



ENVIRONMENTAL AUDIT
ON
MANAGING CLINICAL WASTE
IN THE PUBLIC HEALTH SECTOR



Office of the Auditor General
Angelos Complex
Brades
Montserrat
September 2017

MANAGING CLINICAL WASTE IN THE PUBLIC HEALTH SECTOR

This is a Report of an Environmental Audit conducted by the Office of the Auditor General pursuant to Section 103 of the Montserrat Constitution Order 2010

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Auditor-General,
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30 September 2017

PREAMBLE

Vision-Statement

“To be a proactive Supreme Audit Institution that helps the nation makes good use of its resources”.

Mission-Statement

“The O.A.G. is the national authority on public sector auditing issues and is focused on assessing performance and promoting accountability, transparency and improved stewardship in managing public resources by conducting independent and objective reviews of the accounts and operations of central government and statutory agencies; providing advice; and submitting timely Reports to Accounting Officers and the Legislative Assembly”.

The Goal

“To promote staff development, enhance productivity, and maintain a high standard of auditing and accounting in the public sector, thereby contributing to the general efficiency and effectiveness of public finance management”.

AUDITOR GENERAL'S OVERVIEW

Clinical waste is defined as waste that consist of or is contaminated by human or animal tissue, body fluids, or healthcare equipment such as dressings and sharps which unless made safe may be hazardous to anyone that comes into contact with it. If not disposed of correctly, it can lead to injury or infection.

Some waste is benign, some is hazardous to people or the environment. The generation and disposal of waste should be managed efficiently and effectively. Effective management seeks to reduce waste and manage its disposal in an environmentally friendly and cost-effective way.

Our review revealed that some effort is being made to manage waste. However, this is hampered by the absence of law, regulations and documented waste management policies. Training in waste management is limited at best.

Overall, the impact of inappropriate waste management has been assessed as low-medium (lower range of medium due to word of mouth directives and limited documentation). Thus, we have made a number of recommendations to our findings around the management of clinical waste. The acceptance and implementation of these and other recommendations mentioned in this report will bring significant improvement.

We wish to record our thanks to all Staff within the Ministry of Health who provided information, clarifications or courtesies extended during the course of this audit. We look forward to the same as we continue to strive to promote accountability, transparency and improved stewardship in managing public resources.



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Montserrat
9 October 2017

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EXECUTIVE SUMMARY

The focus of our audit

The effective management of hospital or clinical waste is essential for the health and safety of patients, staff and the general public. The safe storage, transportation, treatment and disposal of waste are important in ensuring that environmental standards are met, while the standards themselves continue to be raised regionally and internationally. Hospital waste can be considered in domestic waste and clinical waste. Domestic waste is made up of the items found in waste from households, and clinical waste consists of waste not deemed safe for disposal with domestic waste.

The Office of the Auditor General (OAG) undertook the environmental audit to assess whether clinical waste generated by the Hospital and Clinics are appropriately managed and disposed of through safe and environmentally sound methods, to protect health care workers, the environment and the communities in which they operate.

Key findings and recommendations

There was no provision for clinical waste management in any Laws of Montserrat or the Strategic/Operational Plans of the Ministry of Health. The Glendon Hospital Waste Management Policy is in draft, incomplete and lacking in content. These issues made it difficult to establish the required level of performance against which clinical waste management could be assessed.

Our review also found that in general, clinical waste was sufficiently managed, although there were occasional cases of poor practice in regard to total compliance with best practice, resulting in inadequate and unsecured storage. Specific training for dealing with waste management was lacking. Some staff reported that they did not receive any training in this area.

It is incumbent upon Management to ensure that policies are in place and are complied with in respect of clinical waste management. This would reduce and/or avoid risks associated with improper waste disposal. Facilities Management should ensure that waste generated is completely incinerated. A request should be made for the Senior Environmental Health Officer

to randomly supervise incineration activities. Alternatively, the Environmental Health Unit duties should be amended to include the conduct of spot checks of the clinical waste process at the Hospital and other facilities where waste is created.

Audit Opinion

The Glendon Hospital has done well to manage clinical waste with the limited resources available to them; however, more needs to be done to improve the facilities, the clinical waste procedures and get staff further trained. An important responsibility of senior health officials is to ensure the formulation, coordination and implementation of policies, strategic and operational plans but the lack of a documented up-to-date clinical waste policy and procedures have seen some procedures being dealt with in an adhoc manner.

The impact at which inappropriate management of clinical waste affects human health, the environment and natural resources have been assessed as low-medium (lower range of medium due to word of mouth directives and limited documentation). It was noted that training is provided annually on infection control with a unit focusing on clinical waste management. The extent to which management prioritizes the activities involving clinical waste must be improved by restructuring the training with more emphasis on clinical waste management. The non-existence of a clinical waste management policy further exemplifies that aspects of clinical waste training is limited.

There have been minimal reports of risks associated with clinical waste however prevention is better than a cure. Health care workers are not offered vaccination against Hepatitis B as and when they commence work however, discussions have begun to address this. Additionally, it is difficult to quantify the cost effectiveness of the management of clinical waste in the absence of robust data collected by the Glendon Hospital or the Ministry of Health.

We have made a number of recommendations to our findings around the management of clinical waste. The acceptance and implementation of these and other recommendations mentioned in this report will bring significant improvement.

