

NATIONAL CHEMICAL EMERGENCY RISK MANAGEMENT PLAN

Government of Jamaica (2017)

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The development of the NCERM Plan was co-ordinated by the ODPEM, with oversight from the project's steering committee, the National Chemical Review Committee (NCRC). Contributions were also received from several public sector agencies, including: the Consumer Affairs Commission (CAC); the Jamaica Customs Agency (JCA); the Jamaica Fire Brigade (JFB); the Ministry of Economic Growth and Job Creation (MEGJC); the Ministry of Health (MOH); the Ministry of Labour and Social Security (MLSS); the Municipal Corporations; the National Environment and Planning Agency (NEPA); the National Solid Waste Management Agency (NSWMA); the National Spatial Data Management Division (NSDMD); and the Planning Institute of Jamaica (PIOJ).

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TERMS AND DEFINITIONS

The definitions given below apply to the terms as used in this manual. They may have different meanings in other contexts.

At risk: Where an individual or population is threatened by a chemical release.

Bund: A retention facility, including walls and base, built around an area where potentially polluting substances are handled, processed or stored for the purposes of containing any unintended escape of material from that area until remedial actions can be taken.

CAS Number: A number assigned to a specific chemical by the Chemical Abstracts Service, an organisation operated by the American Chemical Society. CAS Numbers are used internationally to identify specific chemicals or mixtures.

Chemicals: Any element, chemical compound or mixture of elements and/or compounds. Thus, virtually any product is a chemical. These various types of chemicals are as follows:

- *Element:* the simplest form of matter. There are currently 109 known elements in the periodic table. Examples of elements are aluminum, carbon, chlorine, hydrogen, mercury and oxygen.
- *Chemical compound*: a substance consisting of two or more elements combined or bonded together so that its constituent elements are always present in the same proportions.
- *Mixture*: any combination of two or more chemicals if the combination is not, in whole or in part, the result of a chemical reaction.

Chemical accident: The unintentional release of one or more hazardous or toxic substances during processing, handling, storage or transportation, which could cause harm to human health or the environment.

Chemical Agent. A type of toxic agent that can produce an adverse biological effect.

Chemical Incident: An uncontrolled release of a chemical from its containment.

Decontamination: To make safe by eliminating poisonous or otherwise harmful substances, such as noxious chemicals or radioactive material, from people, buildings, equipment and the landscape.

Disaster: A serious disruption of the functioning of a community or a society, involving widespread human, material, economic or environmental losses and impacts, that exceeds the ability of the affected community or society to cope using its own resources.

Emergency: An adverse situation that requires the resources and skills of emergency services (and/or support services/entities) to save lives, reduce suffering and protect property and the environment.

Emergency responders: All the services that work together, off-site and on-site, to deal with an incident, including fire, police, ambulance, water, food, port, public health/environmental health.

Environment: The environment consists of all, or any, of the following media: the air, water and land. The medium of air includes the air within buildings and other natural and/or man-made structures above or below ground.

Environmental hazard: A chemical or physical agent capable of causing harm to the ecosystem or natural resources.

Environmental health: Comprises those aspects of human health, including quality of life, that are determined by physical, chemical, biological, social, and psychosocial factors in the environment. It also refers to the theory and practice of assessing, correcting, controlling and preventing those factors in the environment that can potentially adversely affect the health of present and future generations

Epidemiology: The study of the distribution and determinants of health-related states or events in populations and the application of this study to control health problems.

Exposure: Contact with a substance by swallowing, breathing or touching the skin or eyes. Exposure may be short-term (acute exposure), of intermediate duration or long-term (chronic exposure).

Exposure limit: A general term implying the level of exposure that should not be exceeded.

Hazard: The latent property of a substance that makes it capable of causing adverse effects to people or the environment under conditions of exposure.

Hazard category: Means the division of criteria within each hazard class, e.g. acute toxicity and flammable liquids each include four hazard categories numbered from category 1 through category 4. These categories compare hazard severity within a hazard class and should not be taken as a comparison of hazard categories more generally.

Hazardous chemicals: Any chemical that can cause a physical or a health hazard.

Hazard class: Describes the nature of a physical or health hazard, e.g. flammable solid, carcinogen and acute toxicity.

Hazard classification: The process of evaluating the full range of available scientific evidence to determine if a chemical is hazardous, as well as to identify the level of severity of the hazardous effect. When complete, the evaluation identifies the hazard classes and associated hazard category of the chemical.

Hazardous materials: Any chemical that is classified as a physical hazard, a health hazard, a simple asphyxiant, combustible dust, pyrophoric gas, or hazard not otherwise classified is considered a hazardous chemical.

Hazard not otherwise classified (HNOC): An adverse physical or health effect identified through evaluation of scientific evidence during the classification process that does not meet the specified criteria of the physical and health hazard classes.

Hazardous site: A site that could present dangers to public health and the environment due to the presence of contamination.

Hazardous waste: Waste that poses substantial or potential threats to public health or the environment

Health hazard: A chemical that is classified as posing one of the following hazardous effects: acute toxicity (via any route of exposure); skin corrosion or irritation; serious eye damage or eye irritation; respiratory or skin sensitisation; germ cell mutagenicity; carcinogenicity; reproductive toxicity; specific target organ toxicity (single or repeated exposure); or aspiration hazard.

Health impact assessment: A practical approach used to judge the potential health effects of a policy, programme or project on a population, particularly on vulnerable or disadvantaged groups. Recommendations are produced for decision-makers and stakeholders, with the aim of maximising the proposal's positive health effects and minimising the negative health effects.

Incident: A situation in which people are potentially exposed to hazards to which they are vulnerable, with resulting public concern and the possibility of immediate or delayed risks to health.

Leak detection: A system that will detect the presence of a leak. With automatic leak detection, an alarm will be activated without user intervention and monitored by a manned control room. While the preference is for automatic leak detection, it is recognised that this may not be suitable in all cases. For instance, detecting leakage from a complex piping system is usually best completed by regular control inspections using a defined procedure and recording the results.

Mitigation: All activities aimed at reducing the health, environmental and economic impact of a chemical incident once the incident has occurred

Personal Protective Equipment (PPE): Includes all clothing and other work accessories designed to create a barrier against workplace hazards. Examples include safety goggles, blast shields, hard hats, hearing protectors, gloves, respirators, aprons and work boots.

Pesticide: Any product, organism, substances or thing that is manufactured, represented, sold or used as a means of directly or indirectly controlling, preventing, destroying, mitting, attracting or repelling any pest, and includes: any compound or substance that enhances or modifies or is intended to enhance or modify the physical or chemical characteristics of a pesticide to which it is added; and any active ingredient used for the manufacture of a pesticide.

Physical hazard: A chemical that is classified as posing one of the following hazardous effects: explosive; flammable (gases, aerosols, liquids or solids); oxidizer (liquid, solid or gas); self-reactive; pyrophoric (liquid or solid); self-heating; organic peroxide; corrosive to metal; gas under pressure; or in contact with water emits flammable gas.

Pollution: The presence in a medium of a pollutant(s) in concentrations great enough to interfere, directly or indirectly, with a person's comfort, safety, health or enjoyment of his or her property.

Public health surveillance: The ongoing systematic collection, analysis and interpretation of data relating to public health.

Rehabilitation: The restoration of normal functioning of people and communities.

Release: Accidental or intentional escape of toxic substances into the environment.

Remediation: The process of making the environment safer and cleaner, as defined by national regulations, after it has been contaminated by one or more hazardous chemical(s).

Restoration: The process of returning the environment to its original state.

Retention facility: This is a secondary barrier within the drainage system of a facility, which is designed in the event of a loss of sealing in the plant or any plant component to retain the escaping fluid. Retention facilities can be, for example, covered pits or pools, separators (oil/water), drainage systems, balancing tanks or closed vessels, which in the case of a leakage, are filled by gravity or by pumps. Mobile road tankers can also serve as retention facilities.

Risk assessment: The identification of environmental health hazards, their adverse effects, target populations and conditions of exposure. A combination of hazard identification, dose-response assessment, exposure assessment and risk characterisation.

Risk communication: The process of sharing information and perceptions about risk. It should be a two-way interaction in which experts and non-experts exchange and negotiate perceptions relating to both scientific and community values and preferences.

Secondary contamination: The transfer of a chemical from a contaminated person (usually from their clothing, skin, hair or vomitus) to personnel or equipment, directly or by emission from a contaminated surface.

Substance: Any natural or artificial matter, whether in solid or liquid form or in the form of a gas or vapour.

Toxic agent: Anything that can produce an adverse biological effect. It may be chemical, physical or biological in form. For example, toxic agents may be chemical (such as cyanide), physical (such as radiation) or biological (such as snake venom).

Toxic effect: A result produced by the ingestion of, or contact with, toxic substances.

Trade secret: May consist of any formula, pattern, device or compilation of information that is used in one's business, and which gives him or her an opportunity to obtain an advantage over

competitors who do not know or use it. It may be a formula for a chemical compound, a process of manufacturing, treating or preserving materials, a pattern for a machine or other device, or a list of customers.

Triage: The assessment of the clinical condition of exposed individuals with designations of priorities for decontamination, treatment and transportation

UN numbers or UN IDs: Four-digit numbers that identify hazardous substances and articles (such as explosives, flammable liquids, toxic substances, etc.) in the framework of international transport.

Underground tanks: Tanks that are fully or partly embedded in the earth or imbedded in construction components that are immediately in contact with the earth. All other tanks are considered as over ground.

Working area: This is the area of a facility in which leakage is quickly and reliably recognised by trained operating staff, who are present to operate the facility.

ACRONYMS

APELL	Awareness and Preparedness for Emergencies at the Local Level
BSJ	Bureau of Standards
CARPIN	Caribbean Poison Information Network
CAS	Chemical Abstracts Service Registry Number
CBO	Community Based Organisation
CERCLA	US' Comprehensive Environmental Response, Compensation and
	Liability Act
CMU	Caribbean Maritime University
CWC	Chemical Weapons Convention
DG	Dangerous Goods
DRM	Disaster Risk Management
EDMSS	Emergency Disaster Management and Special Services (within the MOH)
EHL	Environmental Health Laboratory
EHS	Extremely Hazardous Substances
EHU	Environmental Health Unit (within the MOH)
EIA	Environmental Impact Assessment
EIPs	Emergency Information Panels
EMS	Emergency Medical Service (within the MOH)
EMT	Emergency Medical Technician
EOP	Emergency Operation Plan
EPA	Environmental Protection Agency
EPCRA	US' Emergency Planning and Community Right-to-Know Act
EPRP	Emergency Preparedness and Response Plan
ESM	Environmentally Sound Management

GC	Government Chemist
GEI	Government Electrical Inspectorate
GHS	Globally Harmonized System of Classification and Labelling of
	Chemicals
GIS	Geographic Information System
HAZWOPER	Hazardous Waste Operations and Emergency Response
IAP	Incident Action Plan
IBCs	Intermediate Bulk Containers
IC	Incident Command
ICS	Incident Command System
IFCS	Inter-Governmental Forum on Chemical Safety
IPCS	International Programme on Chemical Safety
IANAAC	Jamaica National Agency for Accreditation
JBI	Jamaica Bauxite Institute
JCA	Jamaica Customs Agency
JCF	Jamaica Constabulary Force
JDF	Jamaica Defence Force
JFB	Jamaica Fire Brigade
JIS	Jamaica Information Service
	Vinceton and Matura alitan Ana
	Kingston and Metropontan Area
КРН	Kingston Public Hospital
KJAU	Kingston and St. Andrew Corporation
LA	Local Authority
LPG	Liquid Petroleum Gas

MAJ	Maritime Authority of Jamaica	
MC	Municipal Corporation	
MDAs	Ministries, Departments and Agencies	
MEGJC	Ministry of Economic Growth and Job Creation	
MFPS	Ministry of Finance and the Public Service	
MLGCD	Ministry of Local Government and Community Development	
MLSS	Ministry of Labour and Social Security	
MNS	Ministry of National Security	
MFAFT	Ministry of Foreign Affairs and Foreign Trade	
MOH	Ministry of Health	
MOU	Memorandum of Understanding	
MTM	Ministry of Transport and Mining	
NCERM Plan	National Chemical Emergency Risk Management Plan	
NCERP	National Chemical Emergency Response Protocol	
NC	National Coordinator	
NCRC	National Chemical Review Committee	
NEOC	National Emergency Operations Centre	
NEPA	National Environment and Planning Agency	
NMIA	Norman Manley International Airport	
NRCA	Natural Resources Conservation Authority	
NSDMD	National Spatial Data Management Division	
NSWMA	National Solid Waste Management Authority	
NWA	National Works Agency	
NWC	National Water Commission	
ODPEM	Office of Disaster Preparedness and Emergency Management	
OPCW	Organization for the Prohibition of Chemical Weapons	
OSHA	Occupational Safety and Health Administration (within the United States	
	Department of Labor)	
OSHD	Occupational Safety and Health Department (within the MLSS)	

РАНО	Pan-American Health Organization
PAJ	Port Authority of Jamaica
PBB	Polybrominated biphenyl
PCA	Pesticides Control Authority (within the MOH)
PCEB	Pay and Conditions of Employment Branch
РСЈ	Petroleum Corporation of Jamaica
PDC	Parish Disaster Committee
PEL	Permissible Exposure Limit
PEOC	Parish Emergency Operations Centre
PEOTSC	Parish Emergency Operations and Telecommunications Subcommittee
PHI	Public Health Inspector
PM	Particulate Matter
POPs	Persistent Organic Pollutants
PPE	Personal Protective Equipment
QSP Trust Fund	Quick Start Programme Trust Fund (of the SAICM)
RADA	Rural Agriculture Development Authority
RQ	Reportable Quantities
SAICM	Strategic Approach to International Chemicals Management
SAR	Search and Rescue
SDS(s)	Safety Data Sheet(s)
SOP	Standard Operating Procedure
SRD	Standards and Regulatory Division (within the MOH)
SRU	Standards and Regulations Unit (within the MOH)
STATIN	Statistical Institute of Jamaica
TLV	Threshold Limit Value
TPQ	Threshold Planning Quantity
TRI	Toxics Release Inventory

UK	United Kingdom
UN	United Nations
UTECH	University of Technology, Jamaica
UWI	University of the West Indies
WHO	World Health Organization
WRA	Water Resources Authority

PART 1

INTRODUCTION

CHAPTER 1.1 THE MANAGEMENT OF HAZARDOUS CHEMICALS IN JAMAICA

1.1.1 Introduction

There are numerous issues surrounding the management of hazardous chemicals in Jamaica. These range from improper procedures for the labelling, handling, storage, transportation and disposal of such chemicals; to the lack of resources available for the management of hazardous chemical emergencies. The potential for the uncontrolled release of hazardous chemicals and chemical waste is therefore a major concern for regulatory authorities and the wider Jamaican population.

While the country has implemented various legal and administrative frameworks, and is a signatory and party to several international agreements related to the management of hazardous chemicals (Annex 1), there is still a great need for a comprehensive approach. It is hoped that the National Chemical Emergency Risk Management (NCERM) Plan will provide that holistic guidance for chemicals management across all sectors in Jamaica.

The Government of Jamaica received funding through the United Nations Environment Programme's (UNEP) Quick Start Programme (QSP) Trust Fund of the Strategic Approach to International Chemicals Management (SAICM) for the development of the NCERM Plan, under the national project, *Strengthening the National Capacity under the Framework of the Integrated National Programme for the Sound Management of Chemicals in Support of the Implementation of the Strategic Approach in Jamaica*. The main implementing agency was the Ministry of Economic Growth and Job Creation (MEGJC), with several other Ministries, Departments and Agencies (MDAs) managing various components of the project. The Office of Disaster Preparedness and Emergency Management (ODPEM) completed the NCERM Plan.

1.1.2 Chemical Emergency Risk Management Overview

The NCERM Plan is guided by the four stages of the disaster risk management (DRM) cycle (Figure 1.1-1): prevention and mitigation; preparedness; response; and recovery.



Figure 1.1-1: The Disaster Risk Management (DRM) cycle.

The critical elements of a systematic approach to chemical emergencies in Jamaica therefore comprises specific forms of activities to avoid or limit (prevention/mitigation and preparedness) the adverse effects of hazardous chemicals; and to effectively respond to (response) and restore (recovery) the living conditions of the affected population and environment.



Figure 1.1-2: Components of chemical emergency risk management within the DRM framework.

The main roles of government agencies and private entities in the initial stages of the chemical emergency risk management cycle, according to their respective mandates and responsibilities, include:

- Identifying the risks.
- Monitoring facilities to ensure risks are minimised.
- Granting permits and licensing.
- Establishing appropriate land-use planning policies to minimise risks to the environment and communities.
- Developing and continuously improving upon policies, regulations and practices aimed at emergency prevention and mitigation.
- Implementing appropriate response mechanisms.
- Establishing effective inter-agency protocols.

1.1.3 Structure of the NCERM Plan

The NCERM Plan comprises five main sections, each of which can be treated as a stand-alone document.

- **PART 1. INTRODUCTION** provides an overview of Jamaica's move towards developing a chemical emergency risk management plan, its overall place within the country's DRM framework, and the Plan's scope, objectives, limitations, authority, assumptions and provisions for revisions.
- PART 2. PREVENTION/MITIGATION of chemical emergencies must begin with identifying and recording the precursor chemicals and hazardous chemicals entering the country, and monitoring where these are being stored and used in order to put in place proactive measures to eliminate the structural causes of chemical incidents or to limit the severity of their impacts. These proactive measures include enforcing zoning and land-use planning guidelines for high risk facilities; controlling the storage of hazardous chemicals; preventing the stockpiling of such chemicals; and providing guidelines for the inland transportation of hazardous chemicals.
- PART 3. PREPAREDNESS details the knowledge and capacities already developed and to be enhanced by the various stakeholders to effectively anticipate, respond to and recover from the impacts of chemical incidents. This includes establishing critical information databases to be easily accessed by all responders, and developing and enhancing the human and material capacities across all stakeholders. Preparedness for chemical incidents must take a multi-sectoral approach, and not only occurs at the national level, but also at the local/parish level and, for some entities, at the regional level. PART 3 also highlights the roles and responsibilities of three major sectors in chemical risk management—MDAs, high risk facilities, and the general public—and also emergency planning and preparedness co-ordination at the local/parish level via the respective Parish Disaster Committees (PDCs).
- **PART 4. RESPONSE** deals with the coordination of a national response effort for a chemical emergency, detailing the roles and responsibilities of MDAs, high risk facilities and other stakeholders, and provides response guidelines for onsite management of a chemical incident.

• **PART 5. RECOVERY** details the various activities that must be carried out, and by the respective stakeholders, in the post-incident phase of a chemical emergency. These strategies are directed towards reducing pollutants in all areas, especially those defined as sensitive, and monitoring activities to determine the scope and effectiveness of the actions taken.

1.1.4 The Scope and Objectives of the NCERM Plan

The NCERM Plan will assist in providing a strategic approach to the sound management of hazardous chemicals in Jamaica. The primary objectives of the Plan are to:

- 1. Outline the activities and procedures necessary at all jurisdictional levels to:
 - (i) Prevent chemical accidents;
 - (ii) Respond to chemical accidents;
 - (iii) Follow-up incidents (accidents and near misses); and
 - (iv) Address specific matters related to transboundary/international movements, fixed installations, and transportation of hazardous chemicals.
- 2. Establish appropriate measures of mitigation, preparedness and recovery of hazardous material.
- 3. Identify adequate resources for responding to hazardous chemical materials incidents/accidents.
- 4. Establish procedures to be employed in containing, dispersing, recovering and disposing of contaminated materials during response and recovery activities.

1.1.5 Limitations of the NCERM Plan

The NCERM Plan will not address occurrences of ionising radiation; and instances of terrorist attacks. If deemed necessary, the Plan may be activated by the Ministry of National Security (MNS) under its plan or protocol for anti-terrorism.

1.1.6 Authority

The National Chemical Review Committee $(NCRC)^1$ has oversight responsibility for the implementation of the NCERM Plan. The ODPEM is responsible for the response coordination component of the Plan. The implementation of the Plan is multi-sectoral and has roles and responsibilities for other MDAs and private entities.

1.1.7 Assumptions

The Plan considers the following assumptions:

- 1. Factors that will influence the successful execution of the NCERM Plan will be instituted in a timely manner.
- 2. All parties involved in emergency planning and response efforts have been involved in the emergency planning process.
- 3. Public authorities and industry will co-operate on emergency planning to protect population centres in hazardous installations, as well as sensitive environments.
- 4. On-site and off-site emergency plans will be tested and reviewed on a regular basis.

1.1.8 Provisions for Revision

The NCRC will revise the NCERM Plan every three years; however, changes in the chemical profile of the country may justify earlier revisions. The Plan will also be updated annually as relevant changes become appropriate. For instance, policy changes and chemical emergencies that reveal system gaps will warrant such revisions.

¹ The National Chemical Review Committee (NCRC) is chaired by the Ministry of Economic Growth and Job Creation/Ministry with responsibility for the Environment, and co-chaired by the Ministry of Health (MoH).

PART 2

PREVENTION AND MITIGATION

CHAPTER 2.1 RISK IDENTIFICATION

Risk identification, the process of finding, recognising and recording risks, is a key component of Jamaica's chemical emergency risk management programme. The objective is to identify and record the hazardous chemicals entering and that originate in the country, and knowing where these chemicals are being stored and used in order to put in place proactive measures to eliminate the structural causes of chemical incidents.

