

VOLUME 5

SECTION 7

MANAGEMENT OF SHIP-GENERATED, MEDICAL AND HAZARDOUS WASTES

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and

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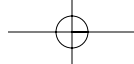
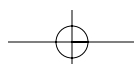
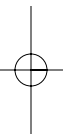
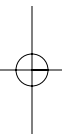


TABLE OF CONTENT

CHAPTER 1	1
MANAGEMENT OF SHIP GENERATED WASTE	
CHAPTER 2	3
MEDICAL WASTE	
CHAPTER 3	7
HAZARDOUS WASTE	



CHAPTER I

MANAGEMENT OF SHIP-GENERATED WASTE

10. BACKGROUND

Jamaica, like other small island developing states, faces challenges in dealing with its hazardous wastes given the constraints in terms of limited land area, infrastructure and available resources (technical, financial and human) for the safe handling, treatment and disposal of such wastes.

The challenges faced by Small Island Developing States (SIDS) in the management of hazardous wastes were clearly articulated in the 1994 Barbados Programme of Action (BPOA) for SIDS and reiterated at the International Meeting for the 10-year review of the implementation of the BPOA which was held in Mauritius in 2005.

1.1 SHIP-GENERATED WASTES

The number of ship calls to the Port of Kingston has increased steadily at a rate of two per cent (2%) per annum between 1998 and 2003, from 2,200 in 1998 to 2,591 in 2003. It is expected that this growth rate will increase to three per cent (3%) per annum over the next twenty years with an estimated 3,767 ship calls in 2025. Not only has the number of ships arriving at the Port increased, but the quantity of large ships, that is greater than 20,000 G.T. (gross tons), has also increased.

Increased ship calls have resulted in significant quantities of ship-generated wastes, an estimated 3,000, 4,379 and 240 tonnes of sludge residuals, oily wastes and garbage, respectively in 2003. As a signatory to the International Convention for the Prevention of Pollution from ships (MARPOL 73/78), Jamaica is required to establish port reception facilities for ship-generated wastes, primarily Annex I and Annex V wastes which are oily wastes and garbage, respectively.

1.1.1 Proposals for Waste Reception Facilities

There are at present no waste reception facilities at the island's ports. However, a technical study has been undertaken to establish waste reception facilities for Annex I and Annex V wastes for the Port of Kingston. In respect of Annex I wastes (oily wastes), it is being proposed that collection tanks be established at Newport West, Rockfort and Port Royal and that a treatment plant be established at Greenwich. The wastes would

be conveyed to Greenwich via pipes over land or tankers. Recovered oil would be mixed with Bunker C and sold, sludge would be land farmed at Greenwich and wastewater treated to Ministry of Health and NEPA's standards and disposed of in the Harbour.

The disposal of Annex V wastes, that is garbage, would be via an established protocol between the port authorities and the National Solid Waste Management Authority. In this regard, it is being proposed that pre-sorted ship-generated wastes would be conveyed to clearly identified skips located at Newport West, Rockfort and Port Royal and would be taken by designated trucks to a 10 hectare area of land at the Riverton City landfill for disposal. A manifest system would also be used to regulate the chain of custody of the wastes from reception at the ports to final disposal.

1.2 THE SHIPPING (POLLUTION PREVENTION, RESPONSE AND COMPENSATION) ACT

The Maritime Authority is spearheading the development of the Shipping (Pollution Prevention, Response and Compensation) Act which will be promulgated in 2006 and will govern the local implementation of the following Conventions: the International Convention on Oil Pollution, Preparedness, Response and Cooperation, the International Convention on Civil Liabilities for Oil Pollution, the Convention on the Prevention of Maritime Pollution by Dumping of Wastes and Other Matter, the International Convention on the establishment of an International Fund for Compensation for Oil Pollution Damage, the International Convention relating to Intervention on the High Seas in cases of Oil Pollution Casualties, the International Convention Liability and Compensation for Damage in Connection with the carriage of Hazardous and Noxious Substances, International Convention for the Prevention of Pollution by Ships, (MARPOL).

The Act will, inter alia, address discharge of wastes from ships and will require these vessels to use reception facilities (including ports and marinas).