CHAPTER 1 Introduction

Why we undertook the audit

We are committed to conducting a number of annual performance and special audits in order to provide assurance to Legislative Assembly on how effectively and efficiently projects or activities are administered and monitored. The early response of organisations to environmental issues is largely reactive, with the majority merely complying with, and not attempting to exceed, the requirements of regulations.

However, as the number of environmental legislation in countries worldwide has increased, and controls are likely to continue to be tightened in the future, companies do not only have to meet existing legislative requirements, but to look ahead and anticipate future developments. In addition, legislation is increasingly phrased so that there is the responsibility of organisations to continuously review and to monitor their production processes and technology on environmental grounds. The OAG realized that ongoing rebuilding infrastructure on the island meant that there would be some impact on the environment and the need to review some aspects of redevelopment.

The objectives of the audit

The overall objective of this review was to assess whether hospital and clinical waste generated by our hospital, clinics and labs was appropriately managed and disposed of through safe and environmentally sound methods, to protect employees' health, the environment, and the communities in which these institutions operate. The sub-objectives were to:

- determine the extent to which the Glendon Hospital and the clinics complied with any policies or code of practice and all other strategies in relation thereto;
- assess the impact at which inappropriate management of clinical waste affected the human health, the environment and natural resources;
- assess the extent to which management prioritises the activities involving clinical waste;
- assess how risks relating to clinical waste were managed;
- determine the extent to which information relating to clinical waste generation and ultimate disposal was being collected and compiled to assist in making informed decisions about allocation of resources, or to provide sound advice on the appropriateness, success, shortcomings and future directions of the operation.

Audit Scope

The focus of the audit was the entire waste stream from generation/production (that is hospital wards, units, clinics and labs) to ultimate disposal of waste residuals and ash to the appropriate places and the administrative arrangements in place. The scale of this review encompassed Units and Departments within the Ministry of Health.

How we conducted the audit

The audit scope included reviewing the Hospital's and Clinics' waste management procedures. During our review, the auditor performed the following activities:

- Reviewed the strategic context of the Ministry of Health
- Reviewed GoM's laws and regulations
- Reviewed MoH's draft waste management policy and procedures
- Interviewed Chief Medical Officer and Secondary Care Manager
- Interviewed Heads of Units and staff at Glendon Hospital and various Clinics
- Interviewed nurses, maids and orderlies
- Site Visits to Glendon Hospital, Landfill Site, Clinics – St. Johns and Dental

The findings of this report were discussed with key health stakeholders and their view(s) were taken into consideration when finalising this report.

Standards Used

We conducted this environment audit in accordance with International Standards for Supreme Audit Institutions (ISSAI) 5110 and 5120 relating to Environmental Auditing. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. It also requires us to provide assurance that the governmental activities are conducted in accordance with relevant environmental laws, standards and policies, both at national and international level.

CHAPTER 2 Why Manage Waste?

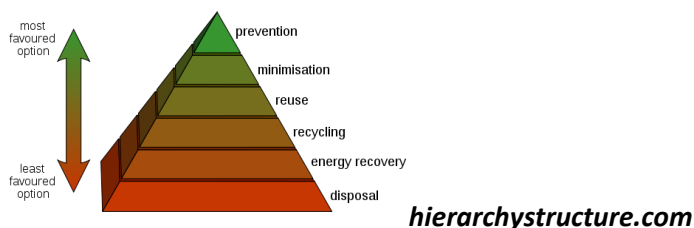
1. The effective management of waste is essential for the health and safety of patients, staff and the general public. The safe storage, transportation, treatment and disposal of waste are important in ensuring that environmental standards are met, while the standards themselves continue to be raised by key bodies locally, regionally and internationally.
2. Waste from health care facilities can be considered in two broad categories: domestic and clinical waste. Domestic waste is, as the name implies, made up of the same types of items found in waste from any household. Clinical waste consists of waste not deemed safe for disposal along with domestic waste. Clinical waste is defined as:
 - Any waste which consists of wholly or partly of human or animal tissue, blood or other body fluids, excretions drugs or other pharmaceutical products, swabs or dressings, or syringes, needles or other sharp instruments, being waste which unless rendered safe may prove hazardous to people and the environment.
 - Any other waste, arising from nursing, dental, veterinary, medical or pharmaceutical or similar practice, investigation, treatment care, teaching or research or the collection of blood transfusion, being waste which causes infection to any person coming into contact with it.¹
3. There are different types of clinical waste and different classifications which determine how the waste should be treated. Waste needs to be managed to promote public health and infection control, to protect the safety and health of waste workers, to minimise damage to the environment and to avoid unnecessary costs.

Policies and Practices

4. Generally, we found that waste management procedures or practices were good as evidenced by low injury reporting as confirmed by the Secondary Care Manager. This was also corroborated during the interview process by selected health care workers. Whilst we note this positive aspect of clinical waste management there have been reports of poor practices during the process. It is important to highlight that the records of injury over the years were not submitted for verification purposes but the required form was submitted. It is our understanding that workers sometimes do not report minor injuries.