2.1.1 Identifying Hazardous Chemicals Entering Jamaica

All importers of hazardous chemicals must apply for a permit from the Ministry of Health (MOH) before importing chemical substances to the country. The MOH is responsible for regulating hazardous chemicals in Jamaica. Specifically within the MOH, the Standards and Regulatory Division (SRD) issues permits for precursor and other chemicals, while the Pesticides Control Authority (PCA) issues permits for pesticides.

2.1.1.1 Applying for an Import Permit

Applications submitted to the MOH for permits to import hazardous chemicals to Jamaica must include:

- A Safety Data Sheet (SDS).
- A clean-up plan and/or emergency preparedness and response plan (EPRP).
- A waste management plan. Where applicable, consultations must be held with other divisions within MOH as well as with the following agencies for a decision to be made based on the chemical's hazard classification (Annex 2): the Jamaica Fire Brigade (JFB), the National Environment and Planning Agency (NEPA), the National Solid Waste Management Authority (NSWMA), and ODPEM. The necessary arrangements to export chemicals after

use. The disposal mechanisms must be clearly outlined in the permit application before approval is granted for import.

- The intended use of the chemical. If the intended use is for retail then the chemical must be sold to registered retailers only.
- An updated log of all retailers to whom precursor chemicals were sold must be kept.¹
- Any other documentation depending on the chemical's hazard classification, utilising the United Nations' Globally Harmonised System of Classification and Labelling of Chemicals (GHS) for the chemical hazard classes and hazard categories (Annex 2).

Figure 2.1-1 outlines the MOH's process for evaluating hazardous chemicals and granting import permits.

¹ The MOH is responsible for regulating hazardous chemicals after point of sale.


Figure 2.1-1: The Ministry of Health's (MOH) process flow for evaluating hazardous chemicals and granting import permits.

The data submitted by the importer on the chemical must be properly assessed to ensure its quality. The MOH will evaluate the information related to the chemical, including its hazard classification (Annex 2), and determine if the import permit will be granted.

2.1.1.2 Granting or Refusing Import Permits

Having determined and verified the hazardous properties of the chemicals under review, the MOH must consider the potential risk to human health and environment throughout the entire life cycle of the chemical. The decision to grant or refuse an import permit must therefore be guided by the controls proposed at each stage of the chemical's life cycle; the capacity of the owner/facility to provide an initial response to an emergency; our vulnerability and susceptibility based on the proposed application; and also the availability of less hazardous substitutes.

2.1.1.2(i) Considering Hazardous Ingredients

In reviewing an SDS to issue a permit to import a chemical, the MOH will be guided by the following general principles established by the US Department of Labor Occupational Safety and Health Administration (OSHA) for hazardous ingredients:²

- For a hazardous chemical mixture that has been tested to determine its hazards, the chemical and common names of the ingredients that are associated with the hazards and the common name of the mixture must be listed.
- If the chemical is a mixture that has not been tested, the chemical and common names of all ingredients determined to be health hazards and comprising one per cent or greater of the composition must be listed.
- Chemical and common names of carcinogens must be listed if they are present in the mixture at levels of 0.1 per cent or greater.

² US Department of Labour Occupational Safety and Health Administration. "Guidance for Hazardous Determination for Compliance with OSHA Hazard Communication Standard (29CFR 1910.1200)." United States Department of Labor Occupational Safety and Health Administration, https://www.osha.gov/dsg/hazcom/ghd053107.html.

• All components of a mixture that have been determined to present a physical hazard must be listed.

Chemical and common names of all ingredients determined to be health hazards and comprising less than one per cent (0.1 per cent for carcinogens) of the mixture must also be listed if they can still exceed an established Permissible Exposure Limit (PEL) or Threshold Limit Value (TLV) or present a health risk to exposed employees in these concentrations.

All chemicals classified as hazardous or extremely hazardous must be included in a hazardous chemicals information database (see Chapter 3.1).

2.1.1.2(ii) Considering Trade Secrets

Where a trade secret is declared, the MOH will reserve the right to request the information if it is deemed necessary to make a sound decision as to the potential hazard of the chemical. When trade secrets are disclosed the MOH will be legally bound to protect that information. The MOH may refuse to grant a permit if the trade secret is not disclosed upon request.³

2.1.2 Identifying High Risk Facilities

Facilities storing and utilising chemicals are considered high risk as the nature of the substances at these locations increases the risk for unforeseen incidents. During the import permit application process, the MOH's SRD will inspect proposed storage sites before granting approvals. Once the MOH grants the approval, NEPA will issue the permit

Classification of a facility as high risk is dependent upon the following:

³ The Chemicals Legislation being drafted should also give the MOH this right.

- The classification and composition of the chemical used, if the facility handles chemicals that are extremely hazardous substances (EHSs); ⁴
- The volume of the EHSs;⁵
- The operations and processes of the facility;
- The type and volume of the emissions and discharges; and
- The general potential to cause harm to human health and to the environment.

When determining if a facility is high risk the JFB, MOH, NEPA, and the Ministry of Labour and Social Security (MLSS) should consult the following established criteria:

- The Hazardous Chemical Identification Database, which stores data on the volume of EHS utilising the EPCRA TPQ^{4, 5} as a guide.
- Hazardous installations as described by the Occupational Safety and Health Department (OSHD) within MLSS.
- Major facilities as described under the Natural Resources Conservation Authority (NRCA) Air Quality Regulations, 2006, meaning any facility having an air pollutant source that emits:
 - o 100 or more tonnes per year of any particulate matter (PM);
 - Sulphur oxides measured as sulphur dioxide (SO₂);
 - Carbon monoxide (CO);
 - Nitrogen oxides (NOx) measured as equivalent nitrogen dioxide;
 - Five or more tonnes of lead per year;
 - o 10 or more tonnes per year of any single priority air pollutant; or
 - 25 or more tonnes per year of any combination of priority air pollutants.

Table 2.1-1 provides examples of high risk facilities in Jamaica expected to apply for the relevant permits and licenses from the various entities, as outlined above.

Table 2.1-1: Types of High Risk Facilities in Jamaica

⁴ The MOH should be guided by the consolidated list of extremely hazardous chemicals compiled by the United States Environmental Protection Agency (EPA). The list can be found at:

https://www.epa.gov/sites/production/files/2015-03/documents/list_of_lists.pdf. These chemicals are subject to the US's Emergency Planning and Community Right-To-Know Act (EPCRA); the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA); and Section 112(r) of the Clean Air Act.

⁵ The EPCRA's Threshold Planning Quantity (TPQ) will be used a guide.

No.	Types of High Risk Facilities	No.	Types of High Risk Facilities
1.	Electrical power generating plants (fuel)	13.	Industrial chemical manufacturing, storage and distribution facilities
2.	Petro-chemical industries (petroleum refinery and storage facilities; gas stations; LPG filling plants including bio-petro)	14.	Household chemicals manufacturing and storage facilities
3.	Larger industrial facilities and entities that store propane and butane	15.	Food businesses with facilities utilising and storing ammonia as refrigerants
4.	Disposal sites (solid waste, industrial waste, asbestos)	16.	Warehouses with chemical stockpiles
5.	Inorganic and organic chemical and industrial gas manufacturing and storage plants	17.	Hospitals with hazardous wastes (e.g. cyto-toxic waste)
6.	Water and waste water treatment facilities (where chlorine is stored)	18.	Cement manufacturing plants
7.	Fertiliser manufacturing plants and agricultural retailers	19.	Food and agro-processing plants with chemical storage and waste streams (e.g. sugar, coffee)
8.	Bauxite/alumina plants	20.	Cosmetic chemicals and pharmaceutical manufacturing
9.	Ports (handling and storing hazardous chemicals)	21.	Mines (gold and other minerals requiring storage and use of hazardous chemicals)
10.	Pesticide manufacturing and retail outlets	22.	Manufacturers of plastics, resins and organic chemicals
11.	Farms storing large volumes of pesticides and other chemicals	23.	Incinerators (municipal, bio-medical, hazardous waste)
12.	Paint manufacturing plants	_	

CHAPTER 2.2

ZONING AND LAND-USE PLANNING FOR HIGH RISK FACILITIES AND CONTROLLING THE STORAGE AND STOCKPILING OF HAZARDOUS CHEMICALS

Prevention and mitigation refers to the outright avoidance or the lessening or limiting of the adverse impacts of hazards and related disasters. In the context of chemical emergency risk management, prevention and mitigation aims at reducing the likelihood of chemical incidents occurring and, if they do occur, reducing their severity. It should be noted that, very often, the complete avoidance of losses is not feasible; but their scale or severity can be substantially lessened by implementing various strategies and actions. These include enforcing zoning and land-use planning guidelines for high risk facilities, controlling the storage of hazardous chemicals, and preventing the stockpiling of such chemicals.

2.2.1 Land-Use Planning for High Risk Facilities

Land-use planning is very important in chemical risk management. Where possible, it is critical that, depending on its classification, high risk facilities are located in areas where, if there is an incident, there will be less impact on the population and the environment. The National Environment and Planning Agency (NEPA) and the Municipal Corporations should ensure that Development Orders identify the specific zones for development, citing the pertinent development guidelines.

The National Environment and Planning Agency (NEPA) and the local authority must enforce land-use planning guidelines that address the following two elements:

• General zoning, which includes the establishment of specific areas for hazardous industrial activities, considering all aspects of protecting health, environment and properties; and

Case-by-case decision-making concerning the siting of a specific new installation, significant changes to an existing installation, or proposed development(s) near an existing installation. Other relevant entities, such as the Jamaica Fire Brigade (JFB), the Ministry of Health (MOH) and the Office of Disaster Preparedness and Emergency Management (ODPEM), as well as public and private stakeholders, should be involved in the decision-making process.

These must be carried out in collaboration with national and local planning and development agencies with a specific focus on chemicals management to ensure the best interest and safety of citizens.

2.2.2 Controlling the Storage of Hazardous Chemicals

The proper storage of hazardous chemicals is critical for the protection of the health and safety of people and the environment. The facilities should store chemicals according to the NRCA 2011 Guidelines for Secondary Containment of Hazardous Liquids Stored Above-ground.¹ The EPA: IPC Guidance Notes on Storage and Transfer of Materials for Scheduled Activities² can also be consulted for guidance.

2.2.3 Inspecting Hazardous Chemicals Storage Sites

The inspection of hazardous chemicals storage sites is done on an agency-by-agency basis, based on each entity's individual mandate. The activities for each entity are, however, linked and require co-ordination and information sharing.

Based on Cabinet Decision No. 11/99 dated 29 March 2009, the Occupational Safety and Health Department (OSHD) within the Ministry of Labour and Social Security (MLSS) will develop memoranda of understanding (MoUs) to establish a joint inspectorate (Annex 3) and develop a protocol for synergy and data sharing. The new protocol should include:

¹ <u>http://nepa.gov.jm/new/services_products/guidelines/docs/NRCA2011Guidelines.pdf</u>

² http://www.epa.ie/pubs/advice/licensee/EPA_storage_transport_hazardous_materials.pdf

- Standardised inspection tools;
- Joint inspections;
- Central databases; and
- Resources/equipment sharing.

2.2.4 Preventing Stockpiles of Hazardous Chemicals

Stockpiling of hazardous chemicals can cause numerous issues, especially at port facilities. It is critical that the appropriate steps are in place to prevent this from occurring. The **Natural Resources (Hazardous Waste) (Control of Transboundary Movement) Regulations, 2002**, are to be used as instructions on how to prevent stockpiling. The waste management plan submitted in the application for an import permit (see 2.1.1.1 above) must clearly outline the disposal mechanisms before approval is granted for an import permit.

CHAPTER 2.3 CONTROLLING THE TRANSPORTATION OF HAZARDOUS CHEMICALS

2.3.1 Transboundary Movement of Hazardous Chemicals

Transboundary movement of chemicals can have a tremendous impact on the health and safety of the population and on the preservation of the environment. All transboundary movement of hazardous substances requires a permit from NEPA, which will ensure that the relevant multi-sectoral review of permits is conducted. Individuals must be guided by the Users' Guide to the Natural Resources (Hazardous Waste) (Control of Transboundary Movements) Regulations, 2002 – First Edition.¹

2.3.2 Internal Transportation of Hazardous Chemicals

All vehicles transporting hazardous chemicals must receive a permit from NEPA. All guidelines within the permit must be followed.

In the absence of local regulations, the National Chemical Emergency Risk Management (NCERM) Plan will utilise the **New South Wales' Dangerous Goods (Road and Rail Transport) Regulation 2014**² as a guide for the internal transportation of hazardous substances. It should be noted that these guidelines do not apply to dangerous goods that are:

- Class 1 (explosives) or class 7 (radioactive substances);
- In the fuel tank of a vehicle;
- In any plant or equipment that forms part of a vehicle and is required for its operation; or

http://nepa.gov.jm/new/legal_matters/policies_standards/docs/standards/users_guide_hazardous_wastes_feb2015.pd

¹ Users' Guide to the Natural Resources (Hazardous Waste) (Control of Transboundary Movements) Regulations, 2002 – First Edition,

²New South Wales' Dangerous Goods (Road and Rail Transport) Regulation 2014, <u>https://www.legislation.nsw.gov.au/regulations/2014-398.pdf</u>

• In any safety or protective equipment that must be carried in a vehicle.

Also exempted are privately transported dangerous goods: small quantities, single consignments of small receptacles and certain quantities carried as tools of trade.

2.3.3 Guidelines for the Internal Transportation of Hazardous Chemicals

2.3.3.1 Placard Loads and Load Quantities

Placards must be displayed on all transport units carrying hazardous substances —portable tanks, bulk containers, freight containers or a vehicle—for the following types of loads:

- In the case of smaller receptacles (receptacles up to 500 L capacity *and* containing up to 500 kg of dangerous goods):
 - If there are category A division 6.2 dangerous (infectious substance) present;
 - If there are at least 10 L/Kg division 6.2 dangerous (infectious substance) present;
 - If there are division 2.1 (flammable gases, except aerosols), division 2.3 (toxic gases) or packaging group I substances present **and** the total quantity of all dangerous goods is at least 250 L/Kg.
 - If none of the above applies the criterion is there is more than 1000 L/Kg of dangerous goods present.
- 2. In the case of larger receptacles (any receptacle > 500 L capacity *or* containing > 500 kg of dangerous goods): when one or more are transported.

Dangerous goods (DG) transport will be grouped into three categories (Table 2.2-1), depending on the size of the receptacles and the total quantity of goods transported. Different levels of controls will apply to each of these categories.

Category of Transport	Controls Required
Less than placard load	Transport documents
Placard load receptacles up to and including 500 L capacity and containing up to and including 500 kg of dangerous goods	 Placards (class labels) Transport documents Emergency information Emergency information holder Double-sided reflectors A fire extinguisher appropriately selected per the hazardous category of chemical Driver protective equipment Dangerous goods stowed correctly Dangerous goods segregated Personal protective equipment (PPE) Resources for clean-up Vehicle and driver to be licensed (licenses are not required for intermediate bulk containers (IBCs) up to 3,000L total capacity if they are not filled or emptied while on the vehicle).
Placard load receptacles over 500 L capacity or containing over 500 kg of dangerous goods	 Placards (EIPs and class labels) Transport documents Emergency information Emergency information holder Double-sided reflectors Additional fire extinguishers Driver protective equipment Dangerous goods stowed correctly Dangerous goods segregated Vehicle and driver to be licensed (licenses are not required for IBCs up to 3,000 L total capacity as long as they are not filled or emptied while on the vehicle).

Table 2.3-1: Transport Categories and Required Controls

2.3.3.2 Transport Documents

- 1. Transport documents must be present when hazardous substances are transported.
- 2. Consignors who send dangerous goods for transport by road must ensure the prime contractor or driver has a transport document describing the dangerous goods.

- 3. Drivers must ensure their transport documents are carried in the vehicle's cabin, and make them available to any authorised person and emergency services if requested. If the vehicle is transporting a placard load, transport documents must be carried in the emergency information holder, if practical.
- 4. Safety Data Sheets (SDS).
- 5. Aggregate quantity of goods and number of packages.

The following information—in English and legible—is required to fully complete a transport document:

- 1. Consignor's name and telephone number.
- 2. A description of the dangerous goods including:
 - United Nations (UN) number;
 - The proper shipping name or the name of the goods that appears on the packaging or receptacle;
 - The dangerous goods class or division;
 - Subsidiary risk (if applicable);
 - Packing group (if applicable); and
 - A description of each receptacle, e.g. 'drum' or 'intermediate bulk container' (IBC).

2.3.3.3 Combination Vehicles

When dangerous goods are transported in a placard load on a combination road vehicle such as a train or B-Double, the transport documentation must indicate which dangerous goods are stowed in each trailer.

2.3.3.4 Residues/Uncleaned Packaging

 Intermediate bulk containers, tank vehicles and others containing only residues must also be described as such on transport documents, as far as practical, by showing empty/uncleaned or residues or similar.

- Empty packaging, such as DG drums that have not been cleaned or contain only residues, may be described in a transport document simply as empty DG drums, DG residues or similar. A full description is not required in these cases.
- 3. Transport documents are required for wastes that are also dangerous goods.

2.3.3.5 Emergency Information

Emergency information must always be on a vehicle transporting a placard load of dangerous goods. The emergency information must set out basic information on substance hazards, first aid procedures and the protective equipment to use. It must explain how to deal with any emergency involving dangerous goods, such as a leak, spill, vehicle rollover or fire.

The following will be considered acceptable types of emergency information:

- The Emergency Response Guide.
- Any other emergency procedure guide plus a vehicle fire guide, which have both been approved by NEPA.

N.B.: An SDS is not the same as emergency information and is not acceptable as a substitute. An emergency information holder must contain only emergency information and transport documents relating to the load.

An emergency information holder must be fitted to a vehicle transporting a placard load of dangerous goods. The holder must be:

- 1. Of a size and shape suitable for carrying emergency information and transport documentation.
- 2. Marked with the words 'emergency procedure guides' or 'emergency information' in red letters at least 10mm high on a white background.
- 3. Securely placed on a road vehicle in one of these locations:

- On the inside of a door of the cabin.
- Immediately adjacent to a door of the cabin.
- If either of the above is not possible, in a visible and accessible position in the cabin (provided the position of the holder is identified on a notice affixed to the inside of the driver's door).

In the case of a placard load, emergency information must be in the emergency information holder. If less than a placard load is being transported and no emergency information holder is fitted, emergency information must be in a prominent position in the cabin.

2.3.3.6 Personal Protective Equipment (PPE)

Personal protective equipment (PPE) is required for the personnel involved in the transfer and transport of all hazardous substances. All vehicles must contain the requisite PPE available.

2.3.3.7 Safety Equipment

The following must be in the safety kit of a vehicle transporting a placard load of dangerous goods:

- ï Three double-sided reflector signals;
- ï An appropriate fire extinguisher.

How to Choose a Fire Extinguisher

The type of fire extinguisher required will be determined by the hazardous class of substances being transported. Identify the type of materials being transported and choose accordingly.

Class A	Solids such as paper, wood, plastic.
Class B	Flammable liquids such as paraffin, petrol, oils.
Class C	Metals such as aluminum, magnesium, titanium.
Class E	Fires involving electrical apparatus.
Class F	Cooking oils and fats.

All contractors transporting hazardous materials must consult the local fire department for guidance on the appropriate fire extinguisher required.

Figure 2.3-1: How to Choose a Fire Extinguisher

2.3.3.8 Stowage

The following must be considered:

- Dangerous goods must only be loaded in transport units that are strong enough to withstand transport. Packages must be stowed **and** restrained within the transport unit.
- Before loading, the consignor must inspect the interior and exterior of a transport unit to ensure there is no damage that could affect its integrity or that of the packages to be loaded in it.
- Specific loading instructions—such as orientation arrows, 'not to be double stacked,' 'keep dry' or temperature control requirements—must also be met. Whenever possible, liquid dangerous goods must be stowed below dry dangerous goods.
- Packaging and IBCs fitted with a vented closure must be stowed and restrained with the closure uppermost.

- If the dangerous goods are of a kind that may lead to the formation of flammable, toxic or other harmful atmospheres, they must be stowed so that no harmful atmosphere will accumulate in the vehicle cabin if a leak should occur.
- Packages that appear to be leaking or damaged, potentially allowing the contents to escape, must not be accepted for transport.

Packaging must be done following the JS 279: 2000 Performance packaging for the transportation of dangerous goods.

2.3.3.9 Stowage on Open or Non-Rigid Sided Vehicles and Freight Containers

Where unpackaged dangerous articles or dangerous goods in packages are transported in an open transport unit:

- The items must be stowed and restrained within rigid sides or gates.
- No dangerous article or package containing dangerous goods may protrude above the sides or gates by more than 30 per cent of the height of the article or package.
- No parts of an article or package may protrude horizontally beyond the sides or gates.

However, rear gates may be omitted from a road vehicle if:

- ï The dangerous goods are loaded towards the front of the vehicle; and/or
- ⁱ Other goods are stowed and restrained at the rear per the load restraint guide to prevent the dangerous goods from falling from the vehicle.

N.B.: A curtain-sided container or vehicle is not regarded as a closed unit and must be fitted with gates unless it has been given a specific exemption from this requirement.

The requirement for rigid sides or gates will **not** apply to IBCs, large packagings, segregation devices, pressure drums or multiple element gas containers, if they are restrained on a transport unit according to the load restraint guide.

The following will apply to class 2 dangerous goods secured in gas industry cylinder pallets (stillages):

- The cylinders must be secured within the frame of the stillage by a lashing system that meets the load restraint guide.
- No more than 45 per cent of the height of the cylinders may protrude above the stillage rail.
- The stillages must be stowed and restrained per the load restraint guide.