CHAPTER 2

MEDICAL WASTE

2.0 DEFINITION OF MEDICAL WASTE

The National Medical Waste Management Policy (draft, 2006) defines Medical Waste as any waste that is generated in the immunization, diagnosis, treatment and disposal of human beings or animals or parts thereof, in research pertaining thereto, or in the production or testing of biologicals, including but not limited to:

- soiled or blood-soaked bandages
- culture dishes and other glassware
- discarded surgical gloves
- discarded cultures, stocks, swabs used to inoculate cultures, specimens, vaccines and associated items likely to contain pathogenic organisms
- discarded disease causing organisms
- wastes from the production of biologicals and antibiotics likely to have been contaminated by pathogenic organisms
- free-flowing blood, blood products, and body fluids, including items containing or visibly contaminated with blood
- animal and human tissues and anatomical wastes (body organs - tonsils, appendices, limbs, etc.)
- sharps¹ likely to be contaminated with pathogenic organisms including discarded surgical instruments and all discarded needles/syringes (used to give vaccinations or draw blood)
- empty chemotherapy containers
- remains of animals likely to be infected with pathogens,

¹ Sharps - Needles, scalpels, knives, glass, lancets, syringes, pasteur pipettes and similar items having a point or sharp edge or are likely to break during transportation and result in a point or sharp edge.

including carcasses, body parts, bedding and related wastes

- autopsy and mortuary wastes
- residue from the cleanup of medical waste
- pharmaceuticals
- radioactive waste
- any solid waste that is contaminated by or mixed with medical waste
- mixtures of hazardous waste identified or listed in the Natural Resources (Hazardous Waste) (Control of Transboundary Movement) Regulation, 2002 and medical waste

2.1 MEDICAL WASTE ESTIMATES

It is estimated that the health sector generates approximately 1,596 tonnes of medical waste annually. This represents approximately 20% of the total waste stream from healthcare facilities. The remaining 80% is non-risk or “general” healthcare waste with similar characteristics to domestic waste. Eighty-three (83%) of the total medical waste is generated by public healthcare facilities, while the remaining 17% is generated by private healthcare facilities.

There is very little documentation on the quantities of waste that are generated by both public and private healthcare facilities. However, previous studies have indicated a generation rate of 0.24 – 1 kg/bed/day for hospitals and 12 kg/day for clinics.

There is no accurate data available on medical waste generation by veterinary, medical laboratory, pharmaceutical sectors.

Table 1. Composition of medical wastes generated within Jamaican public hospitals

Composition of medical wastes	
Type of wastes	Percentage of total wastes generated
Infectious and anatomic wastes	15%
Sharps (e.g. hypodermic needles, intravenous sets, disposable scalpels)	1%
Chemicals and pharmaceuticals (including expired, unused and contaminated pharmaceuticals)	3%
Genotoxic waste, radioactive matter and heavy metals ²	1%
General wastes	80%

2.2 MEDICAL WASTE POLICY

The Ministry of Health has developed a National Medical Waste Management Policy 2006 for the management of medical waste that is generated by healthcare, pharmaceutical and veterinary facilities. It outlines the regulatory and operational requirements to manage waste in a manner that ensures:

- i a safe and healthy environment for all employees, patients and visitors
- ii compliance with national policies and regulations which govern waste management
- iii protection of surrounding communities from risks associated with inappropriate handling, treatment and disposal of medical waste and
- iv that legal liability associated with the improper management of medical infectious waste is avoided

This policy also sets the framework for the enactment of Medical Waste Management Regulations to deal with all aspects of medical waste management and to support cost recovery and enforcement mechanisms among healthcare facilities and medical waste collection and disposal service providers.

2.3 RESPONSIBILITY

The Medical Waste Policy states that medical waste management is the responsibility of the person in charge of the healthcare facility from generation through to safe treatment and disposal. Waste generators, managers and owners of healthcare facilities must ensure that systems are in place for proper management of medical waste. In discharging their responsibilities, the management of the waste must be in compliance with:

- i Policies, regulations, Codes of Practice and Guidelines stipulated by the Ministry of Health.
- ii The requirements (policy, legislation, standards, etc) of the National

² Genotoxic wastes include certain cytotoxic drugs and their metabolites as well as the vomit, urine or faeces of patients undergoing cancer treatment

Radioactive waste is comprised of solid, liquid and gaseous waste contaminated with radionuclides generated in vitron analysis of body tissue and fluid in body organ imaging and tumor localization and investigation and therapeutic procedures

Heavy metal wastes include waste which have high heavy metal content, for example mercury and lead (Reference: Policy Framework for the Management of Medical Wastes, 2003 Ministry of Local Government, Community Development and Sport)

Solid Waste Management Authority (NSWMA) which has the legal mandate for regulating the management of waste nationally (from generation through to treatment and disposal)

- iii The requirements (where applicable) of the National Environment and Planning Agency (NEPA).