¹ What is Clinical Waste & Why is Management Important – www.cannonhygiene.com

5. The Montserrat Conservation and Environmental Management Act 2014 is silent on waste and waste management issues. The 1996 Public Health (Collection and Disposal of Refuse) Regulations does not specifically address clinical or medical waste but little is mentioned of “installation of incinerators.” Additionally, there was no provision for clinical waste management in the 2017 to 2020 Strategic Plan or departmental plans. This made it difficult to establish the required level of performance that is, the efficiency and effectiveness of waste management against acceptable standards.
6. The Glendon Hospital has a **draft** waste management policy; however, it must be noted that the Heads of Units at the hospital were unaware of its existence. Health care workers such as maids, orderlies and nurses were given word-of-mouth guidance and directives upon induction to manage waste in the absence of an approved Policy or Code of Practice.
7. We found that the draft Glendon Hospital Waste Management Policy was unfinished and lacking in content. There was no separation of responsibilities outlined for line managers, nursing/medical, domestic and facilities management staff. Clearly defined roles and responsibilities are essential if the accountability standards are to be achieved. However, it was observed that there was no individual with overall responsibility for clinical waste performance within the Ministry of Health.
8. There is no policy for, or mention of, pharmaceuticals and other pharmacy chemicals disposal. In the Montserrat Conservation and Environmental Bill discussion draft dated March 11th, 2007, we found there were sections on hazardous substances and waste management but these were subsequently removed and not included in the final Act.
9. The draft policy did not address compliance with any waste management or related legislation nor did it include a hierarchy of waste management principles: that is (a) prevention (b) preparation for reuse (c) recycling (d) recovery and (e) disposal. These principles are based on a simple and straightforward guide to waste production. The **waste management hierarchy** is a concept regarding waste management and it acts as a base for developing the various waste management strategies.



10. The fundamental principles of good waste management require management to:
- regularly review all activities to ensure compliance with environmental regulations and health and safety legislation
 - have an awareness of how waste is created
 - have clear accountability of managing waste
 - ensure that waste is properly and efficiently segregated, stored, transported and disposed of
 - provide appropriate information, instruction, training and supervision to ensure implementation and update of related systems
 - minimise the production and environmental impact of waste by reviewing materials used and practices employed
 - safeguard against the uncontrolled release or spillage of waste.

We found lapses in the actual procedures in accordance with these principles (not all are relevant) mentioned and will be address later in this report.

11. All members of the staff have a responsibility to ensure that waste enters the correct disposal stream. They therefore need to be aware that any misuse of the system could lead to an increase in the hazards and risks associated with clinical waste. If such misuse constitutes a breach of the duty of care, it may result in legal action including prosecution. It is vital that management have:

- robust procedures and monitoring/reporting arrangements for ensuring that waste management policies are implemented and adhered to
- safe systems that offer demonstrable value for money with minimal environmental impact
- contingency plans for ensuring prompt and effective action when things go wrong

12. As part of this study, auditors reviewed the procedures in place and found good safety procedures are in place and were followed in some instances. There were, however, areas where improvements could be made and we conclude that the draft waste management policy and procedures did not define duty of care requirements and it was unclear who, if anyone, had responsibility for monitoring adherence to known procedures.

13. Additionally, it was found that the hospital was receiving waste from a private lab without any formal transfer agreement. While the waste was subsequently disposed of properly, there had been a breakdown in control as there was no authorised agreement for this.

The non-existence of this agreement raises legal and safety issues and this also means that the hospital is incurring disposal costs for waste originating elsewhere.

Risks Associated with Clinical Waste

14. According to the documents reviewed, there are two types of risks associated with clinical waste and they are health risks and environmental risks.

(a) Health Risks

Health risks associated with clinical waste can cause injury, infection or death, either by inappropriate handling or inadequate disposal at poorly controlled dumpsites or by inadequate incineration or open burning, which releases dangerous compounds to the environment.

(b) Risks to the Environment

Clinical waste has the potential to cause damage to most aspects of the environment, especially to land, water, air and wildlife. Its thoughtless disposal also causes an unnecessary waste of natural resources. The main risk is caused by deposit of sharps, mercury from thermometers and silver from the processing of x-ray films without treatment.²

15. Exposure to the risks associated with clinical waste poses significant threats to the health institution staff, the public and the environment. It was noted that health care workers are not offered vaccination against Hepatitis B as and when they start work. However, management confirmed that the process for medical assessment and discussions have begun for new or substitute workers to receive 3 doses of the vaccine. The Community Nursing Manager confirmed that there was an initiative a few years ago where all health care workers were offered the vaccinations. However, there was no certainty or guarantee that the full complement of workers did in fact received the vaccine.