2.3.3.10 Special Stowage Provisions

The following special provisions will apply to **any** quantity of dangerous goods transported:

- ï Class 2 gases must not be stowed near a source of heat.
- ⁱ Liquefied gases in a cylinder with a pressure relief device must be transported upright so that the pressure relief device is in the vapour space.
- i When transporting cylinders the main valve must be closed and any regulator removed prior to loading.
- ⁱ Self-reactive substances and organic peroxides must be protected from direct sunlight and heat and be placed in adequately ventilated areas.
- ï Dangerous goods of division 4.3, or with a subsidiary risk of 4.3, must be kept dry.

The following special provisions will apply to placard loads of dangerous goods:

^ï Dangerous goods (other than aerosols and gas cartridges) of divisions 2.1 or 2.3 or with a subsidiary risk of 2.1, or liquefied oxygen, must not be transported unless the transport unit or compartment in which they are loaded is ventilated to prevent the build-up of vapours.

Please be guided by the Nine Classes of Dangerous Goods as seen in Figure A2.1 in Annex 2.

2.3.3.11 Segregation

Segregation helps minimise the risk of incompatible substances reacting dangerously if they were to come into contact with each other. Such contact might be caused by a leak, spill or vehicle accident. Segregation is particularly important to prevent contamination of foodstuffs.

Segregation rules will generally apply whenever a placard load of dangerous goods is transported. The following will also apply:

- No quantity of dangerous goods of division 2.3 (toxic gas), class 6 (infectious substance), class 8 (corrosive), or with a subsidiary risk of 6 or 8 must be transported with food or food packaging.
- Incompatible substances must not be transported together in the same over pack (such as a shrink-wrapped pallet).

Exceptions to these segregation rules will apply to:

- Food or packaging carried in the cabin for the driver's personal use.
- Class 8 food ingredients intended for use in food manufacturing.
- Dangerous goods in an over pack or on a vehicle when all the dangerous goods are 'limited quantities' items.

Primary hazard and the subsidiary risk (if any) of a substance must be considered when assessing whether it is compatible with any other substance.

Other requirements:

- ^ï Packages and articles must be stowed so they remain in position during transport.
- ï The segregation device must be restrained so it remains in position.

- i All other goods must be stowed so they will not be affected by any leak from the device.
- ⁱ Dangerous goods and incompatible goods must not be stowed above each other.
- ^ï For road and rail transport, an over-packing drum must be marked with the proper shipping name, the UN number, and the dangerous goods label for each item contained in the drum.
- ^ï Type I and type II devices must be labelled on each vertical side that may be exposed during loading or transport, with labels at least 250 mm square.
- i Other methods of segregation must be marked per the approval given.

2.3.3.12 Transportation Routes for Extremely Hazardous Substances

Whenever placarded, heavily populated areas, crowds, tunnels, narrow streets and alleys must be avoided. Take other routes, even if inconvenient, unless there is no other way. The JCF must be notified of the route planned when transporting large quantities of hazardous goods.

A written route plan is required if transporting Division 1.1, 1.2 or 1.3 (Class A or Class B) explosives. Carriers must prepare the route plan and a copy must be given to the driver. NEPA, JCF and other agencies with regulatory oversight should enforce these guidelines.

2.3.3.13 Temporary Parking

The following considerations must be made for temporary parking:

- Do not uncouple a trailer and leave it with hazardous material on a public street.
- Do not park within 300 feet of an open fire.
- Avoid populated residential areas.

2.2.3.14 LPG-Fuelled Motor Vehicles

The Transport Authority should further consider the development of a "Guidelines for the Safe Operation of LPG-Fuelled Motor Vehicles," since local vehicles are being converted. It is recommended that the Transport Authority use as a guide the "Safe Working with LPG-

Fuelled Motor Vehicles'³ established by the United Kingdom's (UK) Health and Safety Executive (HSE).

³ <u>http://www.hse.gov.uk/pubns/indg387.pdf</u>

PART 3

PREPAREDNESS

CHAPTER 3.1

INFORMATION MANAGEMENT, LABORATORY ANALYTICAL CAPABILTIES AND CAPACITY DEVELOPMENT

Preparedness actions are aimed at building the capacities needed to efficiently manage hazardous chemical incidents and achieve orderly transitions from response to recovery.¹ These include enhancing the hazardous chemicals knowledge available to all stakeholders via the development of critical databases so that responders can have access to crucial information to guide the appropriate response: a national database of all hazardous chemicals entering the country; a database of all hazardous chemical sites across the island; a human and material capacities database covering all critical Ministries, Departments and Agencies (MDAs); and the development of a comprehensive Toxics Release Inventory (TRI) programme, a resource for learning about toxic chemical releases to better support decision-making processes, especially at the local/parish level.

Measures undertaken during the preparedness phase must also include building the human and material capacity of critical stakeholders to effectively respond to chemical incidents.

3.1.1 Information Management

Information management is critical to the chemical emergency risk management process. All information should be collected and stored in a manner that is useful and available for the relevant MDAs involved in the decision-making process. The following information management mechanisms must be put in place.

¹ United Nations International Strategy for Disaster Reduction (2009). **2009 UNISDR Terminology on Disaster Risk Reduction**. Geneva: UNISDR, <u>http://www.preventionweb.net/files/7817_UNISDRTerminologyEnglish.pdf</u>.

3.1.1.1 Spatial Data

Spatial data and information is important in all facets of emergency planning. At the time of an incident, it is crucial for responders to have access to information that can help guide the appropriate response.

A central repository of spatial data geared to the sound management of hazardous chemicals and chemical emergencies must be developed or coordinated by the ministry with responsibility for the environment, in collaboration with other relevant MDAs, and facilitated by the National Spatial Data Management Division (NSDMD).

Databases should be established for hazardous sites/chemical hotspots, population densities, transportation networks, sensitive resources, and critical institutions, among others. All databases should be integrated and updated regularly (requiring an update protocol) to ensure that the necessary information in each situation is readily available and accurate. The Chemical Hazards Emergency Management Services Mapping Application (CHEMS-MAP) Tool available to government entities must be utilised in the planning process. A protocol must be developed by the NSDMD and the Office of Disaster Preparedness and Emergency Management (ODPEM) for the updating of this application every two years.

3.1.1.2 A Hazardous Chemicals Information Database

The Ministry of Health (MOH) will create a chemicals information database, based on the chemicals classified during the import permit application process (see 2.1.1.1). Jamaica Customs, the National Environment and Planning Agency (NEPA), and the Ministry of Labour and Social Security (MLSS) will also contribute to the development of this database.

The MOH's Standards and Regulatory Division (SRD) and the Pesticides Control Authority (PCA), in the process of issuing a permit for the importation of a chemical, must operate a central registry. At minimum, this database should contain the following information:

- 1. The name of the hazardous chemical (common name as well, if available).
- 2. The product/mixture name (if applicable).
- 3. A Chemical Abstracts Service (CAS) Registry number.
- 4. The name of the facility importing the chemical (or trade association).
- 5. The location of the chemical storage facility.
- 6. The Safety Data Sheet (SDS).
- 7. The percentage of ingredients in the product/mixture (if applicable).
- 8. Substances used that can be deemed as extremely hazardous.²

High risk facilities must maintain an updated inventory of the hazardous chemicals onsite, along with the relevant SDS. The MLSS' Occupational Safety and Health Department (OSHD) will ensure that this requirement is met.

3.1.1.3 A National Hazardous Sites Database

NEPA will develop and display a national hazardous sites database, a compilation of all identified high risk facilities. A hazardous site is one that could present dangers to public health, occupational health and the environment through contamination. A database or inventory of hazardous sites is therefore an important means of identifying the location and magnitude of potential chemical releases. Access to information on specific chemicals and sites will provide emergency planners and first responders with crucial information during the prevention and initial stages of a chemical incident.

At a minimum, the database should include the following primary information:

- Location of the hazardous site.
- Chemical(s) found on the site.

² The MOH should be guided by the consolidated list of extremely hazardous chemicals compiled by the United States Environmental Protection Agency (EPA). The list can be found at: <u>https://www.epa.gov/sites/production/files/2015-03/documents/list_of_lists.pdf</u>. These chemicals are subject to the US's Emergency Planning and Community Right-To-Know Act (EPCRA); the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA); and Section 112(r) of the Clean Air Act.

- Actual quantity/quantities of chemical(s) found on the site, including intermediates and waste products.
- The contact information for the management of the site.

The database may also include the following additional information:

- Existence of an emergency and evacuation plan for the site.
- Materials and first aid available on-site.
- The presence of decontamination equipment for on-site personnel, patients, first responders and equipment.
- Presence of therapeutic measures, including antidotes.
- Availability of relevant expertise among on-site personnel.
- Modeling of potential chemical release scenarios.
- The estimated size and location of vulnerable areas.
- Major transportation routes of a chemical.³

The facilities on the national hazardous sites database should require an environmental or other relevant permits and licenses from NEPA. They should also be required to develop a risk management plan where surrounding populations can be impacted. The license will also stipulate that once the plans have been developed the clients must notify the local authorities and present it to communities at risk. A viable waste disposal/management option and the reporting of spills to the environment must also be included as conditions of the permits. The acceptable quantities will be established by NEPA, using the US's Emergency Planning and Community Right-to-Know Act (EPCRA) Threshold Planning Quantity (TPQ) as a guide.⁴

³ World Health Organization (2009). **Manual for the Public Health Management of Chemical Incidents**. Geneva: WHO. <u>http://apps.who.int/iris/bitstream/10665/44127/1/9789241598149_eng.pdf</u>

⁴ https://www.epa.gov/sites/production/files/2015-03/documents/list_of_lists.pdf.

N.B.: Many chemical emergency incidents involve non-regulated sites, such as small ammonia installations, warehouses, paint shops, and swimming pools, which will be more difficult to include in a national level database. However, these must be captured by the local hazardous chemical information database, which will be generated at the parish level by each respective Parish Disaster Committee (PDC).

The EPCRA further establishes Reportable Quantities (RQ) for spills and TPQ for facilities using and storing extremely hazardous substances (EHS). NEPA, the Office of Disaster Preparedness and Emergency Management (ODPEM) and the local planning authority will consult the database and consider these facilities in emergency planning. Communities in which these facilities are located will also be informed about the chemicals around them.

3.1.1.4 A Human and Materials Resources Capacity Database

All critical entities must develop a capacity and inventory listing, which would include all material and human resources that can be utilised in a chemical emergency. The ODPEM should have access to this database for planning and response purposes.

3.1.1.5 A Comprehensive Toxics Release Inventory (TRI) Programme

NEPA will develop a comprehensive Toxics Release Inventory (TRI) programme to track the management of certain toxic chemicals that may pose a threat to human health and the environment. All facilities identified as high risk will be required to report on their accidental releases and make an annual submission. The TRI will provide free, accessible and reliable information to the public. This information will inform the emergency planning process, especially at the local/parish level.

The Priority Air Pollutants criteria, established over 10 years ago, must be updated. NEPA must look at the present industrial landscape and, guided by the hazardous chemicals information database (see 3.1.1.2) and the national hazardous sites database (see 3.1.1.3), broaden the list of

priority chemicals. The list of toxic chemicals and chemical categories subject to the EPCRA's Toxics Release Inventory (TRI) reporting requirements for the 2015 reporting year should be used as a guide.⁵

3.1.2 Laboratory Analytical Capabilities

The MOH's Environmental Health Unit has overarching responsibility for the management of laboratory resources in chemicals management via the National Public Health and Environmental Laboratories. The main functions of the Environmental Laboratory are:

- Administrative:
 - Maintain communication with all active laboratories and keep abreast of their capabilities.
 - Foster information sharing within the Ministries, Departments and Agencies (MDAs).
 - Promote capacity building within the MDAs.
 - Establish Memoranda of Understanding (MoUs) with MDAs and private facilities to facilitate smooth and speedy assessments.
 - Offer technical support on the interpretation of chemical validation and verification reports.
- Operational:
 - Establish sampling protocols for extremely hazardous substances (EHSs) and other chemicals of concern.
 - Maintain an inventory of available and required basic sampling equipment.
 - Collaborate with laboratories in other MDAs to facilitate resource sharing.
 - Establish protocols or MoUs to obtain equipment that are not housed in the Environmental Laboratory.
 - Estimate and maintain a budget to facilitate equipment rental and also to offset sampling and analytical costs.

⁵ Table II: EPCRA Section 313 Chemical List for Reporting Year 2015 (including Toxic Chemical Categories), <u>https://www.epa.gov/sites/production/files/2015-12/documents/ry_15_tri_chemical_list.pdf</u>

- Identify and train resource persons within MOH at the parish level to be prepared for chemical emergencies.
- Assist parish personnel in identifying laboratory support at the local level.
- Assist parish personnel in providing linkages and support in chemicals identification.
- Maintain a contact list of laboratory personnel.
- Offer technical support in chemical sampling at the national and parish levels.

If the SRD or PCA needs support in chemical identification they will report this to the Environmental Laboratory, which will coordinate the activity. The accredited labs listed in Annex 4 should be utilised. All laboratories must be accredited by the Jamaica National Agency for Accreditation (JANAAC).

3.1.3 Capacity Development

Capacity is the combination of all the strengths, attributes and resources available within an organisation, community or society to manage and reduce disaster risks and strengthen resilience.⁶ It is therefore incumbent upon the various stakeholders involved in chemical emergency risk management to develop these capacities in order to effectively respond to chemical incidents.

3.1.3.1 Building Human Capacities

A structured chemical incident training programme is required for all MDAs and the stakeholders of high risk facilities to ensure effective prevention and adequate preparedness for and response to chemical emergencies. Training programmes for regulatory inspectors of high risk facilities should be cross-functional and include occupational safety and health standards for handling hazardous materials.

⁶ UNISDR (2009). **2009 UNISDR Terminology on Disaster Risk Reduction**. Geneva: UNISDR. <u>http://www.preventionweb.net/files/7817_UNISDRTerminologyEnglish.pdf</u>

The training programmes for high risk facilities should be geared towards chemical emergency response, preparedness and the proper use, handling and storage of chemicals utilised and distributed by the facility. The training for primary and secondary responders will include chemical emergency response, preparedness, Incident Command System (ICS) and chemical risk management.

These training programmes must include:

- A series of refresher trainings for those previously trained;
- Induction training for all new employees at each facility or response agency; and
- The use of drills and simulation exercises to practice and re-enforce the elements of the response as detailed in the protocol.

The following courses are required for all responders (facility and agency):

- Chemical risk management;
- Incident Command System (ICS);
- Hazardous Waste Operations and Emergency Response (HAZWOPER);
- Hazmat first response training;
- Selection and use of appropriate Personal Protective Equipment (PPE) including respiratory protection; and
- Chemical-specific training.

Other courses that would prove to be useful to all responders include:

- Effective communication;
- Incident investigation;
- Data collection and analysis of preliminary findings; and
- Other agency-specific training.

All MDAs and high risk facilities must have a focal point and must receive annual training or exposure to the appropriate content. All MDAs, based on their respective mandates, must include staff training within their budgets. The ODPEM should coordinate national training programmes based on the national needs.

3.1.3.2 Equipment

The ODPEM, as overall coordinator, maintains an inventory of all response equipment in storage and ensures that minimum stock is always on hand. This inventory will include a list of all the equipment owned by the different MDAs that can be deployed in the event of a chemical incident. The MDAs are expected to have their own equipment and maintenance programme and should inform ODPEM of critical resource needs annually.

The ODPEM, the Ministry of Foreign Affairs and Foreign Trade (MFAFT) and the Planning Institute of Jamaica (PIOJ) must develop all mutual aid agreements with other countries so that the necessary support can be provided when needed.

3.1.3.3 Health Emergency Planning

It is critical that certain considerations are taken into account due to the nature of chemical incidents and its wide-scale health complications.

The MOH will ensure that hospitals and other treatment facilities develop emergency plans, coordinated with local off-site plans. As part of chemical emergency risk planning, the respective Regional Health Authorities must ensure that hospital and other treatment facilities:

- Maintain an inventory of available equipment that might be needed, and have up-to-date information on how to obtain additional support.
- Ensure that decontamination equipment and facilities are available (if not on-site, then by mobile units).

- Maintain a register of health/medical personnel who can be called upon to assist hospitals/facilities providing care during a chemical emergency.
- Have plans/procedures for handling mass causalities.
- Have a designated (separate) telephone line, in service 24 hours a day every day, for use by emergency services in the event of a chemical incident.
- Have access to specialised information, and to specialists, for appropriate treatment of exposed victims.
- Have procedures to protect other patients and staff from contamination.

Mass casualty plans must include the role of the MOH, Jamaica Defence Force (JDF), Jamaica Fire Brigade (JFB), Municipal Corporations and ODPEM for air lifting and other transportation arrangements for victims; decontamination areas; and setting-up field hospitals.

The MOH must establish and maintain a system where all facilities can call into the Caribbean Poison Information Network (CARPIN), formerly the Poison Control Centre, between the hours of 8:00 a.m. and 4:00 p.m. daily to access information/instructions on how to treat patients. The contacts of key personnel from CARPIN must be made available outside the stated hours. The MOH must dialogue with the relevant stakeholders to have toll free access to CARPIN. The MOH is to ensure that the capacity of CAPRIN is enhanced to respond to a wider cross section of possible chemical poisoning occurrences. CARPIN can be contacted at 927-1680.

CHAPTER 3.2

STAKEHOLDERS' ROLES AND RESPONSIBILITIES IN HAZARDOUS CHEMICALS RISK MANAGEMENT

3.2.1 Roles and Responsibilities of Ministries, Departments and Agencies (MDAs)

Several Ministries, Departments and Agencies (MDAs), based on their individual mandates, have a role to play in Jamaica's hazardous chemicals risk management programme. Table 3.2-1 summarises these roles.

Table 3.2-1: The Roles and Responsibilities of Ministries, Departments and Agencies (MDAs) in Hazardous Chemicals Risk Management

Ministry/Department/ Agency	Roles and Responsibilities
Bureau of Standards (BSJ)	• Inspects goods entering the country to ensure they meet international and national labelling requirements in accordance with the Standards Act, 1969 (mandatory labelling standards).
Jamaica Bauxite Institute (JBI)	 Monitors environmental aspects of the operations within the bauxite and alumina industries. Liaises with the Water Resources Authority (WRA) and the National Environment and Planning Agency (NEPA) concerning environmental matters in the bauxite/alumina industries.
Jamaica Constabulary Force (JCF)	 Stops vehicles with leaking substances suspected of being chemicals. Conducts spot checks for vehicles carrying chemicals to ascertain if they have all requisite documents and equipment e.g. Safety Data Sheets (SDSs), spill kits and fire extinguishers. Detains vehicles and/or issue tickets for non-compliance.
Jamaica Customs	 Identifies chemicals and checks on the chemicals being cleared in accordance with the Customs Act, 1941. Equip Customs Officers with Hazardous Waste Operations and Emergency Response (HAZWOPER) training. Enforce the permit conditions imposed by the Ministry of Health's (MOH) Standards and Regulations Unit (SRUU).
Jamaica Defence Force (JDF) Coast Guard	 Conducts routine inspections and checks registration status of canoes and some smaller vessels. Sensitises fisher vessels on what is required of them. Keeps equipment and personal protective equipment (PPE) on hand for responses to oil spills and other chemical emergencies at sea. Enforces the provisions of the Protocol on Preparedness, Response and Co-operation to pollution Incidents by Hazardous and Noxious Substances, 2000 (OPRC-HNS Protocol).

Ministry/Department/ Agency	Roles and Responsibilities
Jamaica Fire Brigade (JFB)	 Protects life and property in the case of fires or other disasters, including escape of dangerous fumes or fluids, explosions, oil spills and other dangerous pollutants of the air and sea, in accordance with the Fire Brigade Act, 1988, and the Fire Brigade Regulations, 1993. Reviews building development plans of all public offices for fire prevention and safety. Conducts fire inspections and identifies fire hazards. Collaborates with NEPA regarding permit applications for new entities. Reviews fire safety plans and Emergency Preparedness and Response Plans (EPRPs) requested by NEPA as a permit condition. Conducts drills and simulation exercises for responses to national chemical emergencies. Establishes strategically located chemical emergency response teams based on risks in the different areas across the country. Identifies chemical hazards when conducting fire inspections and notifies relevant agencies of issues, including the MOH SRU. After approval of building plans by relevant authorities, inspects buildings after they have been constructed/occupied. Conducts follow-up fire inspections.
Jamaica Information Service (JIS)	 In collaboration with other key stakeholder agencies, implements public awareness campaigns for the prevention of and response to chemical emergencies. These should include: Risk of chemical emergencies; What to do during chemical emergencies; and Procedures for obtaining permits and permit requirements.