Healthcare facilities have the option to choose the technology to be employed for the treatment of their medical wastes, however, the selected technology must be in accordance with the Ministry of Health Guidelines for the handling and disposal of medical wastes.

2.4 DISPOSAL METHOD

At present, the main technology employed by both public and private medical institutions in the disposal of medical wastes is incineration. The frequency of incineration is dependent on the volume of the waste generated as well as the status of the incinerator. Many of these incinerators are less than effective, in that they are outdated, undersized for the volume of wastes generated for disposal or are poorly maintained. The incinerators which have poor operating efficiencies also have high air pollutant emissions. Residues from incinerators are transported with the municipal garbage to the island's landfill sites for disposal.

Table 2. Relevant Policies related to the management of medical wastes

The following table lists the policies that relate to the management of medical wastes:

Medical Waste Management Policy for Jamaica 2006
Policy for the Management of Healthcare Waste
Guidelines for the Management of Medical/Infectious Waste generated at Healthcare Facilities (1999) <i>draft</i>

In 2004, the Ministry of Health embarked on a National Medical Waste Management project which seeks to improve the management of medical waste and involves the establishment of regional medical waste treatment and collection systems comprising the autoclave and shredding technology and specialized medical waste collection vehicles within each of the four health regions in Jamaica.

CHAPTER 3

HAZARDOUS WASTES

3.0 DEFINITION OF HAZARDOUS WASTES

Hazardous Wastes is defined as wastes which exhibit any of the following characteristics: toxic, ecotoxic, corrosive, flammable, explosive, poisonous.

3.1 EXAMPLES OF HAZARDOUS WASTES (AS DEFINED UNDER THE NATURAL RESOURCES CONSERVATION (HAZARDOUS WASTE) (CONTROL OF TRANSBOUNDARY MOVEMENT) REGULATIONS, 2002)

The following are examples of categories of wastes which are classified as hazardous:

- i wastes from the production and preparation of pharmaceutical products
- ii wastes from production, formulation and use of photographic chemicals and processing materials
- iii wastes oils/water, hydrocarbons/water mixtures, emulsions
- iv wastes having as constituents metals and inorganic materials, for example, beryllium; beryllium compounds, mercury; mercury compounds, lead; lead compounds, copper compounds, zinc compounds, hexavalent chromium compounds, arsenic; arsenic compounds
- v waste lead-acid batteries, whole or crushed, and
- vi wastes, substances and articles containing, consisting of or contaminated with polychlorinated biphenyls (PCBs), polychlorinated terphenyls (PCTs), polychlorinated naphthalene (PCN) or polybrominated biphenyls (PBBs)

3.2 STATE OF ENVIRONMENT REPORT

The 2001 State of the Environment Report estimated the quantity of hazardous wastes generated per annum as less than 10,000 tonnes, of which oily wastes

constituted 80 per cent. This may be a conservative estimate and attempts are being made to obtain a more accurate figure through the hazardous waste inventory being undertaken by the Chemistry Department, University of the West Indies through an Environmental Foundation of Jamaica grant. This inventory will be completed in 2006.

3.3 INSTITUTIONAL FRAMEWORK

The management of hazardous wastes transcends the portfolio responsibilities of several public sector agencies. The Ministry of Land and Environment is primarily responsible for policy formulation in respect of hazardous waste management. The Ministry works closely with the main technical agencies in this area, namely the National Solid Waste Management Authority, the National Environment and Planning Agency and the Environmental Health Unit of the Ministry of Health in respect of solid waste management issues, the impact of hazardous wastes on the environment and public health, respectively.

3.4 LEGISLATIVE FRAMEWORK

There are several pieces of legislation which govern different aspects of hazardous waste management. The principal legal instrument is the Natural Resources Conservation Authority Act which governs the management of the environment and the protection and conservation of the island's natural resource base. Under this Act, a number of regulations governing hazardous waste management have been enacted, namely the:

- i Natural Resources Conservation (Permits and Licences) Regulations, 1996 and the Natural Resources Conservation (Permits and Licences) (Amendment) Regulations, 2004 which, inter alia, make provision for the issuance of a permit for the storage, transportation or disposal of hazardous wastes, and
- ii Natural Resources Conservation (Hazardous Waste)(Control of Transboundary Movement) Regulations, 2002 which regulate the import, transit and export of hazardous wastes through all areas under Jamaica's jurisdiction. Any person who wishes to conduct a transboundary movement of hazardous wastes under these Regulations, must apply to the Applications Secretariat Branch of NEPA for the requisite permit.
- iii Under the Regulations the importation of hazardous wastes is prohibited as the country does not have the necessary infrastructure or capacity to dispose of the wastes in an

environmentally sound and efficient manner.