² ecoRECYCLE Victoria. 1998. Trim Your Wasteline. A Guide to managing waste in hospitals

CHAPTER 3 Clinical Waste Management Process

Waste Segregation

16. Good practice requires that organisations physically examine waste to ensure that it is correctly segregated. This has major influence on the options for its treatment and disposal. It is therefore vitally important (a) all members of staff handle, package, store and transport waste in a safe and secure manner and (b) that various types of waste are segregated at source.³ The main reason is that clinical waste presents greater risks and needs to be handled with caution.
17. The draft policy highlighted that red, yellow and black plastic bags, and sharps containers were being used throughout the facilities. A walkthrough and various interviews confirmed that color-coded bags, receptacles and sharps containers are being used to separate waste at the hospital, the nursing home and the clinics.

| Container | Types of Waste Include: |
|------------------------|--|
| Red Bag | Soiled dressings, swabs, gloves, soiled incontinence pads, nappies |
| Yellow Bag | Infectious or soiled linen or clothes |
| Black Refuse Bag | Non-infected household waste |
| Sharps Rigid Container | Disposal syringes, needles, scalpels |

18. At the time of this walkthrough it was noted that yellow plastic bags were being used to dispose of both red and yellow plastic bags waste throughout the facility. There was a shortage of red plastic bags and therefore there was a risk or possibility of clinical waste vis-a-vis infectious waste being deposited into the wrong containers. A follow up shortly after the walkthrough revealed that Medical Stores Unit had received the outstanding order of red plastic bags.

³ NHS Forth Valley Waste Disposal Operational Policy – 01/06/17 Author Gerald Ferrie

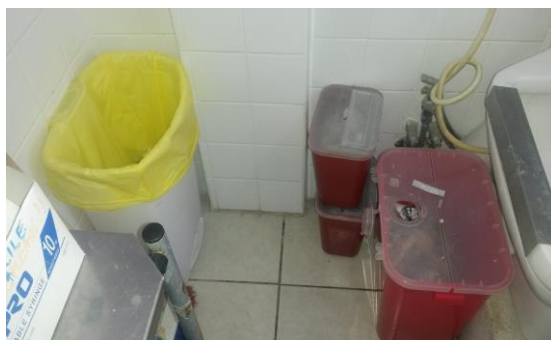


Photo A: Yellow plastic bag in pedal bin without lid replace red plastic bag
(SOURCE: Auditor Walkthrough - April 3, 2017)

19. The OAG observed a number of pedal bins around the facility were without cover this defeated the purpose of ensuring that contents did not spill and that there would be no contamination with regard to smell. The reason given was that the bins were of a poor quality and do not function adequately after a period of time. It was also noted that sharps containers and red plastic bags had not been identified with their places of origin of waste which is required by best practice policies. There was also no sign to alert staff that the yellow plastic bag was the replacement for the red clinical waste bag.

Handling

20. In the public health environment good practice requires that appropriate handling begin when waste is created and that the person responsible should place the waste in a designated container and with caution bearing in mind the risks that might occur. This practice should prevent or eliminate injuries to waste handlers. Adequate clothing should be worn when handling waste and any cuts, abrasions and other injuries sustained during the handling are to be documented and reported. However, the related documentation was not shared and could not be verified. Management informed that there have been no injuries reported in the last two years and that waste is carried in wheelie bins to the respective disposal points.
21. It was reported by senior medical officials that they have observed orderlies not adequately dressed in protective wear when removing waste from various areas of the facility. By practice, handlers are exposed to all forms of infections, not forgetting the nauseating stench that may make handling almost impossible. Proper handling of different types of clinical waste is of paramount importance for health and safety at workplaces. Therefore, it is imperative for Orderlies to know the dangers and hazards that can occur. Safety rules, precautionary measures and action are to be followed and must be clearly and strategically displayed but this was not contained in the draft policy or on the respective walls over the bins. All health care workers involved in handling waste

are to be Hepatitis B vaccinated, which was mentioned previously as a means of protection from infection.

Storage and Transportation

22. When sharps containers are full to the required 2/3 capacity, they should be removed from the collection points within 24 hours as required by most of the international policies reviewed. This is not the current practice within the hospital or clinics. Sharps containers although full and sometimes sealed are not removed for days or weeks by the responsible orderly. Photo A above clearly shows two full sharps containers that indicate that they have been in the casualty sluice room for weeks unsealed.
23. Pharmacy has reported that their main issue is storage. More space is required not only for unexpired pharmacy supplies but for those that have expired. Boxes of disposable items are kept in the pharmacy along with current supplies. The Pharmacist has to distinguish the good from the bad by marking the boxes of expired items. Air condition storage is required to keep items to dispose of cool. There have been times when termites and mildew affected items to be disposed of, owing to lack of air conditioned storage.
24. Red bins with black bags are stationed outside one of the entrances to the Margetson Memorial Home for easy accessibility and these are used to store domestic waste. It was reported that the nauseating stench from these bins is unbearable and protective clothing and goggles have to be worn by the orderlies. The location of these bins (see photo below) in the hot sun is inappropriate and the stench affects not only the orderlies, but also the visitors, and the elderly living in the building.



Photo E: Bins on Entrance to Margetson Memorial Home for the Elderly
(SOURCE: Auditor Walkthrough - April 3, 2017)

25. Currently, bags are removed from wards, casualty and the residential home by the evening orderly and taken to the respective points. However, it was noted that, when bags are ready for disposal and removed from the pedal bins, they are not closed using the swan neck method, which is the preferred sealing method for clinical waste bags. Additionally, the bags were not securely sealed with a ratchet-type waste-tag. The photo B below clearly depicts latex gloves being used to secure clinical waste red plastic bag.