Ministry/Department/ Agency	Roles and Responsibilities
Maritime Authority of Jamaica (MAJ)	 Responsible for the safety of ships in Jamaican waters and of all Jamaican ships anywhere in the world. Administers the requirements of the: International Convention for the Safety of Life at Sea (SOLAS); Shipping (Pollution Prevention, Response, Liability and Compensation) Bill; International Maritime Organization (IMO) Resolutions and Guidelines; and The Shipping Act, 1999. Regulates ships and develops merchant shipping business. Maintains a ship registry. Conducts inspections of ship certificates and ship condition. While this is for the purposes of maritime safety and prevention of marine pollution, it should also include inspection of the stowage of dangerous goods in ships and the lifesaving, fire-fighting and other safety equipment of ships. Responsible for the prevention of marine pollution. Requires ships and terminals to have an emergency plan based on the International Safety Management (ISM) Code, which provides an international standard for the safe management and operation of ships and for pollution prevention. Establishes maritime training and safety standards. Oversees the Caribbean Maritime Institute (CMI) that conducts training for persons in the shipping sector. Makes enquiries as to shipwrecks or other casualties affecting ships. Develops regulations that prescribe, in relation, to dangerous goods: The method of packing and stowing; The matkings that are to be placed on any package or container in which goods may be placed for shipment.
	 Imposes fines for absence of labels and nondisclosure of dangerous goods and can declare the ship to be unseaworthy by reason of improper loading. Detains any ship that is deemed unseaworthy based on inspection findings. Notifies the customs of any port at which an unseaworthy ship may seek clearance. Ensures that vessels and terminals carry approved emergency plans and act as primary responders
Ministry/Department/ Agency	Roles and Responsibilities
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Environmental Health Unit (EHU), Ministry of Health (MOH)	 In accordance with the Public Health Act, 1985 and Regulations: Public Health Inspectors periodically conduct inspections of establishments that utilise hazardous substances and manufacture chemicals; and Serves notices where deficiencies are observed during an inspection. Develops and implements industry awareness campaigns based on common weaknesses identified during inspections.
Standards and Regulations Unit (SRU), MOH	 Issues permits for the importation and local manufacture of chemicals in accordance with the Food and Drugs Act, 1975, the Food and Drugs Regulations, 1975, and the Precursor Chemicals Act, 2005. Establishes a registration system for companies importing chemicals. Maintains an up-to-date electronic database of the permits issued/denied for the importation of chemicals, including electronic copies of the Safety Data Sheets (SDSs) for the chemicals, allowing for notations and holds be placed on a company's account if any breaches occur. Makes the database accessible to other agencies, for e.g., Jamaica Customs, the Port Authority of Jamaica (PAJ), MAJ, port facilities, NEPA and ODPEM. Develops an additional controlled list for hazardous chemicals. Inspects the facilities of chemical importers. Requests fire inspection reports from companies prior to permit approvals. Imposes permit conditions: Limiting the amount of chemicals imported based on an importer's management capabilities; Indicating labelling requirements under the Standards Act for the labelling of the packaging and the type of packaging to be used; and Requiring importers to declare if chemicals are solely for company's use or for distribution.

Ministry/Department/ Agency	Roles and Responsibilities
Industrial Safety / Occupational Health and Safety Division, Ministry of Labour and Social Security (MLSS)	 In accordance with the Factories Act, 1943, the Factories Regulations, 1961, and the Docks (Safety, Health and Welfare) Regulations, 1968: Registers factories; Approves buildings to be used as factories; Conducts periodic factory inspections; Assesses hazards and risks in factories; Ensures that factories have appropriate occupational health and safety measures; and Ensures that factory personnel use appropriate PPEs. Maintains statistics on chemical incidents within factories. Participates in the development of the National Hazardous Substances and Hazardous Wastes Management Policy (draft). Enforces requirements for facilities to prevent chemical emergencies, once the Jamaica Occupational Safety and Health Act (JOSHA) is gazetted. Reviews and approves the occupational health and safety aspect of emergency response plans for registered factories. Develops and implements industry awareness campaigns based on common weaknesses identified during inspections.
Ministry of Transport and Mining (MTM)	• Establishes legislation/codes of practice to govern the transportation of hazardous substances inland, indicating the requirements for: labelling; fire prevention; SDS to be in hand; spill kits for clean-up of minor spills; and emergency response procedures for major spills.
Ministry with responsibility for the Environment	 Formulation of policy in relation to management of chemicals in the environment. Monitors agencies that deal with the enforcement of environmental policies and regulations.

Ministry/Department/ Agency	Roles and Responsibilities
Municipal Corporations	• Develops chemical emergency response protocol for each parish, modelled from the National Chemical Emergency Response Protocol.
National Environment and Planning Agency (NEPA)	 Protects human health and environment in accordance with: The Natural Resources Conservation Authority Act, 1991; The Natural Resources (Prescribed Areas) (Prohibition of Categories of Enterprise, Construction and Development) Order, 1996; The Natural Resources Conservation (Permits and Licences) Regulations, 1996; The Natural Resources Conservation (Permits and Licences) (Amendment) Regulations, 2004; and The Wild Life Protection Act, 1945. Grants permits to new facilities that propose to use and/or manufacture chemicals and those that propose to store, treat and transport hazardous wastes with conditions to prepare and submit for approval EPRPs prior to the start of operations at the facility. Licences effluent and emissions from existing facilities. Requests EPRPs from existing industrial entities using and manufacturing chemicals. Issues enforcement and warning notices where deficiencies are observed. Conducts post permit/licence monitoring. Participates in public awareness and industry awareness campaigns relating to the prevention of and response to chemical emergencies. Determines from the MOH SRU if a company, proposing to use or manufacture chemicals, is in compliance with the MOH SRU's requirements prior to renewal of licences or applications for permits and licences.
National Solid Waste Management Authority (NSWMA)	 Under the National Solid Waste Management Act, 2002, takes all steps for the effective management of solid waste in Jamaica in order to safeguard public health. Provides guidance on the storage, handling, treatment and disposal of hazardous wastes. Establishes the requirements for the environmentally sound management of hazardous wastes and enforces same.

Ministry/Department/ Agency	Roles and Responsibilities
	• Develops the capability to treat and safely dispose of some types of hazardous wastes.
National Water Commission (NWC)	 Ensures that well trained teams are available and equipped for responses to chlorine incidents. Maintains an emergency response plan. Utilises PPEs when handling chemicals.
National Works Agency (NWA)	Maintains resources and equipment that may be needed to respond to incidents.
Office of Disaster Preparedness and Emergency Management (ODPEM)	 Advances disaster preparedness and emergency management measures by facilitating and co-ordinating the development and implementation of integrated disaster management systems in accordance with the Disaster Preparedness and Emergency Management Act, 1993. Reviews EPRPs of entities submitted to them by NEPA or the entity itself. Provides leadership to motivate all stakeholders to fulfil their roles and responsibilities in relation to chemical emergency risk management. Ensures that there is effective communication and co-operation among stakeholders. Promotes inter-agency co-ordination. Participates in public and industry awareness campaigns relating to chemical emergencies. Co-ordinates trainings and conducts drills and simulation exercises for all responders.
Pesticides Control Authority (PCA)	 Regulates, manages and controls pesticides usage in accordance with the Pesticides Act, 1987, the Pesticides Regulations, 1996, and the Pesticides (Amended) Regulations 1999. Maintains a database on pesticides used across the country. Registers pesticides. Licences persons to import or manufacture registered pesticides. Authorises persons to sell restricted pesticides. Registers premises in which a restricted pesticide may be sold. Considers and determines applications made pursuant to the Act, and to deal with all aspects of the importation, manufacture, packaging, preparation for sale, sale, disposal and use of pesticides, and

Ministry/Department/ Agency	Roles and Responsibilities
	 advises the Minister on all matters in relation thereto. Licences farm stores and pest controllers to sell and apply pesticides. Restricts the importation of banned pesticides. Monitors each phase of the importation of approved pesticides. Audits facilities that distribute and retail pesticides, as well as farms, to ensure compliance with best practices. Identifies and removes, for safe storage and disposal, pesticides that are not in use. Engages additional legal counsel to prosecute breaches of the law.
Port Authority (PA) Jamaica	 Regulates the use of all port facilities in accordance with the Port Authority Act, 1972. Makes recommendations to the Minister from time to time regarding measures considered necessary or desirable to maintain or improve the country's port facilities. Maintains and improves, where practicable, such port facilities as are vested in the Authority. Reviews the manifest of goods declared by a ship and allows or prevents entry to the Port based on review of the manifest. Responsible for port safety and ship safety within harbours. Enforces the Port Authority Dangerous Goods Bill, 2003, when it is gazetted. Establishes a chemical response team for major port facilities: Provides proper PPEs, for e.g., bodysuits with self-contained breathing apparatus; Trains responders in identifying and responding to chemical incidents; and Conducts drills and simulation exercises at ports. Stipulates that chemical hazard kits should be installed at various points in port facilities for use, when required, during responses to chemical emergencies.
Water Resources Authority (WRA)	 In accordance with the Water Resources Act, 1996, conducts hydrologic data collection, compilation and analysis; water resources investigation, assessment, and planning; water resources allocation; environmental monitoring and impact assessment; and water resources allocation through licensing of surface and underground water abstractions. Assesses water resources for agricultural and housing developments.

Ministry/Department/ Agency	Roles and Responsibilities
	 Selects solid and hazardous waste disposal sites. Undertakes groundwater pollution risk mapping. Protects fresh water quality and quantity. Conducts monitoring of the quality of water resources island wide. Provides input to the review of permit and licence applications submitted to NEPA for entities proposing to use or manufacture chemicals in sensitive areas near to ground and surface waters.

3.2.2 The Roles and Responsibilities of High Risk Facilities

Facilities using or manufacturing chemicals are expected to implement measures to prevent pollution and to safeguard the health of workers.

Safety at a facility requires the input of both the employer and employees. Table 3.2-2 outlines their roles and responsibilities in the planning phase. Two main types of high risk facilities have been identified: port facilities and other facilities. Port facilities have been separated as there are some specific issues that affect these facilities as it pertains to chemical incidents.

High Risk Facilities	Roles & Responsibilities
High Risk Facilities Employers	 Roles & Responsibilities Conducts risk assessments to identify the hazards within the facility and to develop appropriate control measures. The employer has the legal responsibility to ensure that a suitable and sufficient assessment is done. Implements required occupational health and safety measures to minimise risks. Identifies all of the chemicals used or produced in the work area or process. Prepares a chemical register that lists all the chemicals in the work area or process. Checks the label of chemicals for signal words such as 'warning,' 'poison,' 'hazardous,' and risk phrases that indicate the type of health hazard. Checks if there is an SDS from the supplier and read the section on health hazards. Establishes and maintains a database with the names, quantity, shelf life and SDSs of all chemicals used, stored and handled. Ensures that an adequate stock of PPEs is available to respond to chemical emergencies as per SDS. Stores chemicals as per SDS requirements. Establishes an EPRP for the facility, including incidents involving chemicals, and giving consideration to the potential environmental consequences. Submits EPRP to MLSS, NEPA, JFB and ODPEM for review and approval. Establishes a mutual aid response group with agencies or facilities if EPRP cannot adequately address all chemical hazards and/or if otherwise desired. Trains all employees, at the very least, in hazmat awareness. Trains all employees handling chemicals in the management of and emergency response for all chemicals handled, Ensures that a monitoring programme is in place for high risk areass such as chlorine storage areas, chemical storage rooms and obsolete chemical stockpiles.
	 Ensures that a monitoring programme is in place for high risk areass such as chlorine storage areas, chemical storage rooms and obsolete chemical stockpiles.
	 areas, chemical storage rooms and obsolete chemical stockpiles. Promotes a safety culture that is known and accepted throughout the company by reporting all releases (spills, leaks, etc.) to the relevant authorities.
	 Communicates to surrounding communities the chemical hazards that exist and the procedures in place to address these hazards and protect the community.
	• Applies for importation permits for chemicals from the MOH SRU.

Table 3.2-2: The Roles and Responsibilities of High Risk Facilities in Hazardous Chemicals Risk Management

High Risk Facilities	Roles & Responsibilities
	 Adheres to the permit and certification conditions imposed by MOH SRU, NEPA, MLSS and JFB. Provides a list of emergency response resources to ODPEM annually. Facilities that use hazardous chemicals are responsible for operating their own environmental health and safety programmes, which must be done in conjunction with their respective parish plan. Where industrial zones exist, the industries should be encouraged to establish individual or industry group committees to plan for chemical emergencies. Submit reports to the Parish Disaster Committee (PDC) on incidents at their respective facilities.
Employees	 Acts in accordance with the company's safety requirements. Make every effort to be informed and to provide information and feedback to management. Checks the labels of chemicals for signal words such as 'warning,' 'poison' and 'hazardous,' and risk phrases that indicate the type of health hazard. Checks the SDS database and read the section on health hazards and the information concerning the proper handling of the chemicals and required PPEs. Reports incidents at facilities.
Port Facilities	 All measures included above for industry in addition to the following: Review, by electronic scanning and records, all items taken from the ship either for discharge, transhipment or re-stowing to prevent errors. Reports to MAJ and PAJ all shipments found that are not declared. Reports to MAJ and PAJ all shipments of dangerous goods that are not properly labelled, not disclosed or improperly packaged.

3.2.3 The Roles and Responsibilities of the General Public

The following are the roles and responsibilities of the general public with regards to chemical emergency risk management:

- 1. Be aware of the risks in your community.
- 2. Be knowledgeable of your community's emergency response plans.
- 3. Participate in public/community consultations and decision-making concerning hazardous installations.
- 4. Co-operate with the local authorities and personnel from high risk facilities located in your communities in emergency planning and response.
- 5. Reports incidents to local authorities and first responders.

CHAPTER 3.3

CHEMICAL EMERGENCY RISK PREVENTION/MITIGATION AND PREPAREDNESS STRATEGIES AT THE LOCAL/PARISH LEVEL

The management of chemical emergencies in terms of a strategic prevention and preparedness approach is best handled at the local, i.e., parish and community levels, allowing for the integral involvement of citizens in the process. The activities proposed under the National Chemical Emergency Risk Management (NCERM) Plan will be coordinated at the local government level through each Parish Disaster Committee (PDC).



Figure 3.3-1: Structure of the Parish Disaster Management Framework

3.3.1 The Roles and Responsibilities of Parish Disaster Committees (PDCs) in Chemical Emergency Risk Management Planning

- 1. Collect critical documentation from high risk facilities, such as Safety Data Sheets (SDSs), annual inventories of hazardous chemicals, and reports of accidental releases of hazardous chemicals.
- 2. Facilitate the development of local/district level chemical emergency plans or standard operating procedures (SOPs) tailored to the needs of the community.

- 3. Ensure that appropriate public education programmes are in place to inform the public of the details of the plans.
- 4. Test plans periodically through emergency drills and simulation exercises.
- 5. Facilitate the revision of chemical emergency plans/SOPs every three years.
- 6. Identify capacity building needs and opportunities at the local level.
- 7. Develop parish maps highlighting each parish's vulnerability to chemical hazards.
- 8. Incorporate chemical risk management in the planning approval process.
- 9. Through the relevant channels in each Municipality, monitor the establishments that utilise and store chemicals.
- 10. Report to the requisite national sub-committee: the telecommunications and operations subcommittee.

3.3.2 Spatial Data and Information Management

The PDC, through the Municipal Corporation and other support agencies, will facilitate the following:

- Map high risk facilities and small chemical processing facilities utilising data from various stakeholders. The maps should include potential impact zones and areas of exposure. Critical facilities and vulnerable groups should also be identified in these maps.
- Provide the information to the National Spatial Data Management Division (NSDMD), and include new facilities annually.
- Establish a database of hazardous chemical incidents that occur in each parish.

3.3.3 Elements of a Local Chemical Emergency Risk Management Plan

The local chemical emergency risk management plan must be completed in conjunction with the PDC, the facility and the wider community. The plan must:

- Identify the facilities that stores and utilises chemicals.
- Identify safe transportation routes.

- Outline clear evacuation plans.
- Set up notification procedures for chemical incidents.
- Outline populations that are at greatest risk.
- Identify the resources available within the community, including resources at the facilities.
- Detail a training programme, inclusive of schedules, for the training of local emergency response and medical workers to respond to chemical emergencies.
- Establish methods and schedules for conducting drills and simulation exercises to test elements of the emergency response plan.
- Designate a community coordinator and facility coordinators to carry out the plan.
- Include a checklist for the local chemical emergency plan.

3.3.4 Evacuation Plans

Once a vulnerable community has been identified the facility owner should consider those at risk in the evacuation plan. Provisions for a precautionary evacuation and alternative traffic routes must be submitted to the PDC for prior approval.

The evacuation component of the plan should detail:

- Agreements/memoranda of understanding (MOUs) for additional transportation.
- Notification of transportation resources.
- Establishment of evacuation and alternate evacuation routes.
- Maintenance of evacuation routes.

During an incident the incident command (IC), Parish Emergency Operations Centre (PEOC), and/or the National Emergency Operations Centre (NEOC) will assess and determine the evacuation routes to be used. These routes will be selected based on the location of the hazardous materials incident, the nature of the incident, and the characteristics of the population expected to be affected by the incident. Continuous assessment should be made so that, if necessary, alternate routes can be put in place. The PEOC/NEOC will ensure that preparations regarding shelter and welfare are also put in place.

3.3.5 Community Awareness for Chemical Emergency Risk Preparedness

Based on the principle of the community's right to know, the PDC will develop strategies to inform vulnerable populations of the hazards posed by high risk facilities located in their communities. The PDC will also communicate to vulnerable populations the key elements of the local emergency response plan.

The public should have access to information on shelters and their respective capacities, and escape routes.

The Municipal Corporation should target different segments of the local population. The categories of primary audiences include: labourers in specific occupations; children; teachers; female heads-of-households; village leaders; businesspersons; teenagers; all heads of families; senior citizens; persons with disabilities; and professional groups.

The Municipal Corporation must constantly seek opportunities for collaboration in community awareness initiatives and select the most appropriate communication medium and activities. Social media and traditional forums such as town criers and fliers should also be utilised. Appropriate media should be designed for persons who blind and hearing-impaired.

PART 4

RESPONSE

CHAPTER 4.1 CO-ORDINATING A NATIONAL RESPONSE TO A CHEMICAL EMERGENCY

This chapter outlines procedures for the co-ordination of responders to a national emergency involving hazardous chemical releases into the air, on land or in the country's water resources. The Jamaica Fire Brigade (JFB) is responsible for incidents on land while the Jamaica Defence Force (JDF) Coast Guard is responsible for marine incidents.

4.1.1 Definition of a National Chemical Emergency

A national chemical emergency is one that either requires resources that cannot be provided at the parish level, and/or is adequately responded to at the parish level but has national or international implications.

There are four levels of chemical emergencies: level 1 (minor); level 2 (moderate); level 3 (severe); and level 4 (major). National chemical emergencies are categorised as levels 3 (severe) and 4 (major). Minor (level 1) and moderate (level 2) chemical incidents are managed at the local/parish level by the chemical facility and the local parish mechanism (see Annex 5).

4.1.2 Criteria for Activating a National Response to a Chemical Incident

A national chemical emergency response is activated when the primary responders (JFB and the JDF Coast Guard) assess the incident and make that determination based on the:

- Severity and extent of the incident;
- Type and amount of the chemical substance(s) involved; and
- Affected population.

Annex 5 details the four levels of chemical incidents and the corresponding factors that will determine the level of the response, either local or national.

4.1.3 Managing the National Response to a Chemical Incident

The national response to a chemical emergency occurs over several stages. Managing a major response is therefore a challenge, requiring effective co-ordination among facility, local and national responders to ensure successful management of the incident.

Figure 4.1-1 summarises the steps involved in a national response to a chemical emergency.



Figure 4.1-1: Summary of the steps involved in a national response to a chemical emergency.

4.1.4 **Response Procedures**

Figures 4.1-3 to 4.1-5 outline the response procedures for chemical incidents occurring at facilities, on land and at sea.

4.1.5 Incident Responders

The agencies that make up the team of responders are classified into three categories: primary, secondary and support (Table 4.1-1). Their roles can be seen in Table 4.1-2. ODPEM is the overall coordinator.

	F	
Overall Coordinator: ODPEM		
Primary Responders	Secondary Responders	Support Responders
JFB (land)	JDF	BSJ
JDF Coast Guard (marine)	MLSS OSHD	CARPIN
Facility	MOH-EHU	Government Chemist Dept.
JCF	MOH-EDMD	JBI
MOH-EMS	NEPA	MET SERVICE
	PCA	MAJ
		MOH-SRU
		Ministry with responsibility
		for the Environment
		NSWMA
		NWA
		PAJ
		PCJ
		Universities
		WRA
* This is not an exhaustive list o	f all Ministries Department and	Agencies (MDAs) who would be

Table 4.1-1: Categories of chemical incident responders*

* This is not an exhaustive list of all Ministries, Department and Agencies (MDAs) who would be involved in the response efforts to a chemical incident.

Depending on the incident other critical stakeholders may become secondary and support responders.

Job Function	Primary Agency	Secondary Agency	
Command Post Operations	Rescue/Fire Departments	Law Enforcement	
Decontamination	Rescue/Fire Departments	Fire Departments	
Evacuation	Law Enforcement	Fire	
		Department/Rescue/EMS/Red	
		Cross	
Fire Suppression/Foam	Fire Departments		
Governmental Notifications	ODPEM (PI)	Fire Departments	
Hazardous Materials Entry	Fire Departments (Rescue)	Fire Departments	
Hazardous Materials	Fire Departments (Rescue)	MOH (EHU, EHL)	
Research			
Incident/Perimeter Security	Law Enforcement	Fire Departments	
Public Medical Care	EMS/Parish Hospital	Local Health Department	
Resource Management	ODPEM	Rescue	
Responder Medical Care	EMS	Rescue/Hospital	
Shelter Care	MLSS &Parish Council	Health Department	
Warning/Notification (This	Municipal Corporation	Law Enforcement, Fire	
would include activation of		Departments, Rescue	
the Community Warning			
System)			

Table 4.1-2:	Chemical I	ncident Re	sponse Ageno	cies' Primarv	and Second	darv Roles
	Chemical I		pointe inserie	cies i i i i i i i i i i i i i i i i i i	und becom	any more

The Incident Command System (ICS), as seen in Figure 4.1-2 below, will be utilised for the response.