The table below shows the permit requirements for the export of hazardous waste.

Table 3. Natural Resources Conservation (Hazardous Waste)(Control of Transboundary Movement) Regulations, 2002

<p>A. Export of Hazardous Wastes:</p> <p>i) General Export permit</p> <p>ii) Special Export permit</p>	<p>All persons who propose to export hazardous wastes must apply to the Applications Secretariat Branch of NEPA at least <u>120 days</u> before the proposed date of export</p> <p>The permit entitles the holder to carry out multiple consignments of hazardous wastes of the <u>same</u> physical and chemical characteristics to the <u>same</u> disposer via the <u>same</u> Jamaican customs office of exit to the <u>same</u> customs office of entry in the import State</p> <p>The permit entitles the holder to carry out a <u>single</u> export of hazardous wastes to a specified disposer by way of a specified port</p>	<p>Applicants must complete Form 4 (<i>Fifth Schedule of the Regulations</i>)</p> <p>Cost of the permit is Eighteen thousand five hundred dollars (J\$18,5 00): J\$2,500 - application fee J\$16,000 – permit fee</p> <p>Cost of the permit is Ten thousand five hundred Jamaican dollars (J\$10,500): J\$2,500 – application fee J\$8,000 – permit fee</p>
<p>B. Transit of Hazardous Wastes: Transit Permit</p>	<p>In the case of the transit of hazardous wastes through any area under Jamaica’s jurisdiction (<i>whether the vessel will be transiting or in transit</i>), an application for an transit permit must be made to the Applications Secretariat Branch of NEPA at least <u>90 days</u> before the commencement of the movement</p>	<p>Applicants must complete Form I (<i>Fifth Schedule of the Regulations</i>)</p> <p>Cost fo the permit is Five hundred United States dollars (US\$500): US\$150 – application fee US\$350 - permit fee</p>

3.5 DOCUMENTS REQUIRED FOR EXPORT PERMIT

In addition to the application and permit fee, the following documents must be submitted to the NEPA in applying for an export permit:

- i Completed Notification Form (Form 2 - Fifth Schedule of the Regulations)
- ii Bank guarantee, trust fund, line of credit or insurance which shall cover, but is not exclusive to, damage to third parties, environmental damage and other risks which might arise in relation to the hazardous wastes concerned
- iii Written description of the wastes (including MSDS sheet, if possible), and a
- iv Written contract between the exporter and the proposed disposer in the import State specify the environmentally sound management of the wastes concerned

On receipt of the abovementioned documents, NEPA will contact the competent authorities in the import State and the transit State(s), if any, to request consent for the movement of the proposed wastes through their jurisdiction. NEPA will only grant an export permit if all the States concerned have consented to the movement.

3.6 PROHIBITION OF EXPORT OF HAZARDOUS WASTES

Jamaica, like all other parties to the Basel Convention on the Control of Transboundary Movements and Hazardous Wastes and their Disposal³, cannot permit the export of hazardous wastes:

- i To countries which are not parties to the Convention (a list of countries which are members of the Basel Convention can be found at www.basel.int). Export to such States will only be permitted if a bilateral agreement exists between the Governments of Jamaica and the State concerned to this effect
- ii If the technical capacity and the necessary facilities exist within the island to dispose of the wastes in an environmentally sound and efficient manner

³ The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their disposal is a legally binding multilateral agreement. Jamaica acceded to the Convention on April 23, 2003.

- iii If the waste is destined for disposal within the area south of 60o latitude, and
- iv If the countries that will be affected by the movement of such wastes have not consented

3.7 OTHER RELEVANT PIECES OF LEGISLATION

Other key pieces of legislation pertaining to hazardous waste management include:

3.7.1 The National Solid Waste Management Act

The National Solid Waste Management Act, 2001 which regulates the collection, storage, transportation, recycling, reuse and disposal of the island's solid wastes which, as defined by the Act, includes hazardous and medical wastes.

3.7.2 The Pesticides Act, 1987 and the Precursor Chemicals Act

There is also legislation governing the management of different categories of chemicals, including the Pesticides Act, 1987 and the Precursor Chemicals Act, which also from a 'life cycle approach' also impacts on hazardous waste management. These Acts stipulate that pesticides and precursor chemicals, respectively, must be properly disposed of.

3.7.3 Inter-Island Management of Hazardous Wastes

It should be noted however that there is no legislation which governs the intra-Island management of hazardous wastes in a comprehensive manner. There are plans to enact such legislation in the near future.