Photo B: Red plastic bag not adequately sealed & Incinerator not cleared/cleaned of ash & residuals
(SOURCE: Auditor Walkthrough - April 3, 2017)

26. Trolleys and wheelie bins were reportedly being used to transport clinical waste to minimise the risks of cross contamination but were not immediately cleaned. This was corroborated with selected staff interviews who confirmed that this is the practice and that they are aware that it is a serious offence not to follow this requirement for their own safety and that of others. However, a number of senior hospital staff informed that this was not always the practice.
27. The incinerator room was not adequately secured to store red plastic bags and as such they are left within the incinerator until they are ready to be burnt by the operator (see photo B above). The incinerator room is in good condition but the gates are not secured with a lock and holes in the wired gate fencing (refer to the photo below) could attract rodents and dogs. The storage should be inaccessible to unauthorised personnel at all times. The effect of improper or unsecured storage facilities to effectively control clinical waste could lead to environmental and or health risks.



Photo C: Waste Storage (left) and Incinerator Rooms (right) not secured with lock
(SOURCE: Auditor Walkthrough April 3, 2017)

28. The storage room was an adequate size however, waste was thrown into the room thus damaging bags and leaving them torn, resulting in spillage which can be detrimental or pose risks to the garbage collectors. Waste was also thrown close to the entrance and the gate was not secured or kept locked. In the photo below, yellow plastic bags can be seen dumped in the storage room as observed during the auditor's walk-through, it was previously noted that yellow plastic bags had replaced red plastic bags for clinical waste. It could not be verified whether these bags contained clinical waste, infectious or soiled linen or clothing.



Photo D: Waste Storage Room
(SOURCE: Auditor Walkthrough - April 3, 2017)

29. The local dump truck collects domestic waste once per week; however, there are times when the wards are full and more waste is generated, and the one collection day is insufficient. To resolve this, excess waste is removed upon request. The transportation of ash and residuals by designated drivers and or orderlies in the course of their duties is acceptable in properly restrained containers, for example rigid, leak proof, spill proof.

This is not the case as ash and residuals are transported in these unsecured red storage bins as shown in photo F below.

30. The OAG observed that there was no designated vehicle for transporting waste from the clinics to the hospital or for transporting ash or residuals to the landfill site. There was no evidence to confirm that the vehicle used for transporting waste was disinfected immediately after use. The vehicle used for transporting stores and other items was the same vehicle used to transport waste. Vehicles are regularly washed by orderlies however; there is the risk of spillage and contamination of supplies when being transported.

Treatment/Incineration

31. Most clinical waste is wet and the rate at which it burns is very slow as such it requires a pre-heated incinerator. Pre-heating of the incinerator is very important and must be done appropriately as this reduces smoke emission. It was observed that the pre-heat incineration process was not always carried out. Waste was loaded at the back of the incinerator before ignition and this contravenes the Manufacturer's Operating Instructions which requires that the incinerator should be allowed to reach the required combustion temperatures. Pre-loading the incinerator will cause black smoke emission thus polluting the environment and affecting nearby communities. Additionally, an interview with the Maintenance Technician/Incinerator Operator revealed that the incinerator was sometimes ignited without clearing ash and residuals as can be seen in Photo F.



Photo F: Residual stored in unsealed bins
(SOURCE: Auditor Walkthrough - April 3, 2017)

32. The operator also informed that waste is burned for an hour and 15 minutes each time and not all waste is burned at once but will continue to burn when the incinerator is lit to

burn another red plastic bag. The auditor observed ash of incinerated waste that looked like the waste had not been adequately incinerated since waste was clearly visible as can be seen in the photo above. There is the risk of dioxins, which are extremely toxic substances that can cause air-pollution if waste is not appropriately incinerated.

33. It was reported that the current incinerator serves the entire island and was not design to be working constantly to meet the required capacity but was a temporary fix which has since become permanent and not meeting the full needs of the country. It is imperative to mention that persons who self-medicate disposed of syringes and needles along with their household items. This practice is inappropriate and can harm users, garbage collectors and persons working at the landfill site and may cause damage to the environment because the waste is not incinerated.



Photo G: Incinerator

(SOURCE: Auditor Walkthrough - April 3, 2017)

Disposal

34. Domestic and clinical waste are collected once a week from the hospital facility and are taken to the island's landfill site, which is located north of the island – New Windward Landfill Site, Jackboy Hill. A visit to the site on July 20, 2017, revealed that some areas of the site were being managed adequately but identified shortcomings that are due to cost constraints according to a health officer.
35. The auditor was informed that residuals and ash from the incinerator are transferred to the landfill site in red bins and are buried in a specific area under the supervision of the Principal Environmental Health Officer. The general concept is that this location within the landfill site should be clearly identified and recorded. However, it was observed that this requirement has not been adhered to. The location of the area is known to environmental health officers but there is no signage or markings.

36. The draft policy highlighted that “where the incinerator is non-functional this waste (meaning clinical hazardous waste) will be transported in red bins to the landfill where they will be buried.” It is important to highlight at this point that the inappropriate disposal of residuals and ash that are not appropriately incinerated or non-incinerated clinical waste will have adverse effects on the environment in the long run and could lead to contamination of soil and ground-water if there were to be flooding, for example. The burial points for residuals and ash were observed to be located near a 10-15 foot precipice.