Figure 4.1-2: Incident Command System (ICS) for a national chemical response.



Figure 4.1-3: Response procedures for hazardous chemical incidents occurring at facilities.



Figure 4.1-4: Response procedures for hazardous chemical incidents occurring on land.



Figure 4.1-5: Response procedures for hazardous chemical incidents occurring at sea.

4.1.5.1 Facility Response

In the event of a chemical emergency, the facility should take all reasonable measures to minimise exposure to people and the environment. It is also important to limit adverse effects to human health, the environment and minimise damage to property. The objective is to localise the incident and, if possible, contain it thereby minimising the harmful effects on human health, environment and property.

The facility's response personnel should immediately:

- 1. Activate its onsite emergency plan and/or mobilise its mutual aid response group.
- Alert the local emergency response authorities: JCF, JDF Coast Guard, JFB, Ministry of Labour and Social Security (MLSS), the Ministry of Health (MOH), the National Environment and Planning Agency (NEPA), and the Office of Disaster Preparedness and Emergency Management (ODPEM).
- 3. Notify the surrounding communities on the incident.

Notification procedures should be outlined in the facility's response plan.

The facility's emergency response personnel receiving the alert of a chemical emergency must:

- Get as much information as possible. See Table 4.1-3 for the type of information to be communicated to first responders.
- Route the information to the operations centre of the JFB (land) or JDF Coast Guard (marine).

Figure 4.1-3 shows the response procedures for hazardous chemical incidents occurring at facilities.

4.1.5.2 Marine Response

The primary responder for incidents at sea is the JDF Coast Guard. Owners of vessels or facilities should immediately contact the Harbour Master and the JDF Coast Guard and also inform their respective agents. See Table 4.1-3 below for the type of information to be communicated to first responders.

 Table 4.1-3:
 The Type of Information to be Communicated to First Responders

1.	Name of person reporting.
2.	Nature of incident (leak, explosion, spill, fire, derailment, etc.).
3.	Location and source of release.
4.	Date/Time of release.
5.	Number of dead or injured persons, and the status and location of each.
6.	Name of materials(s) released, if known.
7.	Where the release has impacted (air, land, water resources).
8.	Personnel on scene (facility personnel and emergency responders).

Figure 4.1-5 shows the response procedures for hazardous chemical incidents occurring at sea.

4.1.5.3 Public Response

Members of the public should immediately evacuate from the area and contact the local JCF and JFB. When contacting responders members of the public should try to give as much information as possible (see Table 4.1-3).

Figure 4.1-4 shows the response procedures for hazardous chemical incidents occurring on land and to be reported by the public.

4.1.6 Incident Management

The immediate authority on the ground is the Incident Commander (IC). The IC reports to the Parish Emergency Operations Centre (PEOC). Depending on the magnitude of the chemical incident, either level 3 or 4 (Annex 5), the IC will report directly to the National Emergency Operations Centre (NEOC).



Figure 4.1-6: The chemical incident management reporting system.

4.1.6.1 Initial Response Activities for Incident Commander

On arrival at the scene the Primary Responder, JFB (land)/JDF Coast Guard (marine):

1. Assumes the role of Incident Commander (IC)

- 2. Receives preliminary information from facility and other responders on site.
- 3. Establishes IC Post.
- Notifies the relevant Responders including: MOH-EMS, NEPA, JCF, Marine Police MOH-EHU, MOH-Emergency, Disaster Management and Special Services (EDMSS) and OHSD (MLSS).
- 5. Gathers further information on the incident.
- 6. Completes the site assessment form (Appendix 7).

4.1.6.1(i) Site Management

Site management is undertaken by the IC with assistance and support from other Primary Responders and involves, where appropriate, facility personnel. It includes:

- Defining the physical layout of the site of the chemical emergency and securing same
- Deciding on the immediate actions to be taken in order to avoid or limit exposure of humans and contamination of the environment (air, water land) to hazardous substances, both on-site and off-site. It also includes the use of engineering controls or any new technologies.

Using the detailed information on the Emergency Planning Zones as shown in Figure 4.1-7 below, the following actions are to be coordinated by the IC:

- 1. Establish a Command Post in a safe area that allows for a good view of the incident site and good inter-agency communication.
- 2. Establish a boundary and Emergency Planning Zones, cordon off/barricade affected area, and restrict access to response personnel only to control access until the chemical(s) involved can be identified and the threat level verified.
- 3. Establish a decontamination corridor and triage areas.
- 4. Arrange search and rescue (SAR) and, if necessary, evacuate people from the site to a safe area with support from the JCF and JDF.
- 5. If necessary, evacuate persons in communities at risk.
- 6. If required, arrange traffic control with the JCF.

- 7. If necessary, establish emergency communications with the National Disaster Coordinator of the ODPEM to mobilise the multi-agency responders.
- 8. Request assistance from health/medical and response personnel concerning the immediate actions to take in order to avoid or limit exposure of employees, rescue workers and the public.
- 9. If necessary, identify areas for mass casualty management to take place.



Figure 4.1-7: Emergency Planning Zones (Adapted from the Managing Hazardous Materials Incidents Volume 1, Updated 2009)

4.1.7 Incident Assessment

4.1.7.1 Identification of the Materials Involved

Support responders are involved at this stage and may provide the required information to the IC.

Proper identification of the materials involved is a priority, and it is important that hazardous materials/chemicals be identified WITHOUT coming into physical contact with the suspected materials. If the facility personnel are aware of the identity of the chemical then this information, in addition to the Safety Data Sheets (SDSs) for the substance should be provided to response personnel.

4.1.7.2 Hazard and Risk Assessment

All categories of responders are involved in hazard and risk assessment. The following elements must be included in the risk assessment process:

- 1. Hazard identification.
- 2. Exposure assessment (the estimation of an exposure level or predicted environment concentration).
- 3. Dose response assessment (determination of the dosage at which an adverse effect is likely to occur).
- 4. Risk characterisation (identification of the threshold level for toxicological effects).

The process will determine the type of specialised resources required to control and handle the chemical emergency.

The completed site assessment form will also help in the risk assessment process (Annex 7).

4.1.7.3 Safety Data Sheet (SDS)

Using the SDS (where available) a hazard assessment should be done for:

- 1. The physical and chemical properties of the material(s), flash point, ignition temperatures, toxicity, specific gravity.
- 2. The environmental risks (air, land and water contamination/pollution)
- 3. The health of workers, responders and the wider community.

4.1.8 Incident Action Plan (IAP) Development

The development of the Incident Action Plan (IAP) should be co-ordinated by the Planning Section Chief of the ICS, and must be approved by the Incident Commander.

The IAP should include the following:

- Response strategies and tactics;
- Assignment lists with specific tasks;
- Incident maps;
- Logistics plan;
- Resource listings
- Health and safety plan;
- Communications plan; and
- Critical situation updates and assessments.

4.1.8.1 IAP Implementation

After the IAP has been reviewed and finalised by the Incident Commander, respective responders will be assigned their tasks. The IC will monitor to ensure that the proper control, response and recovery activities are carried out.

<u>4.1.8.1(i)</u> Decontamination

Decontamination removes the hazardous substances from the victims, responders and their personal protection equipment (PPE), and the equipment and vehicles at the site of a chemical incident thereby preventing cross contamination. Ideally, a decontamination area should be close to the incident to limit the spread of contamination.

A suitable decontamination site must be identified by the JFB in consultation with relevant stakeholders, for example NEPA and the MOH, and an isolation perimeter established to mark this area as contaminated. Warning signs must be placed well in advance of the approach to identify this area as a danger zone. The signs also serve as a guide to those personnel who need to access decontamination. The decontamination area can easily be marked with stakes, banner tape, rope or cones.

4.1.8.2 IAP Response Evaluation

This step involves evaluation of the status of the incident to determine the effectiveness of the implementation of the IAP. It should be determined by the primary and secondary responders whether additional response activities are needed to successfully control the incident. If additional activities are required, a supplementary action plan should be developed and implemented.

4.1.9 Reporting and Record Keeping

• The IC is responsible for the completion of the site assessment form. This form will be shared with the various responders to assist in the risk assessment of the site. Templates of the form are provided in Annex 7 for land and marine based incidents. The IC is responsible for its eventual submission to ODPEM within 48 hours of the incident.

- All primary responders are required to complete a chronological log. This log is a sequence of activities related to the response at specified time stamps and frequencies recorded by the respective Primary Responders. A template of the form is provided in Annex 7.
- The primary responders are responsible for the chronological log submission to the IC within 24 hours of the incident. The IC will then compile these logs and submit them along with the site assessment form to ODPEM within 48 hours of the incident.
- The facility must submit a report to the Ministry of Labour and Social Security (MLSS) when there is an incident exposing staff to injury or which may cause any potential harmful effects on staff, whether seen or unseen.

4.1.10 Communication

4.1.10.1 Communication with the Media and the Public

At the incident site the IC is responsible for designating a communications officer.

The Public Information Officer in the NEOC (ODPEM) is responsible for communicating with the ICS communications officer and media officers from all the relevant agencies. This information will then be passed on to the public.

Table 4.1-4: Agency-Specific Communications Roles and Strategies during a National
Response to a Chemical Incident

Agency	Role	Strategy
First Responders JCF/JDF CG	 Discuss and coordinate statements concerning incident response and actions to be taken. May issue statements through the ODPEM or may issue their own press releases based on their specific responsibilities. 	
Responders (MOH-EDMSS, MOH-EHU, NEPA, MLSS)	 Discuss and coordinate statements concerning the health, environment and social impact of the incident. May issue statements through the ODPEM or may issue their own press releases based on their specific responsibilities. 	• Include details on the impact, potential threats and precautionary measures that should be taken.
ODPEM	 Responders Facilitates the coordination of a unified statement from the various responding agencies. 	• Check the clarity and reliability of information as it becomes available, and before it is communicated to the public.
	 Media Issues releases through JIS and/or the Minister of Information on the public emergency and the work of the responders. Responds to inquiries from the media. Ensures that the media has continuous access to designated officials with relevant information. 	 Be as open as possible in providing information during and after an incident. Be timely in presenting information. Provide essential and accurate information to the public throughout the emergency to avoid confusion. Admit when information is not available. Avoid making promises that cannot be fulfilled. Ensure that the messages
Agency	Role	Strategy
--------	---	--
	 Public Along with specialists meet with citizens in the community and provide local officials with site status information. Provide an opportunity for questions to be asked and respond accordingly. 	provided are consistent with the actions taken.
Public	 Responds to the warning alert systems used in the event of a chemical incident. Follows instructions provided through designated channels of information. 	• Ensure that close attention is paid to media releases.

CHAPTER 4.2

THE ROLES AND RESPONSIBILITIES OF KEY AGENCIES AND PRIVATE ENTITIES IN A NATIONAL RESPONSE TO A CHEMICAL EMERGENCY

Various Ministries, Departments and Agencies (MDAs), as well as non-government and private entities, have various roles to play in a national response to a chemical emergency. Table 4.2-1 outlines the specific responsibilities of these entities.

Table 4.2-1: The Roles and Responsibilities of Key Agencies and Facility Stakeholders in a National Response to a Chemical Emergency

Agency	Role
Caribbean Poison Information Network (CARPIN) Support Responder	• Provides relevant information and advice on chemicals in it capacity as the hub of operations for poison prevention, control and data collection for Jamaica and the wider Caribbean.
Government Chemist Department Support Responder	 Identifies substances via analysis of samples and generates reports. Provides technical advice to the responders.
Facility Primary Responder	 Activates emergency response plan and/or mobilises mutual aid response group if chemical incident occurs at or in close proximity to the facility. Contacts JFB and/or JDF Coast Guard, ODPEM, NEPA and JCF. Identifies and isolates the incident. Contains area of the incident. Evacuates personnel from the relevant areas. Provides Safety Data Sheets (SDs) for chemicals involved in the incident. Coordinates with ODPEM to advise communities and the public about the incident. Completes a chronological log of the response measures taken.

Agency	Role
Jamaica Bauxite Institute (JBI) Support Responder	• Liaises with NEPA, ODPEM, WRA, JDF Coast Guard, JFB and the facility in the event of an incident at a bauxite/alumina facility in accordance with their Memorandum of Understanding (MOU) with NEPA.
Jamaica Constabulary Force (JCF) Primary Responder	 Preserves and isolates the area and contacts relevant agencies. Maintains order at the scene of the incident by restricting access. Controls traffic. Assists JFB and other primary responders. Completes a chronological log of the response measures taken.
Jamaica Defence Force (JDF) Secondary Responder	 Assists the JCF in securing the area. Provides additional manpower. Provides equipment and manpower to assist in cleaning up. Completes a chronological log of the response measures taken.
Jamaica Defence Force Coast Guard (JDFCG) Primary Responder (Marine)	 Responds to chemical incidents at sea. Assumes the role of Incident Commander (IC). Isolates the affected marine area with support from the facility or owners. Rescues personnel. Transports responders from various agencies to marine incident site. Completes a chronological log of the response measures taken. Completes the incident site assessment form. Conducts investigations into marine incidents.
Jamaica Fire Brigade (JFB) Primary Responder (Land) Secondary Responder (Marine)	 Responds to chemical incidents on land. Assumes the role of Incident Commander (IC). Contains and controls the incident. Evacuates people and isolates the incident. Rescues personnel. Assists the JDF Coast Guard, as necessary. Completes the incident site assessment form. Seals and removes leaks (e.g. chlorine leaks). Conducts investigations. Completes a chronological log of the response measures taken.
Jamaica Information Service (JIS)	• Facilitates the ODPEM in issuing warnings, notifications and statements regarding incidents.

Agency	Role
Maritime Authority of Jamaica (MAJ) Support Responder	 Reports chemical incidents to JDF Coast Guard, PAJ, ODPEM, NEPA, MOH and JFB. Conducts inspections and investigations of incidents related to shipping vessels. Detains vessel if they are the cause of an incident. Requires the vessel to issue a bond to cover the cost of the emergency response in exchange for permission to leave (if required). Detains unseaworthy ships. Imposes fines for absence of labels and nondisclosure of dangerous goods. Shares ship inspection findings that may relate to a chemical emergency with the relevant agencies and responders.
Occupational Health and Safety Department Ministry of Labour and Social Security (MLSS) Secondary Responder	 Conducts investigation into the incident. Coordinates with ODPEM regarding the press release to the public.
Emergency, Disaster Management and Special Services (EMDSS) Branch, Ministry of Health (MOH) Secondary Responder	 Takes the lead role in coordinating public health issues related to national emergencies and disasters where casualties have occurred, if there is the threat of casualties, and if there is a threat to community/public health. Monitors public health concerns in and around the incident site. Advises on evacuation needs. Coordinates the activities of the EHU and EMS. Conducts investigation into the incident. MOH's Public Relations Unit coordinates with ODPEM regarding the press release to the public on health concerns.
Environmental Health Unit (EHU) Ministry of Health (MOH) Secondary Responder	 Conducts environmental and health assessments. Coordinates with ODPEM regarding the press release to the public on health concerns.

Agency	Role
Emergency Medical Services (EMS) Ministry of Health (MOH) Primary Responder	 The first ambulance arriving at the scene contacts the nearest hospital and advises on the actual size, potential scope and suspected materials involved. Collects information on affected persons including name, age, gender of each affected person, and total number of affected persons. Establishes triage areas in collaboration with the IC. Assists with on scene decontamination of victims prior to transportation to a hospital. Provides a representative to join the ICS. Provides on-site treatment of all injured persons. Periodically reports on injuries and casualties to the IC. Transports persons requiring hospital treatment by ambulance. Completes a chronological log of the response measures taken.
Standards and Regulations Unit (SRU) Ministry of Health (MOH) Support Responder	 Provides information for any imported chemical that has caused an emergency such as importer's name and contact information, details on the chemical and its SDS. Puts a hold or note on the profile of the importer in the database if the importer breaches their permit.
National Environment and Planning Agency (NEPA) Secondary responder	 Provides guidelines the handling of chemicals. Monitor the response activities in relation to environmental implications. Requests report(s) from the facility about the emergency/incident. Collects samples and conducts investigations based on environmental risks/impacts. Coordinates with ODPEM regarding the press release to the public on environmental concerns.
National Works Agency (NWA) Support Responder	 Assist with the provision of equipment, if needed, and provides technical advice on infrastructure maintenance, safety and security. Assist with the removal of material and substance on public roadways, bridges, drains and gullies.

Agency	Role
Office of Disaster Preparedness and Emergency Management (ODPEM) Overall Coordinator	 Coordinates the response and support from other agencies. Maintains a contact list of various agencies arranged by incident type and also by the type of response the agency offers. Maintains and updates a resource list of items that may be needed to respond to an emergency and its location. Coordinates and submits to JIS, the Minister of Information/Office of the Prime Minister (OPM) a unified statement regarding the incident, with input from stakeholders. Advises responsible ministry on the need to relocate communities based on the chemical emergency. Activates international triggers for chemical response.
Port Authority of Jamaica (PAJ) Support Responder	Provides information on the ship manifest.Facilitates the primary and secondary responders.
Pesticides Control Authority (PCA) Secondary Responder	 Coordinates with ODPEM, MOH, NEPA and other secondary responders regarding press releases to the public. Coordinates with other secondary responders regarding measures to address land, water and health impacts.
Municipal Corporation Support Responder	Implements the Parish Chemical Emergency Response Plan.
Water Resources Authority (WRA) Support Responder	 Provides information on the impact of the incident on water resources. Monitors water quality.

CHAPTER 4.3 CHEMICAL HOTSPOTS ACROSS JAMAICA



Figure 4.3-1: Locations of Potential Chemical Risk Sites in Jamaica.



Figure 4.3-2: Map of Chemical Hotspots, Jamaica.



Figure 4.3-3: Map Showing the Major Chemical Hotspots Across Jamaica.

4.3.1 Marcus Garvey Drive

Industries	JPS Power Plant, Petrojam
Affected Communities	Greenwich, sections of Tivoli
Notification and Mobilisation	 Information to be disseminated must come from authorized agency such as the ODPEM, JFB, JCF or MOH. Depending on the incident the following mechanisms will be utilised: 1. Media (all media houses that broadcast in the Corporate Area) 2. Social media 3. Town criers (depending on the incident the JCF, JFB and JDF should be asked to go in and notify and mobilize persons for evacuation. PPE to be provided by the KSAC and ODPEM for this activity.)
Primary Shelter	Greenwich All Age and St Andrew Primary School
External Shelter for Chemical Incidents	 Indoor Sports Centre: JDF to quick erect shower facilities at these facilities – arrangements for this activity to be finalized (KSAC,JDF,ODPEM) JDF to quick erect kitchen facilities- arrangements for this activity are to be finalized. ODPEM, MLSS to provide resources needed for the kitchen.
Shelter in place	If shelter in place is the required response this should be clearly communicated through the required mediums outlined with the necessary information.
Evacuation Procedures	Arrangements to transport residents from the area will be done through JUTC. Arrangements for the use of JUTC should be managed through KSAC and National DRM Framework. Companies are expected to have their own evacuation procedures for their employees. Special consideration should be made for persons in critical facilities and vulnerable groups.
Welfare	Welfare needs at the primary and secondary Shelters should be organized through the existing Welfare system – MLSS & ODPEM.
Health Care	Initially patients are to be sent to KPH. The MOH once there emergency procedures are activated will make the decisions concerning the deployment of patients.



Figure 4.3-4: SAMPLE SCENARIO Marcus Garvey Drive, Kingston – Chemical Hotspots, Buffers and Critical Facilities.

4.3.2 Spanish Town Road

Industries	Red Strip, Berger Paint
Affected Communities	Seivright Gardens, Majestic Gardens, Seaview and Riverton Meadows
Notification and Mobilisation	 Depending on the incident the following mechanisms will be utilized: Media – all media houses that broadcast in the Corporate Area Social Media Town Cry- depending on the incident the JCF, JFB and JDF should be asked to go in and notify and mobilize persons for evacuation. PPE to be provided by the KSAC and ODPEM for this activity.
Primary Shelter	Majestic Gardens Community Centre and Riverton Basic School
External Shelter for Chemical Incidents	 Indoor Sports Centre: JDF to quick erect shower facilities at these facilities – arrangements for this activity to be finalized JDF to quick erect kitchen facilities- arrangements for this activity are to be finalized. ODPEM, MLSS to provide resources needed for the kitchen.
Shelter in place	If shelter in place is the required response this should be clearly communicated through the required mediums outlined with the necessary information.
Evacuation Procedures	Arrangements to transport residents of the area will be done through JUTC. Arrangements for the use of JUTC should be managed through the Parish and National DRM Framework. Companies are expected to have their own evacuation procedures for their employees. Special consideration should be made for persons in critical facilities and vulnerable groups.
Welfare	Welfare needs at the primary and secondary Shelters should be organized through the existing Welfare system – MLSS & ODPEM.
Health Care	Initially patients are to be sent to KPH. The MOH once there emergency procedures are activated will make the decisions concerning the deployment of patients.



Figure 4.3-5: SAMPLE SCENARIO Spanish Town Road - Chemical Hot Spot, Buffers and Critical Facilities.

