the Ontario Agency for Health Protection and Promotion (OAHPP) and the Institute for Clinical Evaluative Sciences (ICES) which found that **nearly 5,000 Ontarians die every year from infectious diseases.**

“Infectious diseases are not going away”

Mr. Kwong, ICES scientist



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Ten Pathogens That Carry the Biggest Health Burden in Ontario

1. Hepatitis C (affects young people, causes devastating lifelong effects – liver cirrhosis and cancer)
2. Streptococcus pneumonia (leading bacterial infection causes pneumonia and meningitis) elderly in nursing homes
3. Human papillomavirus (HPV)(cervical cancer, anal cancer)
4. Hepatitis B virus (liver diseases), about 350 deaths a year
5. Escherichia coli (E.coli) (gastrointestinal and urinary tract infections) – 450,000 cases of infection each yr.
6. HIV/Aids
7. Staphylococcus aureus (main cause of hospital-acquired infection - 160,000 infections requiring sometimes intensive medical care each year in Ontario)
8. Influenza (infection affecting 630,000 Ontarians every year and 270 deaths annually)
9. Clostridium difficile (bacterium causing severe and fatal diarrhea)
10. Rhinoviruses (common cold) 1.6million cases require medical attention every year.

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Staph Infection

Staph can cause skin inflammation or abscesses. If Staph bacteria goes in lungs – pneumonia, bone –osteomyelitis, or into the blood stream it can spread to organs and cause life-threatening infections leading to death.

Some staph germs are resistant to antibiotics.

“Methicillin, Staphylococcus aureus” or “MRSA” are type’s of Staph that are resistant to antibiotics.



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Spreading the Disease

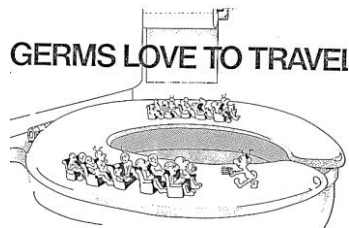
How?

- person to person
- contact with bodily fluids
- improper handling and control of infectious waste
- by vector (insects, animals).



Germs can reproduce outside or inside the body with the right conditions. Most bacteria thrive in warm temperatures like our bodies, around 98.6 degrees, moist areas, with presence of oxygen and food.

***Germs can multiply quickly, 1 germ can multiply into 64 billion germs in just 12 hours.**

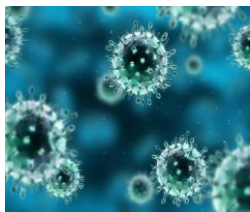
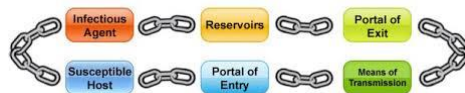


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Transmission of Infectious Diseases Requires Six Elements



1. Infectious agent
2. Reservoir
3. Portal of exit
4. Mode of transmission (how the micro organism moves from one place to another-contact/droplets/airborne)
5. Portal of entry
6. Susceptible host (a person susceptible to the disease, lacking immunity or resistance to prevent infection).

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Infection Control Stops at the Door

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Healthcare Cleaning & Disposal

Public Health Ontario has been doing excellent work in providing scientific and technical advice and support on infectious diseases, prevention and control, as well as environmental and occupational health support.

STANDARD PRECAUTIONS

A simple, consistent and effective approach to infection control



Minimise contact with blood and body substances by utilising safe work practices and protective barriers.

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www.ehow.com



Healthcare Cleaning & Disposal

Public Health Ontario outlined in their environmental cleaning toolkit how to clean and dispose of blood/body fluid spills:

- *“Dispose of the materials by placing them into regular waste receptacle.*
- *If the soiled materials are so wet that blood can be squeezed out of them, then they must be disposed of into the biomedical waste container, which is a yellow bag.”*

So blood on the healthcare paper towels, absorbent material is in regular garbage.

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Risks for Waste Disposal

The risk of infection is magnified in hospitals and long-term care facilities:

- It can spread from patient to healthcare workers by touching contaminated surfaces such as bathrooms, toilets, and equipment.



Patient's cleaning tissues, bed liners, incontinents, bandages contain potential infectious material, which are disposed in black garbage bags, going to

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Healthcare Waste - Landfills



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Plastic Bags – Environment for Bacterial Growth

Health care waste (bloody paper towels, absorbent materials, or incontinents - diapers) are put into plastic bags, sent to the landfill.



The plastic bag creates an environment that can promote the growth of bacteria, living off of the blood/urine/feces from the absorbent materials, supported with the warmth and darkness within the plastic bag waiting for disposal.

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Safe Management of Waste Report

“Very few data are available on the impact on medical and support workers from most components in health-care waste, but this should not prevent the use of sensible measures for safe waste handling and treatment at every health-care facility.”

“**Safe Management of Waste**” Report –
by the World Health Organization.