Photo H: Showing Residual/Ash Burial Location (left) & Precipice (right)
(SOURCE: Auditor Site Visit – July 20, 2017)

37. This location was overgrown; this made it difficult for anyone to access the area to continue a coordinated burial trend. A compactor is not used to conserve valuable airspace and to extend the dumpsite's life span. Proper waste compacting includes the process of using a steel wheeled/drum landfill compactor to shred, to tear and to press together various items in the waste stream so that they consume a minimal volume of landfill airspace. The higher the compaction rate, the more trash the landfill can receive and store. This will also reduce landslides and cave-ins and minimize the risk of explosions or land fill gas. Currently, it was noted that a John Deere 650G LPG series IV (bulldozer) and operator are rented to move the garbage around at the landfill site. However, we found that the once per week rental of this bulldozer is insufficient as waste is not adequately secured or buried on a daily basis.

Training

38. Suitable training must be given at regular frequencies in order to ensure the safety of all medical staff, drivers, orderlies and persons involved in the waste disposal process.⁴

⁴ NHS Forth Valley Waste Disposal Operational Policy – 01/06/17 Author Gerald Ferrie

While it is not a major activity in terms of expenditure it should be a high priority. Managed badly, infection and other safety issues can affect the health of patients, staff and the public. It was noted that training is provided annually on infection control with a unit focusing on clinical waste management. The non-existence of a clinical waste management policy further exemplifies that aspects of clinical waste training is limited. We also found that health care workers were given word of mouth guidance and directives at induction to dispose of waste. Participants of this training are presented with a certificate of completion.

39. Despite the training and directives disseminated there have been reports of poor practices when dealing with clinical waste. Training and instructions should be designed to ensure that all staff who are required to handle clinical waste including segregation and ultimate disposal should be aware of or must be trained in the following matters:

- what is expected of them
- where to get advice and help
- requirements for their own safety, and that of their colleagues and of the environment
- the cost and environmental advantages to be gained from good segregation of waste
- Procedures in the event of accidental spillage are correctly followed
- Awareness about the risks associated with clinical waste
- Segregate the various color-coded bags, cardboard boxes and rigid sharps containers and ensure that they are stored separately
- The date and origin of the waste is marked on the bag or container
- Storage bags are securely sealed using the swan-neck method
- Sharps are completely incinerated to avoid health risks
- Reporting of injuries so that appropriate action is taken with immediate effect and information compiled for future reference and incorporated in training as case studies
- Operators are to be properly trained in removal of residuals and ash techniques and must wear protective clothing all the time during the process.

40. The Maintenance Technician received on the job training by the current incinerator manufacturers and has done well in disposing of red plastic bags clinical waste. It was mentioned that management is seeking to ensure that additional training is received. It is the OAG's view that the lack of adequate training makes it difficult for new and seasoned health care workers to be conversant with processes and hazards involved in the clinical waste-stream.

CHAPTER 5 OVERALL CONCLUSION AND RECOMMENDATIONS

41. The draft Glendon Hospital Waste Management Policy provides health staff with a framework for addressing clinical waste. However, the Ministry of Health requires the implementation of a clinical waste management system consistent with best practice. This would facilitate the management of clinical waste to protect human health, environment and natural resources. We noted the existence of internal initiatives that are used to manage waste but has identified in addition to a draft policy issues including:
- Non-existence of clinical waste in strategic plans and objectives
 - Some inappropriate processes relating to waste management
 - Inadequate disposals and treatment of waste
 - A general attitude that clinical waste issues were of a low priority and non-core business activities.
42. Exposure to risks associated with clinical waste poses significant threats to the health staff, the public and the environment. These risks must be addressed if the operation's efficiency and accountability are to be achieved. The Ministry of Health should address the shortcomings mentioned and consider the following recommendations.
43. **Laws, Policies and Practices.** Ministry of Health/Glendon Hospital should request an amendment to related laws for the inclusion of clinical waste management and should include in their strategic/operational plans a program objective to address clinical waste issues. There is the need to implement an approved or well detailed waste management policy with clear responsibilities and duty of care requirements and use of hierarchy of waste management principles must set the policy framework. Management must consider the inclusion of pharmaceutical disposal.
44. There is the need to improve upon the management of clinical waste i.e. employing an individual to overlook clinical waste performance and other similar aspects such as infection control. This may involve ensuring that the necessary policies are in place and procedures are being adhered to. There is also the need to develop and implement facility-wide infection prevention, injury and control measures to protect patients, health care workers and visitors.
45. **Segregation.** Management should ensure that different types of receptacles are adequate in terms of quantity, quality and or durability and that they are continuously available in order for waste to be appropriately treated and segregated. Adequate

monitoring of order levels must be done to avoid shortage of necessary supplies as was the situation with the red plastic bags.