4.3.3 Rockfort

Industries	Jamaica Flour Mills, Cement Company
Affected Communities	Windward Road, Boreman Gardens, Springfield, Rockfort, Harbour view, Port Royal and Bull Bay
Notification and Mobilisation	 Depending on the incident the following mechanisms will be utilised: Media – all media houses that broadcast in the Corporate Area Social Media Town Cry- depending on the incident the JCF, JFB and JDF should be asked to go in and notify and mobilize persons for evacuation. PPE to be provided by the ODPEM for this activity.
Primary Shelter	Harbour View Primary, St Benedicts Primary
External Shelter for Chemical Incidents	 Indoor Sports Centre: JDF to quick erect shower facilities at these facilities – arrangements for this activity to be finalized JDF to quick erect kitchen facilities- arrangements for this activity are to be finalized. ODPEM, MLSS to provide resources needed for the kitchen.
Shelter in place	If shelter in place is the required response this should be clearly communicated through the required mediums outlined with the necessary information.
Evacuation Procedures	 Arrangements to transport residents of the area will be done through JUTC. Arrangements for the use of JUTC should be managed through the Parish and National DRM Framework. Companies are expected to have their own evacuation procedures for their employees. Based on the location of this area in relation to the Norman Manley International Airport (NMIA) if the area is impassible arrangements will have to made to airlift persons from the airport if there is an emergency.
Welfare	Welfare needs at the primary and secondary shelters should be organized through the existing Welfare system – MLSS & ODPEM.
Health Care	Initially patients are to be sent to KPH. The MOH once there emergency procedures are activated will make the decisions concerning the deployment of patients.

4.3.4 Halse, Clarendon

Industries	JAMALCO
Affected Communities	Halse, Mineral Heights
Notification and Mobilisation	 Depending on the incident the following mechanisms will be utilized: Media – all media houses that broadcast in Clarendon Social Media Town Cry- depending on the incident the JCF, JFB and JDF should be asked to go in and notify and mobilize persons for evacuation. PPE to be provided by the JAMALCO AND Municipal Corporation for this activity.
Primary Shelter	Halse Primary School
External Shelter for Chemical Incidents	Vere Technical High School
Shelter in place	If shelter in place is the required response this should be clearly communicated through the required mediums outlined with the necessary information.
Evacuation Procedures	The Parish School Bus service to be utilized. Special consideration should be made for persons in critical facilities and vulnerable groups. JAMALCO is expected to have their own evacuation procedures for their employees.
Welfare	Welfare needs at the primary and secondary shelters should be organized through the existing Welfare system – MLSS & ODPEM.
Health Care	The May Pen Hospital is to be utilized. MOH will make a determination where victims go depending on the magnitude of the situation.



Figure 4.3-6: SAMPLE SCENARIO May Pen – Chemical Hotspots, Buffers and Critical Facilities.

4.3.5 Freeport, Montego Bay

Industries	General Industrial Areas
Affected Communities	Bogue, Catherine Hall and Freeport
Notification and Mobilisation	 Depending on the incident the following mechanisms will be utilised: Media – all media houses that broadcast in St James Social Media Town Cry- depending on the incident the JCF, JFB and JDF should be asked to go in and notify and mobilize persons for evacuation. PPE to be provided by the Municipal Corporation and MOH for this activity.
Primary Shelter	Bogue Hill All Age
External Shelter for Chemical Incidents	West Jamaica Conference Centre (currently being used by Cornwall Regional Hospital). Catherine Hall Sports Centre – sleeping supplies etc. to be taken from the ODPEM Anchovy Warehouse. Municipal Corporation will arrange the logistics.
Shelter in place	If shelter in place is the required response this should be clearly communicated through the required mediums outlined with the necessary information.
Evacuation Procedures	Arrangements to transport residents of the area will be done through the Montego Bay Retro Service. Arrangements for the use of JUTC should be managed through the Parish and National DRM Framework. JAMALCO is expected to have their own evacuation procedures for their employees.
Welfare	Welfare needs at the primary and secondary shelters should be organized through the existing Welfare system – MLSS & ODPEM.
Health Care	The Cornwall Regional Hospital is to be utilized. MOH will make a determination where victims go depending on the magnitude of the situation.



Figure 4.3-7: SAMPLE SCENARIO Montego Bay Freeport – Chemical Hotspots, Buffers and Critical Facilities.

4.3.6 Falmouth Pier

Industries	Falmouth Pier
Affected Communities	Falmouth Town Centre
Notification and Mobilisation	 Depending on the incident the following mechanisms will be utilised: Media – all media houses that broadcast in Trelawny Social Media Town Cry- depending on the incident the JCF, JFB and JDF should be asked to go in and notify and mobilize persons for evacuation. PPE to be provided by the Municipal Corporation.
Primary Shelter	Holland High School, William Knibb High School – welfare needs to be supplied by the MLSS and Municipal Corporation
External Shelter for Chemical Incidents	Trelawny Multi-purpose Stadium – Welfare needs to be supplied by the by Port Management for their guest and staff
Shelter in place	If shelter in place is the required response this should be clearly communicated through the required mediums outlined with the necessary information.
Evacuation Procedures	JUTA services to be utilized for the Port. Plans are to be developed for movement of the general public.
Welfare	
Health Care	The Falmouth Hospital is to be utilized. MOH will make a determination where victims go depending on the magnitude of the situation.



Figure 4.3-8: SAMPLE SCENARIO Falmouth – Chemical Hotspots, Buffers and Critical Facilities.

PART 5

RECOVERY

CHAPTER 5.1 POST-INCIDENT ACTIVITIES OF A NATIONAL RESPONSE TO A CHEMICAL EMERGENCY

During the post-incident phase of a national response to a chemical emergency, actions are directed towards reducing the impact of pollutants in sensitive areas and monitoring activities to determine the scope and effectiveness of the actions taken. This phase also includes the removal of the pollutant and restoring the affected area to an acceptable standard.

There are various activities that must be carried out in the post-incident phase of a chemical emergency (Figure 5.1-1). The post-incident activities required for chemical incidents occurring at a facility, at sea and on land are outlined in Figures 5.1-2 to 5.1-



Figure 5.1-1: Post-Incident process map.



Figure 5.1-2: Post-incident response flow chart for a chemical incident occurring at a facility.



Figure 5.1-3: Post-incident response flow chart for a chemical incident occurring at sea.



Figure 5.1-4: Post-incident response flow chart for chemical incidents occurring on land and the general environment.

5.1.1 Site Clean-up and Initial Assessment

The facility/owner /vessel is responsible for the clean-up of the incident site. This is done with the guidance of the JFB (land), JDF Coast Guard (marine) and NEPA. The initial site assessment should determine whether it is possible to safely recover chemicals that have been released.

If the facility/owner /vessel is unable to or does not accept ownership of the incident then NEPA will manage the clean-up. The relevant investigation and legal activities will be conducted to recoup resources and for environmental damage.

The local authority, i.e., the Municipal Corporation, is required to provide assistance.

5.1.2 Reporting Mechanisms

5.1.2.1 Incident Report

The facility is required to submit a detailed schedule of activities relating to the exploratory works. This should be included in the facility's initial incident report.

The facility incident report, completed by the facility, must be submitted to ODPEM, NEPA, MLSS, MOH-EHU within 24 hours of the incident. The report includes the initial specifics of the incident: time, location and nature of the incident; materials and quantity spilled/released; source of spill/release; injuries or exposures; agencies contacted; comments or other pertinent information.

Information from an initial assessment process is critical to the incident report and will outline some of the details that are required for completion of the Incident Report. This initial impact assessment process should be done by the facility in close consultation with the responders and should include, but not be limited to, a detailed sampling regime comprising:

• Soil, groundwater, surface water and air quality sampling as necessary

- Determination of off-site migration
- Health impact assessment
- Environmental impact assessment to include biological environment (flora, fauna) and physical environment

5.1.2.2 Investigative Report

A detailed investigative report should be compiled by the secondary responders NEPA, MOH (other entities may be necessary based on the type of activity), and the facility. These reports should outline in detail all the factors that resulted in the incident and the response actions that were taken.

5.1.3 Chemical Recovery

If it is determined that chemical(s) can be recovered, the facility has the responsibility to ensure that these are properly contained and transported to the designated area for storage/treatment/disposal. If items are recovered by the state, legal processes will be conducted to retrieve the cost of the recovery, where necessary.

NEPA will monitor the chemical(s) recovery process.

5.1.3.1 Storage/Treatment/Disposal of Waste Chemical(s) and Contaminated Materials

All waste chemicals and contaminated materials are to be disposed of in an environmentally sound manner. Disposal of the waste chemicals and contaminated materials are to be guided by the Safety Data Sheet (MSDS) as well as requirements of NEPA, NSWMA, MOH-EHU as outlined in the permits, and as per legal instruments authorised and issued by the regulator and the disposal plan that was submitted and approved.

5.1.4 Post-Incident Assessment and Monitoring

The responsibilities of the relevant stakeholders in post-incident monitoring activities are presented in Table 5.1-1.

No.	Post-Incident Monitoring Activity	Responsibilities
1.	Conducts initial health and environmental impact assessment of the site	Facility with the emergency
2.	Conducts post-incident assessment and monitoring of the site	 Facility with the emergency MOH (health impact) NEPA (environmental impact) WRA (water quality impact) The (State) agency most impacted by the incident with support from other entities as required (social and economic impact)
3.	Conducts post-incident monitoring of exposed and injured people. Appropriate epidemiological and medical follow-up procedures are to be applied for monitoring and observation of persons exposed to the chemical(s), including those who are seemingly unaffected by the exposure. The onset of symptoms may be delayed for hours or days following exposure.	 MOH-EDMSS MLSS Ministry with responsibility for the environment
4.	Evaluates the adequacy of the facility's emergency response plan and procedure based on the operations at the facility.	 MLSS ODPEM NEPA MOH-EHU Municipal Corporation

Table 5 1-1.	Post-Incident	Agency	Monitoring	and Assess	sment
1 abic 5.1-1.	1 Ost-menuem	rigency	monitoring	and moscoe	ment

5.1.5 Reporting and Record Keeping

ODPEM is expected to maintain and distribute properly documented reports on national chemical emergencies in order to successfully evaluate these incidents. In this capacity ODPEM acts as the coordinator of post-incident reporting and record keeping.

The following are the required documentation related to an incident for the above purpose:

- Primary responder incident report;
- Facility investigation report; and
- Secondary responder investigation and impact assessment reports.

Report	Minimum Information Required	Completed by	Submitted to	Submitted within
Facility Incident Report	• Details the nature of the incident, source and resulting effects of the incident.	• Facility	• ODPEM, NEPA, MOH, JFB	• 24 hours
Primary Responder Incident Report	 Site Assessment Form (see Annex 8) Chronological logs from all primary responders (see Annex 8). 	• IC to compile and prepare the report	 ODPEM, NEPA, MLSS, MOH-EHU MOH- EDMSS 	• 48 hours ¹
Secondary Responder Investigation and Impact Assessment Reports	• Details of investigation and findings of the impact assessments.	• All Secondary Responders	• ODPEM	• 7 days

Table 5.1-2: Reporting Requirements

¹ ODPEM may allow for an extension of time for the submission of the Report based on the nature of the event that can result in extended response activities, thereby delaying the preparation of the reports

Report	Minimum Information Required	Completed by	Submitted to	Submitted within
Facility Investigation Report	• Facility's account of the incident (see Annex 8).	• Facility	• ODPEM, NEPA, MLSS, MOH-EHU	• 7 days

5.1.6 Site Remediation

The Facility will also be required to submit the following reports to NEPA:

- 1. Site Remediation Plan²
- 2. Interim Status Reports
- 3. Final Post-remediation Report

NEPA acts as the coordinator of the site remediation with support from MOH-EHU, NSWMA, MLSS, WRA, JBI, among others. If it is determined by these agencies that further remedial actions are required to restore the natural resources, the facility should be advised in writing by NEPA to take steps to determine the extent of the contamination to the natural environment, as agreed upon by all the relevant secondary responders.

On this basis:

- 1. NEPA requests a site remediation plan from the facility/owner in accordance with the guidelines they provide.
- 2. The facility/owner prepares a site remediation plan, including the proposed schedule of the remediation activities with timelines for the completion of each activity.
- 3. The facility/owner submits the site remediation plan to NEPA for review by the relevant agencies and final approval.
- 4. NEPA:

² To be submitted within 14 days following the submission of the Facility Investigation Report.

- Coordinates the review of the site remediation plan by all relevant agencies.
- Liaises with the facility until a plan that can be approved is received.
- Formally notifies the facility of the approval of the plan on behalf of all the relevant agencies.
- Includes in the approval the requirement for the facility to submit interim status reports at regular intervals to NEPA, who will advise the other relevant agencies on the status of the remediation activities.
- 5. As required NEPA, acting as the coordinator of the site remediation, along with all relevant agencies, monitors the implementation and completion of these activities.
- 6. The facility/owner is expected to submit to NEPA a final post remediation report with the details of the remediation activities and their outcome.
- 7. Where the Facility is unwilling or unable to undertake the site remediation, the state agencies should arrange for remediation and cost recovery from the facility under the relevant legislation.

5.1.7 Response Analysis and Investigation

ODPEM is the coordinator of the response analysis and investigation. This will include:

- Coordinating a multi-agency investigation and analysis of the incident and its response.
- Documenting the details of these reviews and analyses.
- Coordinating a multi-agency review of the submitted reports.
- Recommending amendments to the Emergency Operations, Communications and Transport Sub-Committee on the National Chemical Emergency Risk Management (NCERM) Plan, based on lessons learnt from the incident response.
- Updating the protocol annually and advising the stakeholders of these updates.
- Coordinating follow-up training, drills and simulations as required, in relation to responding to chemical emergencies.
- Reviewing the NCERM Plan at least once every three years.

5.1.7.1 Final Incident Report

- 1. Should be coordinated and completed by ODPEM within 30 days after all reports have been submitted.
- 2. Should be submitted to the Emergency Operations, Communication and Transport Sub-Committee.
- 3. Should include all relevant information in the Primary and Secondary Responders Reports.
- 4. This report provides an overview of the event and analyses the response to the incident. See Annex 8 for an example of the details to be included in this report.

5.1.8 Communication

ODPEM will provide closure notice of the event to the media. The final report will be made available to the public and agencies if requested.

5.1.9 Liability and Compensation

The applicable regulations will apply. NEPA and the MAJ will lead this legal process. Depending on the nature of the chemical incident, the Public Defender and the Attorney General may be involved.

In the event of a national chemical emergency the responders will take all necessary remedial measures to control or mitigate the impacts of the incident. The facility/owner shall be bound to render assistance and cooperation as required and will be liable for all expenses related to the response and post-incident activities, and the damages and losses to affected parties

Individual agencies are expected to give their cost recovery claims to the ODPEM who will submit compiled submissions to the relevant agency. Agencies should submit a detailed list of expenditures with relevant documentation so that claims can be processed.

CHAPTER 5.2

THE ROLES AND RESPONSIBILITIES OF KEY AGENCIES AND PRIVATE ENTITIES IN THE POST-INCIDENT PHASE OF A NATIONAL RESPONSE TO A CHEMICAL EMERGENCY

The relevant Ministries, Departments and Agencies (MDAs) and private entities have various roles and responsibilities in the post-incident phase of a national response to a chemical emergency, as outlined in Table 5.2-1.

Table 5.2-1:	The Roles	and Responsib	oilities of	Agencies	and Private	Entities in	the	Post-
Incident Pha	se of a Natio	onal Response	to a Chen	nical Eme	rgency			

Agency	Post-Incident Role
Facility	• Post-incident cleanup and initial site assessment of the affected areas.
Primary Responder	• Recovers and contains chemical(s) as necessary.
	• Stores/Treats/Disposes of waste chemical(s) and contaminated materials.
	• Prepares a facility incident report and submits it to ODPEM within 24 hours. This report includes a copy of the completed chronological log (see Annex 8).
	Carries out relevant corrective actions.
	• Conducts post-incident monitoring of incident site.
	• Prepares a facility investigation report and submits it to ODPEM within seven days.
	• Participates in ODPEM-chaired meeting to analyse response to and investigate incident.
	• Develops site remediation plan using NEPA guidelines, and revises this plan until approved.
	• Carries out site remediation activities as detailed in the approved site remediation plan.
	• Provides interim reports on the status of the remediation activities in the approved remediation plan at a frequency agreed on with NEPA.
	• Submits final post-remediation report.
	• Assumes responsibility for the cost of the response and post- incident activities.

Agency	Post-Incident Role
	• Is deemed liable and shall provide compensation to third parties.
Jamaica Bauxite Institute (JBI) Support Responder	 Conducts post-incident monitoring for incidents relating to the bauxite/alumina industry. Requests report(s) from the facility with the emergency. Discusses remediation activities and corrective actions with the bauxite/alumina facility and relevant agencies.
Jamaica Constabulary Force (JCF) Primary Responder	 Conducts investigation and prepares police report if the incident is a criminal offence. Participates in ODPEM-chaired meeting to analyse response to and investigate incident. Prosecutes perpetrators for offence(s) and enforces requirements for remediation. Conducts traffic management and control.
Jamaica Defence Force Coast Guard (JDFCG) Primary Responder (Marine)	 Assists the facility with post-incident clean-up of the affected area(s). Compiles the chronological logs from all primary responders. Prepares the Primary Responder Incident Report and submits it to ODPEM, NEPA, MOH-EHU, MLSS and all primary responders within 48 hours of the incident. Participates in ODPEM-chaired meeting to analyse response to and investigate incident.
Jamaica Fire Brigade (JFB) Primary Responder (Land) Secondary Responder (Marine)	 Assists the facility with the post-incident clean-up of the affected areas. Compiles the chronological logs from all primary responders. Prepares the Primary Responder Incident Report and submits it to ODPEM, NEPA, MOH-EHU and MLSS within 48 hours of the incident. Participates in ODPEM chaired meeting to analyse response to and investigate incident.
Jamaica Information Service (JIS)	• Issues follow up notifications on the status of the incidents (as advised by ODPEM).
Maritime Authority of Jamaica (MAJ) Support Responder	 Recovers funds through detention of ships and issuance of a bond (based on cost of response and clean-up from the responding agencies). Prosecutes perpetrators for offence(s) and enforces requirements for remediation. Marine Inspectors monitors clean-up and conducts inspection.
Agency	Post-Incident Role
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	• Issues release to cargo/vessel at appropriate time after the incident.
Occupational Health and Safety Department Ministry of Labour and Social Security (MLSS) Secondary Responder	 Conducts post-incident monitoring of effectiveness of corrective actions. Evaluates the adequacy of the facility's emergency preparedness and response plan (EPRP) based on its operations. Writes a Secondary Responder Investigation and Impact Assessment Report on the incident, response and impact analysis. Submits the Investigative Report to ODPEM within seven days.
Emergency Disaster Management and Special Services (EDMSS), Ministry of Health (MOH) Secondary Responder	 Conducts post-incident monitoring of the effectiveness of corrective actions. Conducts assessment of the epidemiological impact of the incident in collaboration with the EHU. Prepares a Secondary Responder Investigation and Impact Assessment Report on the incident response, investigation and health impact. Submits the investigative report to ODPEM within seven days.
Environmental Health Unit (EHU) Ministry of Health (MOH) Secondary Responder	 Discusses and approves remediation activities and corrective actions with the facility and relevant agencies regarding incidents that have environmental health implications. Conducts post-incident monitoring of effectiveness of corrective actions. Conducts assessment of the epidemiological impact of the incident in collaboration with the EDMSS. Prepares a Secondary Responder Investigation and Impact Assessment Report on the incident response, investigation and health impact. Submits the investigative report to ODPEM within seven days.
Emergency Medical Services (EMS) Ministry of Health (MOH) Primary Responder	 Provides follow up treatment to those exposed, injured/hospitalised due to the incident. Submits the completed chronological log to the Incident Command (IC) within 24 hours of the incident. Provides the EDMSS with data collected related to chemical incident(s) for epidemiological studies.

Agency	Post-Incident Role
Standards and Regulations Unit (SRU) Ministry of Health (MOH) Support Responder	 Assesses if the permit holder is compliant with permit conditions. Reviews and amends, if necessary, conditions of permit for future importations and improves on any weaknesses identified in regulatory provisions. Prosecutes perpetrators for offence(s).
Ministry with responsibility for the environment Secondary Responder	 Conducts assessment of the social and economic impact of the incident. Assist with relocation of affected communities as advised by ODPEM, MOH, NEPA and MLSS.
Ministry of Transport and Mining (MTM) Support Responder	 Relocates affected communities as advised by ODPEM, MOH, NEPA and MLSS. Reviews codes of practice governing the transportation of chemicals and amends if necessary.
National Environment and Planning Agency (NEPA) Secondary Responder	 Prepares a Secondary Responder Investigation and Impact assessment report on the incident response, investigation and environmental impact. Submits the investigative report to ODPEM within seven days. Conducts post-incident environmental monitoring of the effectiveness of corrective actions. Acts as coordinator for site remediation activities. Requests site remediation plan from the facility, if necessary. Provides guidelines for preparation of site remediation plans. Approves site remediation plan in collaboration with the other relevant agencies. Prosecutes perpetrators for offence(s) and enforces requirements for remediation.
National Solid Waste Management Authority (NSWMA) Support Responder	 Assists with the containment, removal, storage or disposal of waste and contaminated materials. Participates in the review and approval of the site remediation plan. Operates a hazardous waste storage and disposal facility.
National Works Agency (NWA) Support Responder	 Assist with the provision of equipment, if needed, and provides technical advice on infrastructure maintenance, safety and security. Assist with the removal of material and substance on public

Agency	Post-Incident Role
	roadways, bridges, drains and gullies.
Office of Disaster Preparedness and Emergency Management (ODPEM) Overall Coordinator	 Acts as coordinator of post-incident reporting and record keeping. Follows up on the reports to be submitted by the facility and various agencies. Reviews and circulates the reports received from the responders. Conducts post-incident response analysis and investigation. Prepares final incident report within 30 days of incident. Shares lessons learnt with other stakeholders. Updates the protocol annually or as required, based on the effectiveness of response. Reviews the protocol at least once every three years. Advises stakeholders of changes.
Municipal Corporation	 Submits parish reports in a timely manner. Liaises with local agency representatives to monitor post-incident activities. Reviews Parish Chemical Emergency Response Protocol.
Pesticides Control Authority (PCA) Secondary Responder	 Determines whether the facility has an approved permit. Investigates incidents relating to inappropriate pesticide use and contamination. Reviews compliance status of permit for pesticides. Prepares a report on the incident response, investigation and health impact. Submits report to ODPEM within seven days. Conducts post-incident monitoring of effectiveness of corrective actions. Prosecutes perpetrators for offence(s) and enforces requirements for remediation.
Port Authority of Jamaica (PAJ) Support Responder	 Conducts an investigation of incidents at the ports. Monitors the clean-up and remediation activities.
Water Resources Authority (WRA) Support Responder	 Conducts post-incident monitoring of water quality (if actually or potentially affected). Requests report(s) from the facility with the emergency. Discusses and approves remediation activities and corrective actions with the facility and relevant agencies regarding incidents that affect water quality.