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Protection for All

How does hospital/healthcare workers know if the waste contains potentially infected material that they put through regular garbage?

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Protection for Patients and the Public

Infection control practices in hospitals have been designed to protect the patient, and healthcare workers, **but what about the waste handler and the public?**

It is known that actual cases of waste being demonstrated to cause an infection in health-care staff and waste workers are rarely documented.

All individuals coming into close proximity with health-care waste are potentially at risk from exposure to a hazard.

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Risky Business - Life Threatening Risks to Waste Haulers - City of Windsor



In the last 2 years there was 6 – 8 injuries to sanitation workers from sharps in garbage. “They pose a huge risk to our collectors,” said Anne-Marie Albidone, City of Windsor’s Environmental Services Manager in the Windsor Star, May 1st, 2014.

The City warns the public to never put such sharp objects (hypodermic needles, syringes, lancets, medical finger stick devices used for testing) in the trash, instead the sharps should be put in an approved yellow sharps container

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The reputation of a hospital or health care facility matters not only to the patients it serves, but to the community. It can have an impact not only on attracting patients, but potential international business, new physicians, and workers.

Health care facilities have a social responsibility, community responsibility and an environmental responsibility in the decisions it makes to manage its operations.

The Value Of Reputation

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Waste Management Hierarchy



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Greening Health Care Sector Report

The **Green Hospital Scorecard (GHS)** is a benchmarking and recognition program reflecting hospital's environmental performance:

In 2012 total waste in Canada contributed approximately 6% of Canada's greenhouse gas emissions:



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The amount of waste that Ontario's non-residential sector disposed of into landfill in 2010 (which is the most recent year) published data from Statistics Canada was **6,043,151 tonnes** and **752,990 tonnes were diverted** from landfills.

Table 1: Disposal of waste in tonnes, by source and geography

Geography	Sources of waste for disposal	2010
Canada	All sources of waste for disposal	24,883,546
	Non-residential sources of waste for disposal	15,627,006
Ontario	All sources of waste for disposal	9,247,415
	Non-residential sources of waste for disposal	6,043,151

Table 1 data consists of non-hazardous waste disposed of in public and private waste disposal facilities by industrial, commercial and institutions. For more information, please see Statistics Canada Table 153-0041: Disposal of waste, by source, Canada, provinces and territories.

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Ontario Hospital Sector Waste Volume & Diversion from Landfills

Ontario hospital sector in 2013 generated approximately:

- 64,560 tonnes of general (non-hazardous) waste
- 31,102 tonnes of waste was diverted from landfill.

This is approximately 1% of Ontario non-residential sector waste destined for disposal and 4% of diverted waste.

Reference: Green Hospital Scorecard (GHS) 2013 data

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Ontario Hospital Waste Composition

The GHS 2013 reporting data suggests that the average composition of Ontario hospital waste consists of:

- 59% - General (non-hazardous)**
- 34% - Diverted wastes (recycle, reuse and compost)**
- 7% - Biomedical waste**



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Health care Waste to Landfills Environmental Hazards

Landfill waste attracts birds and wildlife scavenging, which introduces a risk of reintroducing micro-organisms into the food chain – spread of disease, tied with healthcare waste.



6,000 dead birds washed up on Georgian Bay's shoreline near Wasaga Beach – botulism
CTV News Oct 23, 2011

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Healthcare can make a difference

Reducing Risks & Going Green



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Environmental Footprint

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Environmental Footprint

The focus of all health care leaders is to reduce waste and where ever possible recycle.

The Greening Health Care Sector Report on Waste management diversion from landfill gives many examples of positive diversion from donations to reuse and recycling.



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Where Does the Waste Come From?

Where the waste comes from and what possible or probable risk and impact the waste can have is where we need to start to address setting policy and purchasing decisions for waste disposal methods.

An organization is legally responsible for its waste.

Stop the Spread of Potential Infectious Waste

The composition of the regular waste from a healthcare facilities: (hospitals, care homes, laboratories, mortuary, autopsy, animal research and blood banks) has a probability of infectious waste and therefore the method of disposal needs to be total destruction and diversion from landfills.

How?

SOLUTION Diversion & Destruction

Total destruction of potential infectious waste through Energy from Waste (EFW).

This is the only way to ensure that this waste is managed and controlled. It inactivates disease agents and eliminates the opportunity for spread of potential infectious pathogens at a landfill.



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Energy from Waste (EFW)

**Diversion from landfills
Total destruction of infectious waste**



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Healthcare Can Make a Difference



Reduction of Risks (Value for your Money)

Manage Health care sector waste through total destruction of potentially infectious waste, going Green - meeting diversion from landfill & producing Energy from Healthcare Waste.