46. Spot checks should be conducted on a regular basis by a designated senior official to ascertain compliance with laws and policies and to ensure that environmentally sound principles are followed at all times.
47. **Handling.** A system should be put in place to alert the Facilities Manager when sharps containers are at their maximum capacity. There is the need to ensure that all staff involved with carrying clinical waste or any waste in different ways must treat this aspect of the process with care. Under no circumstances, should waste be transported by hands. All red bags should be closed using the swan-neck method and sealed with a ratchet waste-tag.
48. Management must ensure adequate protective clothing is available and is of the right type. There is also the need to continue to encourage orderlies to wear full protective clothing at all times.
49. **Storage and Transportation.** Adequate storage and/or immediate action are required for pharmaceutical waste. The storage facilities for the incinerator and waste storage are adequate in size; however, these areas must be adequately secured to prevent unauthorized accessibility and to avoid scavenging. “No Entry” signs should be strategically placed to inform persons of the dangers of entering these areas. The red bins situated outside the Margetson Memorial Home should be relocated and kept from sunlight.
50. Waste carriers should be regularly steam-cleaned or disinfected in conformity with best practice to reduce the possibility of infection. Any waste leaving the facility should be secured/packed adequately to prevent spillage.
51. It is our recommendation that spill kits are available for every vehicle transporting waste and staff should be trained in their use. Also request should be submitted for adequate transportation to facilitate the various functions within the Ministry especially for the hospital and clinics as the same vehicle is used to do all transportation.
52. **Incineration/Treatment.** Request a new spend for the purchase of an adequate incinerator to service the entire island – hospital, labs, clinics, self-medicated users and any other waste that should be incinerated. This incinerator is required to completely burn and disintegrates waste to reduce the effects on human health and the environment.

53. **Inspections.** Management should ensure that clinical waste is treated adequately and request that the Senior Environment Health Officer regularly supervise incinerator activities or conduct spot checks of the clinical waste process at the Hospital and other facilities where waste is created.
54. **Disposal.** Management should strive to ensure that waste collected within their facilities is appropriately disposed of, in order to minimize the consequences or risks to human health and the environment.
55. Signs should also be placed at the landfill site for location of the area(s) where incinerated ash or residuals are buried. A trash compactor is required (a) to conserve space and (b) to extend the landfill site's life span and (c) to reduce landslides and cave-ins.
56. The landfill site is also lacking in terms of the right tools and or equipment to enable the workers to be more effective and to work efficiently. A needs assessment should be carried out to determine the requirements of equipment such as chainsaws and a mini hydraulic excavator to facilitate the digging and burial of ash and residuals.
57. **Training.** All health care workers should be trained but with greater emphasis (a) in waste management procedures to ensure awareness and (b) in the process of waste management to ensure compliance with best practice and with the Waste Management Policy when it is finalized and implemented. Management should provide education and training to all health care worker including collectors, transporters and key managers that will be instrumental in the implementation of the new waste management policy.
58. **Funding.** It is recommended that a request should be made for additional funding to purchase much needed resources such as a trash compactor, a proper incinerator, durable bins, protective clothing, air conditioned units and signs. This is required to support adequate preventative measures and ensure appropriate disposal of all clinical waste from the various health facilities and the private homes where persons are cared for or self-medicated. A suitable incinerator is extremely important to facilitate the incineration of all clinical waste on island not just those generated at the hospital. When this is in place there will be the need to educate the public and implement procedures for the disposal of clinical waste from private homes. Currently, clinical waste generated at private homes is disposed with other household waste.

CHAPTER 6 MANAGEMENT RESPONSE

Policies and Practices

59. (Response to 4.) The MOHSS encourages all of its staff to report all incidents and accidents using the Occupational Health and Safety (OHS) Accident Incident Forms which were introduced in 2009. There have been no such reports made to the Secondary Care Manager and the relevant supervisors were not aware of any such incidents related to clinical waste disposal in the past two years.
60. (Response to 5.) Whilst there was no mention of clinical waste management in the strategic plan or departmental plans, the matter is addressed in the individual work plans of the relevant officers.
61. (Response to 6.) The policy was drafted in 2009 and reviewed with an assortment of policies at a day- long meeting convened with staff in that same year. Relevant sections of the policy are provided to various categories of staff during orientation and training. The Sister Tutor conducted this training for staff in previous years and in 2017 co-opted the designated Infection Control nurse to deliver training.
62. (Response to 7. 33. 46.) For a number of years, the MOHSS and made a new spend submission for the appointment of an Infection Control Coordinator. In a small island such as Montserrat, this officer would have oversight of the gamut of infection control responsibilities to include the management of clinical waste. Despite not having the position approved to date, an officer has commenced work in the Infection Control area. The submission has been made again for the fiscal year 2018/19.
63. (Response 9.) We accept that the policy does not address principles such as preparation for reuse, recycling and recovery. Note that there is no national legislation, policy or strategy that is related to the principles of recycling and all national waste is disposed of. As a consequence, these elements were not addressed in the policy. While reusable medical devices and supplies were traditionally used in the healthcare industry, there is evidence to support the use of single-use devices. Some of the factors that support single-use medical devices include:
64. Safety: Healthcare-associated infections (HAIs) are avoidable if reusable supplies are effectively decontaminated. Infections such as variant Creutzfeldt-Jakob Disease (vCJD), are resistant to conventional decontamination processes and can cause serious and fatal transmissible infections. Single-use devices are sterile if used appropriately.
65. Time: Reusable devices must be autoclaved to ensure that devices and supplies are decontaminated. This can additional responsibilities and create delays in the availability of these items.