3.8 POLICIES

A National Hazardous Substances and Hazardous Waste Management Policy is being developed by the Ministry of Land and Environment. This Policy will provide the framework for the management of these toxic substances. The tenets of the Policy will be based on, inter alia, the recommendations outlined in the Hazardous Waste Management Policy Framework document, the National Implementation Plan for Persistent Organic Pollutants (POPS) 3 and the National Programme of Action. It is anticipated that this Policy will be completed by 2006.

National policies, such as the National Solid Waste Management Policy, the

National Policy and Strategy for Environmental Management Systems (EMS) (draft) and the Medical Waste Management Policy (draft) will support the NHSHW Policy. The National Environment and Planning Agency (NEPA) and the Environmental Health Unit of the Ministry of Health are spearheading the development of the EMS and the Medical Waste Management policies, respectively. It is anticipated that both policies will be completed by the end of the 2005/2006 financial year.

3.9 GUIDANCE DOCUMENTS

A Guidance document has been developed for polychlorinated biphenyls (PCBs). This document is presently being reviewed. Similar documents are being developed for other categories of hazardous wastes, including waste oils and lead acid batteries.

3.10 INFRASTRUCTURE

At present there are no designated local facilities for the storage, treatment or disposal of hazardous wastes. The lack of the necessary infrastructure has, in part, contributed to the illegal dumping and the improper management of hazardous wastes.

Industries, such as the bauxite, petroleum and lead acid battery sectors, have exported their hazardous wastes, in keeping with the Basel Convention (see below), for recycling, recovery or disposal. The cost to export hazardous wastes for disposal can be prohibitive for many small and medium enterprises therefore the management of their hazardous wastes, (given the lack of infrastructure locally), is somewhat of a challenge. Some companies however have applied to NEPA for permits to store such wastes until they can be disposed of in an environmentally sound manner.

3.11 CATEGORIES OF HAZARDOUS WASTES ACCEPTED IN LAND FILLS LOCALLY

There are some categories of hazardous wastes that are presently being accepted at the landfill site, but the acceptance of this waste is dependent on ability of the National Solid Waste Management Authority to handle the wastes in an environmentally sound manner.

In this regard, hazardous wastes such as asbestos and filter compounds used in the processing of oil products are presently being accepted at the island's landfills.

3.12 HOUSEHOLD HAZARDOUS WASTES

Household hazardous wastes, for example paints, batteries, insecticides, pharmaceuticals, are not segregated and are collected with the municipal garbage and disposed of at the island's landfills, none of which is classified as sanitary landfills. The disposal of household hazardous wastes in this manner poses a risk to the health of the National Solid Waste Management truck crews and the personnel which work at the landfill sites. Hazardous wastes disposed of in this manner can leach into the groundwater and threaten the quality of the drinking water supply for some urban centres.

3.13 International Environmental Agreements Related to Hazardous Wastes Management

Jamaica has signed or is a Party to the main multilateral environmental agreements that address hazardous wastes or chemicals management, namely the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, the Stockholm Convention on Persistent Organic Pollutants and the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals in International Trade (see Table 4.0 at page 14).

TABLE 4. MULTILATERAL ENVIRONMENTAL CONVENTIONS RELATED TO CHEMICALS AND/OR HAZARDOUS WASTES MANAGEMENT

Name of Convention	Date of Entry into force for Jamaica	Main Objective of the Convention
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	April 23, 2003	<p>The regulation of the transboundary movements of hazardous wastes.</p> <p>The Convention also stipulates that, as much as possible, the transboundary movement of wastes should be minimal and efforts must be made to put the necessary infrastructure in place to address the environmentally sound management of hazardous wastes at source.</p>
Stockholm Convention on Persistent Organic Pollutants	May 23, 2001 (S)*	<p>The management of certain pesticides and industrial organic compounds which persist in the environment, thereby posing a serious threat to health and the environment. At present, there are twelve (12) designated persistent organic pollutants (POPs) listed in Annexes A, B and C of the Convention (lindane, mirex, hexachlorobenzene, polychlorinated biphenyls, dioxins, furans, DDT, aldrin, chlorodane, dieldrin, endrin and heptachlor)</p>
Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Pesticides and Chemicals in International Trade	February 24, 2004	<p>To promote shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm and to contribute to the environmentally sound use, by facilitating information exchange about their characteristics, by providing for a national decision-making process on their import and export and by disseminating these decisions to Parties.</p>

Note: (S)* - Jamaica is a signatory to the Stockholm Convention

3.14 CONTACT INFORMATION

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