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Health Care Sector – EFW Greening & Protection



- Enhances reputation of Healthcare to protect patients & public health
- Total destruction of potential infectious waste from health care facilities. Inactivating disease agents and elimination of the spread of potential infectious pathogens
- Meeting the Green Hospital Scorecard (GHS) benchmarking for diversion. Adding another 64,560 tonnes for diversion from landfill from hospitals in Ontario.
- Production of Energy from Waste (potential infectious waste) from health care facilities
- Reducing CO2 emissions from long haul truck disposal

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Incineration Technology

Incineration was used by many hospitals in the 80's and early 90's, however the technology was built for disposal of body parts and not health care materials such as plastics and metals,

Therefore under Ruth Grier, Minister of the Environment in the early 90's came the closure of hospital incinerators that had not been retrofitted to handle the plastics and metals that comes with medical waste disposal.



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Toronto Western
Hospital

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Diverted over 2.5 million tonnes of waste from landfill

This treatment method has a sound track record of over twenty plus years (since 1992) of managing Energy from Waste in the Region of Peel and in Ontario (2012).

The facility has operated in compliance with its license by the Ontario Ministry of the Environment and Climate Change. It has 5 gasification units. It **burns waste** from MSW, commercial, pharmaceutical, international waste, treated medical waste, product destruction, contraband, etc. AND **produces electricity**

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Wasted energy

Medical waste is a potent power source

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SPONSORED CONTENT WASTE REDUCTION

Wasted energy

Medical waste is a potent power source

Many Ontario hospitals struggle to keep out of landfills and disposal of a way that keeps potentially dangerous pathogens from seeping into the environment, but no.

The disposal of biomedical waste — blood and other bodily fluids from humans and animals, potentially infectious waste, and sharps such as needles and blades — is regulated by Ontario's Ministry of the Environment and Climate Change under Guidelines C-4.

The guidelines outline how biomedical waste is to be segregated from other waste, stored or shipped, and ultimately disposed of. Sharps, for example, are collected in its sharps bins with other biomedical waste it is collected.

However, items that contain blood and human waste such as bandages, glistening wipes, bandages and bed linen are not classified as biomedical waste and routinely thrown into garbage bags and sent to landfills.

Those bodily fluids may contain infectious pathogens that could pose a danger to the environment and in human health, argues James Pike, CEO of Pilot Performance Resources Management Inc. and an expert on biomedical waste disposal and international environmental standards.

The National Center for Emerging & Zoonotic Infectious Disease estimates that one in every 25 patients has an infection related to hospital care. Effective management of bio-waste in Ontario with Ebola Virus, swine influenza.

"When you close off a garbage bag with these items, you now have an environment of blood, warmth, darkness for the growth of

these diseases," Pike says. In May, Pike issued a white paper entitled "Health Care Waste: Overview and Direction — Disposal Decision — Ensuring Health and Environmental Safety." It includes the call for all waste from health-care facilities to be incinerated and produce electricity.

While health-care waste carrying infectious bacteria ends up in landfills, it not only sits in its inert environment for years, but vectors such as mosquitoes, insects, birds, rodents and snakes, which feed on this waste, are carriers to spread disease, Pike warns.

The solution is reducing risks through the total destruction of all health-care waste through energy from waste (EFW) — burning waste to produce electricity — removing those pathogens in landfills and preventing spreading of pathogens to agricultural lands and waterways, or an spread to scavengers.

Hospitals throughout Europe have been burning all health-care waste for years, Pike says. While hospitals in Ontario seek that innovation, they were not built to handle such, plastic and other materials and, if they weren't upgraded, were eventually closed.

But a facility run by Emerald Energy from West in Burlington, Ont., has been incinerating waste since 1980. It produces enough electricity to run its own operations and generate profit for the publicly traded paper mill. Opening other such facilities across the province will ensure that no health-care waste will end up in landfills, Pike says.

"The more I talk to people, the public, they are flabbergasted that waste from hospitals and health-care facilities goes to a landfill," she says. "They're shocked."












15 Tidmore Avenue - Etobicoke - Ontario - M9W 7E3
Tel: 416-475-3700 Toll Free: 1 (866) 299-8725 Fax: 416-747-4878

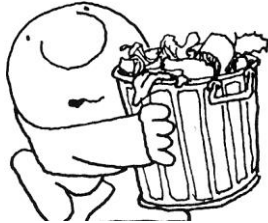
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TAKING OUT THE GARBAGE
IS VERY THERAPEUTIC
...IT HELPS KEEP ONE IN
TOUCH WITH REALITY !!



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Disclaimer

The presentation was intended to deal with health care waste not going to landfill and promote total destruction of potential infectious waste.

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Pilot Performance Resources Management Inc.
P. O. Box 68584, 25 Great Lakes Drive,
Brampton, Ontario, Canada, L6R0J8

Tel: 905-792-3130

Email: jpilot@pilotims.com

Website: www.pilotims.com

Twitter: [PilotManagement](https://twitter.com/PilotManagement)



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