66. Environmental Impact: Disposing of medical devices after use creates disposal costs. Reprocessing reusable devices uses utilities and detergents, autoclaving bags and tape which also have negative environmental impacts.
67. Cost: The initial cost of single-use devices and supplies can cost more than reusable devices. However, the cost of decontamination, machine maintenance and staffing must be borne in mind in the use of reusable medical devices and supplies. With many healthcare facilities looking to consolidate their bottom lines, single-use devices may offer considerable cost savings, even when on-site decontamination facilities exist. At present the majority of supplies used at the Glendon Hospital are disposable. We accept that a MoHSS policy is required that would include all health facilities.
68. (Response to 13.) Transportation of clinical waste to the hospital is the responsibility of any private facility. In addition, there is a charge levied for use of the incinerator to cover all associated costs.

Handling

69. (Response to 20. 21. 48.) All orderlies are provided with personal protective equipment (PPE) such as fluid resistant overalls, hazmat coverall suits, rubber gloves and respirators. See point 4.

Storage and Transportation

70. (Response 22. 27. 47. 49.) The incinerator housing had been constructed just prior to this audit. Safe storage of the sharps had been an issue and the containers had been removed at the time of incineration. With a secure locked incinerator building this practice has ceased.
71. (Response 23.) The Glendon Hospital, after twenty-one years, is still accommodated in a renovated school building. Storage is an issue for all of the departments including the Pharmacy Department. There has been one occasion where there was an issue with termites and mildew of expired pharmaceuticals stored in a container. With OECS/PPS funding, the MOHSS has purchased a forty (40) foot container to address some of the storage issues for Pharmacy. An air conditioner will be procured MoHSS awaits the drawings and scope of works for the footing and enclosure of the container.
72. (Response to 24.) Consideration is given to reviewing the securing of MMH bins simultaneously with some anticipated renovations.
73. (Response to 25.) Tie straps are provided to secure red bags shown in the picture below. Orderlies usually doff their gloves over the top of the red bags or secure them around the bag after they are doffed.



74. (Response to 29. 49.) And orderlies do not transport the ash. The ash is transported by the Maintenance Technician and Assistant in strapped, covered red bins.
75. (Response to 30. 51.) The MoHSS has only one pickup. Submissions for new vehicles have been submitted over the past four (4) years. The unavailability of a reliable pickup limits the department's ability to earmark a vehicle for this purpose. Although the drivers wash the vehicles every day, the Maintenance Technician sanitizes the vehicle after transporting the ash.

Treatment/Incineration

76. (Response to 31.) Different incinerators have different operating instructions. This incinerator follows an automatic process. Once the start button on the incinerator is pressed, the door cannot be opened until the entire burning process is complete. The operator follows the manufacturer's instruction for this unit whereby the incinerator is loaded and the door closed. Once the burn time is selected and the start button is pressed, the machine automatically pre-heats for seven (7) minutes after which it starts incineration.
77. (Response 32.) This unit cannot disintegrate needles and scalpels, however it sanitizes them to the point where there is no risk of contracting infections. Like every burning process, ash is generated after each incineration. Ash is not removed after every burn as the manufacturer advised that leaving the ash in the chamber further de-sanitizes and causes further degradation.
78. (Response 33.) There had been two options discussed to address the need for a fixed incinerator. One alternative explored a national incinerator that would provide an alternate source of energy. The other option identified having one fixed incinerator on the site at the new Glendon Hospital. With no traction on the national incinerator and no final decision on

the location of the new hospital, the MoHSS procured a portable medical incinerator given the need for incineration. The Mediburn Medical Waste Incinerator is a safe and simple solution for the disposal of infectious and pathological waste for the small medical facility. Portable and easy to operate, the Mediburn Medical Waste Incinerator incinerates everything from laboratory waste to animal remains. It incinerates up to 8 cubic feet (.22 cubic meters) per load, 330lbs (150kg) per day and has dual chamber combustion and high exhaust temperatures in excess of 1000C. This unit is used in countries all over the world.

79. This small footprint machine could be used at the present hospital site without posing a hazard to the aircrafts landing or taking off at the John A. Osborne Airport which is in close proximity; and not be a nuisance to the neighbourhood. In addition, the machine could be transported to any outbreak holding area if necessary or another site if the hospital needed to be relocated. The unit is used primarily for the MoHSS to incinerate clinical waste generated by its facilities.
80. (Response to 34. 35. 37. 55.) Some improvements are being undertaken at the landfill. There will be signage of the area earmarked for the disposal of clinical waste identifiable by the relevant staff.
81. (Response to 38. 57.) Training sessions are conducted for all categories of staff. The MoHSS will continue to provide regular training to staff. Major garbage collection from the Glendon Hospital and MMH usually occurs in the evening after supper. Management will make attempts to spot check on a more regular basis outside of the usual working hours to ensure that there is routine compliance.
82. (Response to 43.) MoHSS supports this recommendation.
83. (Response to 45.) The change of the ferry operator affected the reliability of the garbage bags supply (including red bags) from St. Kitts. MoHSS now places orders in advance to ensure that the stock out that resulted earlier in the year does not recur.
84. (Response to 52.) MoHSS supports this recommendation however the location for this unit will have to be determined given factors such as the proximity of the John A. Osborne Airport; uncertainty regarding location of new hospital etc.
85. (Response to 53.) MoHSS supports this recommendation.
86. (Response to 56.) A submission was previously made for heavy equipment to be assigned to the landfill. This request was not granted. MoHSS will continue to lobby for appropriate support in this area with the resources available.
87. (Response to 58.) MoHSS will continue to lobby for the appropriate funding to be able to effectively execute its programmes.