ANNEXES

NATIONAL LEGISLATIVE FRAMEWORK AND INTERNATIONAL AGREEMENTS IN SUPPORT OF THE MANAGEMENT OF HAZARDOUS CHEMICALS

National Legislative Framework and International Agreements in Support of the Management of Hazardous Chemicals

A1.1 The National Legislative Framework in Support of the Management of Hazardous Chemicals

The management of hazardous chemicals in Jamaica is currently covered under several pieces of legislation.

Table A1.1-1:	Existing	Legal	Instruments	in	Support	of t	he	Management	of	Hazardous
Chemicals in J	amaica									

National Policies	Responsible Ministry, Department or Agency (MDA)	Summary of Objectives in Relation to the Management of Hazardous Chemicals in Jamaica
Draft National Policy and Strategy		This policy is based on an integrated life cycle approach to hazardous wastes management: from its
for the		generation to reuse, recovery, refurbishment, and
Environmentally		final disposal. It also provides guidance to public
Sound Management		sector decision-makers, the private sector, public
(ESM) of		interest non-governmental organisations (NGOs) and
Hazardous Wastes		the public on issues related to the management of
(2016)		hazardous wastes, including the special requirements
		for labelling, packaging, storage, transportation and treatment.

National Legislations/Regulations	Responsible Ministry, Department or Agency (MDA)	Summary of Objectives in Relation to the Management of Hazardous Chemicals in Jamaica
The Natural Resources Conservation Authority Act, 1991	National Environment and Planning Agency (NEPA)	Provides for the management, conservation and protection of Jamaica's natural resources, and establishes the Natural Resources Conservation Authority (NRCA). The relevant feature of this Act relates to the discharge or disposal of substances. It sets out that a license is required for the discharge of trade effluent, any poisonous, noxious or polluting matter into waters, on or into the ground. This also applies to the construction or altering of any works for the discharge of any of the above.
The Natural Resources (Hazardous Waste) (Control of Transboundary Movement) Regulations, 2002	-	Defines the terms and conditions pertinent to the sound management of hazardous wastes, as are required under the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 1989.
The Natural Resources Conservation Authority (Air Quality) Regulations, 2006	-	Provides the framework for regulating emissions from major and significant point sources and are developed pursuant to Section 38 of the NRCA Act, 1991. The regulations outline the ambient air quality limits for specific parameters, which are referred to as critical air pollutants namely: total suspended particulates; particulate matter having diameters not less than 10 micrometres (PM110); lead; sulphur dioxide; photochemical oxides (ozone); carbon monoxide; and nitrogen oxide.
The Natural Resources Conservation (Wastewater and Sludge) Regulations, 2013	-	Provides guidance for the handling treatment and discharge of sewage and trade effluent as well as industrial seepage and sludge in keeping with the requirements of the Cartergena Convention and Land Based Sources of pollution.
The Natural Resources Conservation (Permits and Licences)		Outlines the permit and licensing system for regulating the discharge and use of wastewater and sludge by directly applying the principle of

National Legislations/Regulations	Responsible Ministry, Department or Agency (MDA)	Summary of Objectives in Relation to the Management of Hazardous Chemicals in Jamaica
(Amendment) Regulations, 2015		the 'polluter pays', and by carrying out Jamaica's international obligations under the Protocol Concerning Pollution from Land-Based Sources and Activities (LBS Protocol) to the Cartagena Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region (WCR).
The Road Traffic Act, 2016	Transport Authority Jamaica Constabulary Force (JCF)	To establish the Island Traffic Authority for the regulation and control of road traffic in Jamaica. It is expected to improve road safety and transport efficiency and reduce the cost of administering road transport to create new categories of driver's licenses, and for other connected matters.
The Food and Drugs Regulations, 1975	Ministry of Health (MoH)	 The six relevant features of this Act are: The restrictions surrounding the importation of food, drugs, cosmetics and devices. The prohibition on the sale of food that contain any poisonous or harmful substances. The provision for the issue of an order to request the composition or chemical formula of a substance. The stipulation that the preservatives and concentrations allowed in foods. It also gives strict guidelines on the use of preservatives. It requires the registration of a drug before it can be imported, manufactured or sold. It gives a list of drugs that require a prescription and limits the importation of these drugs to a medical or veterinary practitioner, drug manufacturer, registered pharmacist or public hospital, and drug distributors.
The Pesticides Act, 1987	Pesticides Control Authority (PCA)	Applies to all products, organisms and devices sold or used to control pests. It sets out the requirements for the importation, manufacture, advertisement or sale of any pesticide, stipulating that: every pesticide must be registered; the

National Legislations/Regulations	Responsible Ministry, Department or Agency (MDA)	Summary of Objectives in Relation to the Management of Hazardous Chemicals in Jamaica
		importer or manufacturer must be licensed; and pest control operators must be licensed. The Act gives a list of restricted pesticides that can only be sold by authorised persons on registered premises. It also gives a list of prohibited pesticides, which are not allowed into or to be used in the island.
The Petroleum (Quality Control) Act, 1990	Petroleum Corporation of Jamaica (PCJ)	Governs the exploration, development and management of petroleum resources in Jamaica. It also applies to all aspects of the petroleum industry, from the refinery to the sale and distribution of petroleum and petroleum products. The Act specifies the normal/minimum composition of the various petroleum products; and requires the registration of retailers, haulage contractors and drivers of petroleum tanker wagons.
The Trade Act, 1955	Prices Commission	The key feature of this Act is its application to the importation of harmful hazardous chemicals. If it is viewed that there exists any safety, health, economic risk/hazard associated with a substance, restrictions can be placed on its importation. Under this Act a ministerial order can be established that provides for:
		 Prohibiting absolutely the importation or exportation of goods or any class or description of goods from or to any country; Prohibiting the importation or exportation of goods or any class or description of goods from or to any country except under the authority of a licence granted by the Minister; and Regulating the distribution, purchase or sale of goods or any class or description of goods.
		The regulations of this Act states a list of restricted chemicals for which import licenses are needed for their importation.

National Legislations/Regulations	Responsible Ministry, Department or Agency (MDA)	Summary of Objectives in Relation to the Management of Hazardous Chemicals in Jamaica
The Precursor Chemicals Act, 1999	MoH Ministry of National Security (MNS)	Provides for the monitoring and control of precursor chemicals and other chemical substances used or capable of being used in any type of illicit transaction involving narcotic drugs, psychotropic substances or other substances having a similar effect, and for matters connected therewith or incidental thereto.
The National Solid Waste Management Act, 2001	National Solid Waste Management Authority (NSWMA)	Provides for the regulation and management of solid waste in Jamaica in order to safeguard public health, ensure waste is collected, stored and transported, recycled, reused or disposed of in an environmentally sound manner. The Act also promotes safety standards in relation to such waste, and public awareness of the importance of efficient solid waste management.
The Factories Act, 1943	Ministry of Labour and Social Security (MLSS)	Provides for the registration and supervision of factories, and for the safety and welfare of workers employed therein.
The Disaster Risk Management Act, 2015	Office of Disaster Preparedness and Emergency Management (ODPEM)	Provides for the management and mitigation of disaster, the reduction of risks associated with disaster; and for connected matters, including chemical risk management.
The Standards Act, 1969	MoH Bureau of Standards (BSJ)	Promotes standardisation in relation to commodities, processes and practices, and for that purpose to provide for the establishment of a Bureau of Standards and to define its functions. Over the years the roles of the Bureau of Standards has expanded to include the provision of services in relation to conformity assessment (certification, inspection and testing, and calibration) and metrology. Its main activities include facilitating the development of standards and other requirements to which commodities,

National Legislations/Regulations	Responsible Ministry, Department or Agency (MDA)	Summary of Objectives in Relation to the Management of Hazardous Chemicals in Jamaica
		services, practices and processes must comply; monitoring for compliance; conducting tests and calibrating instruments; certifying products and management systems; and providing industrial training and promoting research and education in standardisation.
The Customs Act, 1941	Jamaica Customs Agency (JCA)	An Act that deals with the importation of goods, including chemicals, into Jamaica.
The Public Health Act, 1985	МоН	Provides for the promotion of public health and for preventing the spread of communicable and epidemic diseases, and other incidental matters.
The Port Authority Act, 1972	Port Authority of Jamaica (PoJ)	Established the Port Authority with responsibility for regulating the use of all port facilities in a port and maintaining and improving, where applicable, such port facilities, as well as other matters connected therewith.

A1.2 International Conventions and Protocols in Support of the Management of Hazardous Chemicals

Jamaica is signatory and party to several international conventions and protocols that provide guidance on the sound management of hazardous chemicals.

Table A1.2-1: International Conventions and Protocols in Support of the Management of
Hazardous Chemicals to which Jamaica is Signatory and Party

International Conventions and Protocols	Date Ratified by Jamaica	Summary of Objectives in Relation to the Management of Hazardous Chemicals
The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 1989.	January 23, 2003	A treaty designed to reduce the movements of hazardous wastes between nations, and specifically to prevent transfer of hazardous wastes from developed to developing countries. It does not, however, address the movement of radioactive wastes. The Basel Convention is also intended to minimise the amount and toxicity of wastes generated to ensure their environmentally sound management as closely as possible to the source of generation, and to assist developing countries in environmentally sound management of the hazards and other wastes they generate.
The Stockholm Convention on Persistent Organic Pollutants (POPs)	June 1, 2007	This agreement was developed with an aim to protect human health and the environment from persistent organic pollutants (POPs). In achieving its goal, the convention seeks to, among other measures, prohibit the production of POPs, ensure the sound handling of POPs impacted stockpiles, and restrict the import/exportation of these chemicals. The Stockholm Convention also has established procedures for the listing of new POPs.
The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	August 20, 2002	A multilateral treaty to promote shared responsibilities in the importation of hazardous chemicals. The Rotterdam Convention promotes open exchange of information and calls on exporters of hazardous chemicals to use proper labelling, include directions on safe handling, and inform purchasers of any known restrictions or bans. Signatory nations can decide whether to allow or ban the importation of chemicals listed in the treaty, and exporting countries are obliged to make sure that

International Conventions and Protocols	Date Ratified by Jamaica	Summary of Objectives in Relation to the Management of Hazardous Chemicals
		producers within their jurisdiction comply.
The Montreal Protocol on Substances that Deplete the Ozone Layer	March 31, 1993	This is an international treaty designed to protect the ozone layer by phasing out the production of numerous substances that are responsible for ozone depletion.
Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction (Chemical Weapons Convention - CWC)	8 September 2000	This is an arms control treaty that outlaws the production, stockpiling and use of chemical weapons and their precursors. Is administered by the Organisation for the Prohibition of Chemical Weapons (OPCW), an intergovernmental organisation based in The Hague, Netherlands.
The Minamata Convention on Mercury	It has been signed but not yet ratified.	This is a global treaty to protect human health and the environment from the adverse effects of mercury. The major highlights of the Minamata Convention include a ban on new mercury mines and the phase-out of existing ones; the phase out and phase down of mercury use in several products and processes; control measures on emissions to air and on releases to land and water; and the regulation of the informal sector of artisanal and small-scale gold mining. The Minamata Convention also addresses the interim storage of mercury and its disposal once it becomes waste, and sites contaminated by mercury as well as associated health issues.
Cartagena Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region (WCR)		The Cartagena Convention is a comprehensive umbrella agreement for the protection and development of the marine environment. The Convention is supported by three additional technical agreements or Protocols, on: Oil Spills; Specially Protected Areas and Wildlife (SPAW); and Land-based Sources of Marine Pollution (LBS).
Convention on the International Maritime		The purposes of the IMO, as mentioned in Article 1(a) of the Convention, are "to provide machinery for cooperation among governments in the field of

International Conventions and Protocols	Date Ratified by Jamaica	Summary of Objectives in Relation to the Management of Hazardous Chemicals
Organization		governmental regulation and practices relating to technical matters of all kinds affecting shipping engaged in international trade; to encourage and facilitate the general adoption of the highest practicable standards in matters concerning maritime safety, efficiency of navigation and prevention and control of marine pollution from ships". The primary roles of the IMO are to promote safe, secure, environmentally sound, efficient and sustainable shipping through cooperation.
ILO Convention No. 155 - Occupational Safety and Health Convention, 1981		An International Convention that addresses issues of Occupational Safety and Health including the use and storage of chemical at places of work.

CHEMICAL HAZARD CLASSES AND CATEGORIES

Chemical Hazard Classes and Categories

During the import permit application process the Ministry of Health (MOH) must ensure that the hazardous chemicals are appropriately classified according to the Globally Harmonised System of Classification and Labelling of Chemicals (GHS). Developed by the United Nations (UN), the GHS standardises and harmonises the classification and labelling of chemicals according to their physical, health and environmental hazards, and harmonises hazard communication elements, including requirements for labelling and safety data sheets.

The GHS System describes the nature and severity of a chemical hazard by hazard class and hazard category. There are three main types of chemical hazards: physical, health and environmental hazards. Each has one or more associated hazard classes: 17 physical hazard classes; 10 health hazard classes; and two environmental hazard classes. The severity of each hazard class is further divided into categories, according to the different severity levels of the chemical.¹

¹ United Nations (2015). Globally Harmonized System of Classification and Labelling of Chemicals (GHS) (6th ed.). New York and Geneva: United Nations.

Chemical Hazards	GHS Hazard Classes	GHS Hazard Categories
Physical Hazards	Explosives	Divisions 1.1 - 1.6
	Flammable gases	Categories 1 and 2
	Aerosols	Categories 1 and 2
	Oxidising gases	Category 1
	Gases under pressure	Four groups: compressed gas, liquefied gas, refrigerated liquefied gas, and dissolved gas
	Flammable liquids	Categories 1 - 4
	Flammable solids	Categories 1 and 2
	Self-Reactive substances	Types A to G
	Pyrophoric liquids	Category 1
	Pyrophoric solids	Category 1
	Self-heating substances and mixtures	Categories 1 and 2
	Substances which, in contact with water, emit	Categories 1 - 3
	flammable gases	
	Oxidising liquids	Categories 1 - 3
	Oxidising solids	Categories 1 - 3
	Organic peroxides	Types A - G
	Corrosive to metals	Category 1
	Desensitised explosives	Categories 1 - 4
Health Hazards	Acute toxicity (oral/dermal/inhalation)	Categories 1 - 5
	Skin corrosion/irritation	Categories 1 - 3
	Serious eye damage/eye irritation	Categories 1, 2A and 2B
	Respiratory sensitisation	Categories 1, 1A and 1B
	Skin sensitisation	Categories 1, 1A and 1B
	Germ cell mutagenicity	Categories 1A, 1B, and 2
	Carcinogenicity	Categories 1A, 1B, and 2
	Reproductive toxicology	Categories 1A, 1B, 2 and additional category for effects

Table A2.1: The GHS Chemical Hazard Classes and Hazard Categories

Chemical Hazards	GHS Hazard Classes	GHS Hazard Categories
		on or via lactation
	Specific target organ toxicity – single exposure	Categories 1 - 3
	Specific target organ toxicity following repeated exposure	Categories 1 and 2
	Aspiration hazard	Categories 1 and 2
Environmental Hazards	Hazardous to the aquatic environment, short-term (acute)	Acute categories 1 - 3
	Hazardous to the aquatic environment, long-term (chronic)	Chronic categories 1 - 4
	Hazardous to the ozone layer	Category 1

CLASS 1 EXPLOSIVES	EPPLOSWE	Explosives: materials that can detonate and explode, for example, gelignite, dynamite, nitropil, various detonators, ammunition and fireworks.
CLASS 2.1 Flammable gases		Flammable gases: gases that can ignite in air or on contact with an ignition source, for example LGP and acetylene.
CLASS 2.2 Non Flammable Non toxic Gases		Non Flammable Non toxic Gases: gases that can displace atmospheric oxygen causing asphyxiation. These materials are often storedunder pressure causing an additional hazard. Examples include nitrogen, carbon dioxide and oxygen.
CLASS 2.3 Toxic Gasses	NUMBER 2	Toxic Gasses: gases that are liable to cause death if inhales, for example, chlorine gas and anhydrous ammonia.
CLASS 3 Flammable Liquids		Flammable Liquids: liquids thar produce vapours that can ignite in air on contact with an ignition source. Examples include: petrol, benzene, acetone, MEK and kerosene.
CLASS 4.1 Flammable Solids		Flammable Solids: solid materials that can give off enough vapours for ignition to occur. Examples include: sulphur, carbon and red phosphorous.
CLASS 4.2 Spontaneously Combustible		Spontaneously Combustible: materials that can emit flammable or toxic gases if contacted by water. For example sodium, zinc dust, calcium carbide and zinc.
CLASS 4.3 Dangerous When Wet		Dangerous When Wet: materials that emit flammable or toxic gases if contacted by water. For example: sodium, zinc dust, calcium carbide and zinc phosphate.
CLASS 5.1 Oxidising Agents		Oxidising Agents: materials that can release oxygen and increase the intensity and burning rate of a fire. Examples include sodium nitrate, potassium chlorate, ammonium nitrate and calcium hypochlorite.
CLASS 5.2 Organic Peroxides	8 10 10 10	Organic Peroxides: materials that have the ability to provide both fuel and oxygen if involved in a fire. These materials are generally unstable and need to be stored under refrigeration. Examples include: methyl ethyl ketone peroxide, and various fiberglass hardeners.
CLASS 6.1 Toxic Substances	59 R003	Toxic Substances: materials that can cause death or injury when swallowed, inhaled or brought into contact with skin. An example of this cyanide.
CLASS 6.2 Infectious Substances		Infectious Substances: examples of these materials generally include viruses, bacteria and other pathogens plus various items of material waste.
CLASS 7 Radioactive Materials	ABALATIVE 7	Radioactive Materials: materials that emit ionizing radiation, whick can effect the body's cells and disrupt other metabolic processes. Examples include uranium, plutonium and strontium.
CLASS 8 Corrosive Substances		Corrosive Substances: materials that can cause serious damage on contact with the skin or damage the airway if vapours are breathed in. Examples include hydrochloric acid, sulphuric acid, nitric acid and caustic soda.
CLASS 9 Miscellaneous Dangerous Goods		Miscellaneous Dangerous Goods: materials that present a hazard nor covered by any of the above classes. The danger associated with the material is usually unique to that substance. Examples include dry ice, asbestos, hot bitumen and molten aluminum.



MINISTRY, DEPARTMENT AND AGENCY (MDA) INSPECTORATES

Ministries, Departments and Agencies (MDAs) with Responsibility for Inspecting Hazardous Chemicals Storage Sites in Jamaica

Table A3.1 provides details on the respective Ministries, Departments and Agencies (MDAs) with responsibility for the inspection of hazardous chemicals storage sites in Jamaica.

Table A3.1: Ministries, Depar	tments and Agencies (MDAs) w	ith Responsibility for I	nspecting Hazardous Chen	nicals Storage
Sites in Jamaica				

Ministry/Dept./ Agency	No. of Inspectors	Legal Instruments	Types of Workplaces Inspected	Broad Parameters of Inspection
Ministry of Labour and	l Social Security (N	MLSS)		
Occupational Safety and Health Department (OSHD)	16	• The Factories Act, 1943 and regulations covering factories, docks and buildings.	FactoriesDocksConstruction sitesShips	Safety, health and welfare requirements of regulations
Pay and Conditions of Employment Branch (PCEB)	29	 The Minimum Wage Act, 1938 and respective regulations The Holidays with Pay Act, 1947 and respective regulations The Maternity Leave Act, 	All workplaces except private homes and embassies (e.g. hotel trade, laundry and dry cleaners, bakeries, garment trade, petrol trade, catering, dry goods trade, industrial,	Compliance with minimum benefits and documentations required in the Acts and Regulations

Ministry/Dept./ Agency	No. of Inspectors	Legal Instruments	Types of Workplaces Inspected	Broad Parameters of Inspection	
		 1979 The Women (Employment of) Act, 1942 and respective regulations The Labour Officers (Powers) Act, 1943 	security guards companies, transport (rural bus)).		
Ministry of Transport a	and Mining				
Island Traffic Authority		• The Road Traffic Bill	Inspection and licensing of vehicles transporting dangerous goods.		
Mines and Geology Division (MGD)	 5 safety inspectorate 4 mining and quarries inspectorates 	 The Mining Act, 1947 and respective regulations The Quarries (Control) Act, 1985 The Mining (Safety and Health) Regulations, 1977 The Quarries Control (General) Regulations, 1958 	All mining and quarry sectors and alumina plants.	Compliance with regulations	
Ministry of Industry, Commerce, Agriculture and Fisheries					
Rural Agricultural Development Agency (RADA)	 6 land husbandry officers 60 extension officers 60 assistant 	 The Rural Agricultural Development Authority Act, 1990 Legal orders issued by the Minister of Agriculture Collaborates with 	 Farms and farm buildings (storage areas, packing houses) Farmers register of 90,000 farmers 60 extension areas 	• Routine visits in extension areas for potential crop activity, human health, environmental protection, and	

Ministry/Dept./ Agency	No. of Inspectors	Legal Instruments	Types of Workplaces Inspected	Broad Parameters of Inspection
	extension officers	Pesticides Control Authority (PCA) under the Pesticides Act, 1987	across the island	 pesticide management. Specific surveys for pests; surveillance programmes. Weekly to monthly visits.
Ministry of Health				
Pesticides Control Authority (PCA)	• 4 (2 regional offices: Kingston and Montego Bay)	 The Pesticides Act, 1987 The Pesticides Regulations, 1996 The Pesticides (Amendment) Regulations, 1999 The Pesticides (Amendment) Regulations, 2004 	 Manufacturers of pesticides Sellers of pesticides Farms (storage of pesticides) Pest control operator businesses Importers of pesticides 	 Exposure of workers to pesticides in farm stores, warehouses. Ability to handle spills, structures to prevent release into the environment. Access to protective gear. Training of farmers in collaboration with RADA, the Jamaica Agricultural Society (JAS) and the Bureau of Standards (BSJ), in safe storage and transport of pesticides.
Environmental Health Unit and PHD		• The Public Health Act, 1985	All work places except private homes and embassies.	Environmental and occupational health and safety.

Ministry/Dept./ Agency	No. of Inspectors	Legal Instruments	Types of Workplaces Inspected	Broad Parameters of Inspection
Standards and Regulatory Division (SRD)		 The Dangerous Drugs Act, 1948 The Dangerous Drugs Regulations, 1948 The Food and Drugs Act, 1975 The Food and Drugs Regulations, 1975 The Precursor Chemicals Act, 1999 	Inspection of chemical facilities.	Inspection investigation and enforcement Regulator of the importation of all chemicals.
Ministry of Energy, Sci	ence and Technolo	ogy		
Energy Division	 51 (within the Government Electrical Inspectorate – GEI) 5 (Petroleum Inspectorate; 5 posts, 2 vacancies) 	 The Electric Lighting Act, 1890 The Petroleum (Quality Control) Act, 1990 	Refinery, loading racks, bulk storage installations (e.g., marine sites, trucks, service stations)	 Ensures that all electricity installations are compliant before being energised. Over 30,000 inspections per year. Licensing of electricians Quality of the petrol product; checklist for each type of work area.

Ministry/Dept./ Agency	No. of Inspectors	Legal Instruments	Types of Workplaces Inspected	Broad Parameters of Inspection
Ministry of Economic (Growth and Job C	reation		
National Environment and Protection Agency (NEPA)		 The Natural Resources Conservation Authority (Air Quality) Regulations, 2006 The Natural Resources (Hazardous Waste) (Control of Transboundary Movement) Regulations, 2002 The Natural Resources Conservation (Permits and Licences) Regulations, 1996 The Natural Resources Conservation (Wastewater and Sludge) Regulations, 2013 The Watersheds Protection Act, 1963 	Industrial facilities	 Pollution prevention, control, monitoring, assessment, and incident investigation and reporting. Receive and process applications to provide recommendations for decisions on licences and permits for planning, subdivisions, beaches, environment hazardous waste export, import, or transportation.
National Works Agency (NWA)	• 1 (an Environment al Engineer to monitor road work activities, produce a	• Construction Act (administered by Parish Council)		

Ministry/Dept./ Agency	No. of Inspectors	Legal Instruments	Types of Workplaces Inspected	Broad Parameters of Inspection	
	report for lending agencies)				
Ministry of Local Gove	ernment and Comm	nunity Development			
Jamaica Fire Brigade (JFB)		• The Fire Brigade Act, 1988	The mandate of the Fire Prevention Division is public education and fire inspection of public buildings, including schools and hospitals, and of hotels and places of amusement.	Mandated to protect life and property from fire and other disasters within Jamaica and its territorial seas.	
National Solid Waste Management Authority (NSWMA)		The National Solid Waste Management Act, 2002	Waste storage sites	Mandated to collect, store, transport, recycle, reuse, and dispose of solid waste in safe and environmentally sound ways.	
Ministry of Finance and Public Service					
Jamaica Customs Agency		 The Customs Act, 1941 The Customs (Amendment) Act, 2015 	Warehouses and ports		

ANALYTICAL CAPABILITIES OF MAJOR ACCREDITED LABORATORIES IN JAMAICA

Analytical Capabilities of Major Accredited Laboratories in Jamaica

Name	Description of Lab.	Equipment (# units; #functioning units)	Testing and Analytical Capabilities	Accreditation
Bureau of Standards (BSJ)	Tests food, fuels, pharmaceuticals, environmental and others samples against regulatory requirements.	 Carbon sulphur determinator (1;1) Density meter, FAES photometer (1;1) Flame atomic absorption spectrophotometer (AAS) (1;1) Gas chromatograph (1;0) Gas chromatograph- mass spectrometer (1;1) HPLC (2;1), ICPMS (1;1) IR spectrophotometer (1;1) Irox 2000 (1;1) Karl Fisher Titrator (1;1) KjeltecAnalyzer (1;1) UV/Vis 	 Food: protein, carbohydrate, fats, minerals, calorie value, pH, acidity, brix, vitamins, sodium benzoate, hypoglycin. Fuels: API gravity, ethanol, methanol, flash point, viscosity, moisture, contamination. Pharmaceuticals: active ingredients in cold and cough syrup Environmental: tap water, waste water, packaged water for heavy metals, fluoride, chloride, calcium, iron. Construction material: steel and cement and others samples against regulatory requirements. 	Yes, by Jamaica National Agency for Accreditation (JANAAC)

Table ...: Analytical Capabilities of Major Accredited Laboratories in Jamaica

Name	Description of Lab.	Equipment (# units; #functioning	Testing and Analytical Capabilities	Accreditation
		 units) spectrophotometer (2;2) XRF spectrometer (1;1) 		
Environmental Health Laboratory (EHL)	Environmental and biological monitoring lab	 Continuous flow analyser (1;1) Light microscope (2;2) PM10 particulate air sampler (2;2) UV/Vis spectrophotometer (2;2) 	 Water analysis: Major ions and physical parameters in drinking water Microbiology, O₂ demand, nutrients in waste water Recreational bathing water Swimming pools Air sampling 	No
Government Chemist	Analytical testing	 Gas chromatograph (1;0) HPLC (2;1) IR spectrophotometer (2;1) UV/Vis spectrophotometer (1;1) 	 Analysis of bodily fluids e.g. for poisons, drug overdose Analysis of pharmaceutical formulations Analysis of levels alcohol (in beverages and food 	No
University of the West Indies, Mona	Department of Chemistry: Central Analytical Laboratory,	 CHNS/O Elemental analyzer (1;1) Flame AAS (1;1) Fluorimeter (1;1) 	 Testing of physical and chemical properties of chemical compounds, food items, building material Analysis of pesticide levels in foods 	Yes, by JANAAC

Name	Description of Lab.	Equipment (# units; #functioning units)	Testing and Analytical Capabilities	Accreditation
	Pesticides Research Laboratory	 Gas chromatograph (2;2) Gas chromatograph- mass spectrometer (3;2) Graphite furnace AAS (1;1) HPLC (4;2) IR spectrophotometer (2;2) Ion Analyzer (1;1) LC-MS (1;1) LC-MS (1;1) LC-MS (1;1) NMR spectrometer (2;2) Polarimeter (1;1) UV/Vis spectrophotometer (12;9) X-ray diffractometer (2;1) 	and soil	ISO 17025 (Pesticides Research Lab)
Mines and Geology Division (MGD)	Analytical testing	 Perkin Elmer AAS system. This system utilises three different AAS techniques. More than 40 elements, mainly metals may be determined. Specific AAS 	 Soil Testing: Soil Contamination: applicable to pollution monitoring, like lead in soils due to battery works, pollution due to industrial effluent, sewage plants, manufacturing plants 	

Name	Description of	Equipment	Testing and Analytical Capabilities	Accreditation
	Lab.	(# units; #functioning		
		units)		
		 techniques include: Graphite Furnace AAS (GF-AAS) Flame AAS (F-AAS) Flow Injection AAS (FI-AAS). 	 including bauxite plants, chemical processing plants, agricultural processing and practices, and soil pollution due to natural processes like weathering, windblown dust, and silt deposition. Water Testing: 	
		• Ion Chromatography (IC) A DIONEX TM IC allows rapid multi- element determination of the following parameters; nitrate, chloride, fluoride, nitrite, bromide, phosphate, and sulphate.	• Water contamination: applicable to pollution monitoring, pollution due to industrial effluent, sewage plants, manufacturing plants including bauxite plants, chemical processing plants, agricultural processing and practices, and soil pollution due to natural processes like windblown dust, and silt deposition.	
			• Portable water assessment: preliminary testing and routine monitoring, applicable to water bottling entities, well operators, water treatment plants, and others suppliers of domestic water	
			• Recreational water testing: to meet international standards routine testing is required and is applicable to beaches, swimming pools, rivers	

Name	Description of Lab.	Equipment (# units; #functioning units)	Testing and Analytical Capabilities	Accreditation
			 and streams. Testing of Food: Nutrient content testing including mineral content testing Testing of trace metals and other toxic components Wide range of foods including fruits, vegetables, canned foods, juices and meat 	
National Environment and Planning Agency (NEPA)		 PM10 Particulate air sampler (2;2) UV/Vis spectrophotometer (2;2) 	 Ambient Air particle Nutrients, microbiology and oxygen demand in ambient and waste water 	No

LEVELS OF HAZARDOUS CHEMICAL INCIDENTS AND FACTORS TO DETERMINE LOCAL OR NATIONAL RESPONSE

Levels of Hazardous Chemical Incidents and Factors to Determine Local or National Response

A national chemical emergency response is activated when the primary responders (JFB and JDF Coast Guard) assess the incident and makes that determination based on: the severity and extent of the incident; the type and amount of the chemical substance(s) involved; and the affected population. Table A5.1 details the four levels of chemical incidents and the corresponding factors that will determine the level of the response: local or national.

Level	Severity of Incident	Extent of Incident	Type of Chemical Substance Involved	Amount of Chemical Substance Involved	Affected Population	Resources
1	Minor A spill, release or potential release of known hazardous substance. No deaths, if injuries, minor in nature.	Limited to initial area of involvement and unlikely that it will spread. For example, a single structure or area of 28 m ² or less.	Identified hazardous substance that is not radioactive, water reactive or hypergolic. Generally a flammable or combustible liquid but could also include limited amounts of corrosives.	A limited amount of a hazardous substance or smaller container.	Evacuation will be limited to the immediate area that can be evacuated in a short period of time for a limited duration (usually does not exceed 4 hours). A limited number of the populace will be affected.	Facility & Local resources can handle, includes automatic mutual aid agreements. Notify MLSS. (Facility & Parish Response)
2	Moderate A spill, release or potential release of known or unknown hazardous substance. No deaths; injuries can be minor to severe.	Release may not be controllable without special resources. Limited to several blocks or buildings.	Unknown hazardous substance or hazardous substance that is toxic, reactive, flammable, radioactive, corrosive, or biological in nature.	An amount limited by the size of the container and the release from it. For example, a small leak from a tanker that is controlled would be a Level 2, while a complete failure	Evacuation will be considered to a designated area that local resources can achieve. Extended sheltering is not required.	Local response agencies may need assistance from outside sources. Requires notification of the JFB,MLSS, NEPA.JFB/JDF CG to notify PDC. (Parish Response)

Table A5.1: Levels of Hazardous Chemical Incidents and Factors to Determine Local or National Response
Level	Severity of Incident	Extent of Incident	Type of Chemical Substance Involved	Amount of Chemical Substance Involved	Affected Population	Resources
				releasing the entire contents would be a Level 3 or 4.		
3	Severe A spill, release or potential release of a hazardous substance with an associated fire, explosion or toxic/corrosive cloud. Injuries or deaths may have already occurred.	Large area may be impacted possibly disrupting essential community services. Extensive environmental contamination is possible.	Unknown hazardous substance or hazardous substance that is capable of producing a toxic/corrosive gas cloud, is highly reactive or unstable, is a flammable gas or produces significant flammable vapours, is radioactive or chemical/biological pathogen.	Large amounts of hazardous material or limited amount of a very dangerous substance.	Presents an immediate danger to the public and operating personnel. Evacuation will require large numbers of the populace and/or extending over an area that will have a significant impact on the community. It may require activation of shelters for evacuees.	Local response agencies will need assistance from outside sources. Requires notification of the JFB,MLSS and ODPEM. (National Response) NEOC activation may be required.
4	Major A spill or release of a hazardous substance that has resulted in a serious fire, explosion or	Has an impact over a wide area with the probability that it will spread to a larger area. The impacted area can be smaller in	A known or unknown hazardous substance that can be highly toxic, very reactive or unstable, flammable or explosive; etiological agents that are extremely pathogenic.	A hazardous substance in a large amount that can affect a large area.	Evacuation will affect a large area and will have to be done in stages taking several hours or more (evacuation duration could exceed several days). A large number of the populace	Mutual aid will be needed with a need for a large number of resources. Requires notification of the JFB and

Level	Severity of Incident	Extent of Incident	Type of Chemical Substance Involved	Amount of Chemical Substance Involved	Affected Population	Resources
	environmental contamination over an extended area.	a highly urbanized area with a large population impacted.			is affected. Presents immediate danger to the public and operating personnel.	ODPEM. (National/ International Response) NEOC Activation is required

ANNEX 6

RESOURCES

Annex 6

Resources

Table A6-1: Content Area Specialists for National Emergency Operations Centre (NEOC)Activation for National Chemical Emergencies

Agency	Contact Person	Contact Information
Department of Government	Ms. Mei Har Lau	536-3741 (CUG Mobile)
Chemist	Government Chemist	harlaum@moh.gov.jm
National Environment and	Mr. Richard Nelson	580-8081 (CUG Mobile)
Planning Agency (NEPA)	Senior Manager	rnelson@nepa.gov.jm
	Environmental Subdivision	
	Ms. Bethune Morgan	508-3949 (CUG Mobile)
		bmorgan@nepa.gov.jm
Pesticides Control Authority	Mr. Hugh HoYoung	633-778
(PCA)	Senior Inspector	hoyoung@caribpesticides.net

Table A6-2: The Distribution of Jamaica Fire Brigade (JFB) HazMat Trained OfficersIsland Wide

Division	# of Trained Officers
Kingston and St Andrew Corporation (KSA)	3
St. James	13
St. Catherine	4
St. Thomas	2
St. Ann	4
Hanover	4
Trelawny	5
Training Department	2
TOTAL	47

Table A6-3: Emergency Response Resources for Facilities

Agency/Entity	Resources Available
Office of Disaster Preparedness and Emergency	• 318 3M half mask respirators and cartridges
Management (ODPEM)	(P100)
Ministry of Health (EH Lab)	• 2 mini volume air sampler
	• 2 personal sample pumps
	• 1 direct reading gas detector
	Air sampling kit
Ministry of Health (EHU)	ENM3 IAQ monitor
National Water Commission (NWC)	• 19 chlorine salvage vessel
	• 18 hazmat suit
	• 38 self-contained breathing apparatus
	• 12 emergency repair kit
	• 12 emergency repair kit
	• Pick-up with siren
National Environment Planning Agency	• Hand held ohoto-ionization detector (PID)
(NEPA)	Passive monitors
	• Speciation particulate matter
	• Monitoring equipment: combustible
	gasicators, oxygen level indicators,
	chemical detectors and pH papers
	Decontamination kits

Kingston

Jamaica (TCD #1)

-

Line #	Item	Specs/Description	Reqd	On hand	Packing Location
1	Binoculars	Binoculars Tasco 10x50 Binoculars- Rubber fold- down eyecups Magnification: 10x Field-of-View: 367ft. /123m Exit Pupil: 5mm	1	1	3
2	Blood Pressure Cuff	Blood Pressure Cuff Complete Adult Standard Cuff BP- 300 mmHg no-stop pin manometer gauge Black nylon calibrated cuff with range markings and manometer gauge strap	3	3	2
3	Clip Boards	Plastic with attached pens	4	4	3
4	Megaphone	Megaphone Pyle Pro PMP40- Bullhorn w/Siren and Handheld Mic Powers Up to 40 Watts 1000 Yard Range Indoor/Outdoor Use Variable Volume Control Tough Housing Built-In Siren Uses 6 X D Batteries,	1	1	3
5	Pelican Light System: 9460	Pelican Light System 9460 Remote LED Area Lighting System Portable- Pelican 9460 Remote Area Portable Lighting System:	2	2	Front
6	Reflective Safety Vest	Mesh Reflective orange	10	10	3
7	Scale	HoMedics SC-202 LED Digital Bathroom Scale	2	2	2
8	Stethoscope	Stethoscope dual head 30" long high acoustic sensitivity two-side bell and diaphragm chest-piece. Includes extra pair of ear-tips and replacement diaphragm	3	` 3	2
9	Thermometer	Thermometer Exergen Temporal Thermometer Non- invasive probe captures naturally emitted heat from skin over the temporal artery. No probe covers required, 9V battery included	3	3	2
10	trauma Shears	Trauma Shears RIP Shears FIREFLY RS-3Trauma Shears with 7.25" stainless steel blades One blade serrated Safety probe tip Comfortable grip handles Fully assembled glow-in-the-dark Ripper(RS-1)	3	3	2
11	Triage Tape System	Triage Tape System NATO, EM19 Individual rolls measure approx. 1 in.W x 300 ft.L (2.5cm x 91.4m), Colors: Red, Yellow, Green, and Black, With Case (+1)	5	5	2
12	Batteries	D-Cell, Box of 12	1.	1	3
13	Bucket	5 Gal. Plastic Handle	16	16	Front
14	Chem. Lights	Green, 12 Hour, Box of 12	20	20	4
15	Contaminated, Clothing Bag	Contaminated Clothing Bag Heavy Duty Plastic Bio- Capacity Range (Volume) 33 gal, Thickness 1.1 mil Width 33 in ,Width 33", Height 40", Height 40 in (20/box)	3	3	9
16	Decon Elevation Grids	DQE Brand: Decon Elevation Grids $3' L \times 3' W \times 3''$ H Poly drainage grid- 5 1/2" above ground during decontamination.	8	8	Front Streetside
17	Disinfecting Liquid Soap	3 Liter Bottle	7	7	Toter
18	Doff-It Kits (Must provide privacy for all sizes)	Doff-It Personal Privacy Kit - Adult (HMDOFFIT)	30	30	Overpack
19	3-way hose splitter	Individual on/off, brass	2	2	Toter

Jamaica (TCD #1)

Line #	Item	Specs/Description	Reqd	On hand	Packing Location
20	Garden Hose	3/4" or 5/8", 50 ft. (6 ply commercial)	12	10	Rear Curbside
21	Garden Hose connection	3 Ft. Manifold to Reel connection Hose	6	6	Attached
22	Garden Spray Hose Nozzle	With Spray Selector Capability	24	24	Toter
23	IRT Litter Conveyor	10' P/N: 19-120-1110	1	1	Center Aisle
24	IRT Transfer Board	White, plastic, designed for litter conveyor; P/N 19- 120-2389	3	3	Top Rack Curbside
25	Long Handled Brush	Siding Brush with Handle 12.34" W x 61.75" H	8	8	Brushes in O'pack; handles under curbside rack
26	Metal High Pressure Multi manifold, P/N MM15-6	1 1/2" (3.81 cm) inlet/6valve outlet, 5.2 lbs, 8.5" x 4.5" x 12"	1	1	Toter
27	Morgan Lens Delivery Set, Part # MT 202, box of 6	***Priced individually, not in boxes of 6	24	24	4
28	Morgan Mediflow Lens, Part # MT2000, Box of 12	***Priced individually, not in boxes of 12	24	24	4
29	Reel, Hose	Plastic, accommodate a 50 ft hose	6	6	Center Aisle
30	DQE Medical Decon Pool	Decon Pool (HDP - 6000)	16	16	Rear streetside
31	Sponges	Armaly 00009 ProPlus Heavy Duty Utility Sponge	25	25	Toter
32	Stanley Folding Sawhorses	30" wide by 31" tall. Weights 10 lbs. Flat folding free-standing saw horses anti-slip rubber bases	6	6	Rear Curbside
33	Tank Spray	2.5 Gallon, Adjustable spray tip	6	6	Toter
34	Tarps	25' x 25'	4	4	Toter
35	Toter Trash Can with Wheels, Plastic	Toter Trash Can with Wheels, Plastic 65 Gallon Dimensions (I x w x h)30.00" x 27.50" x 40.00" Load Rating224 lbs	3	3	Center Aisle
36	Traffic Cone	Traffic Cone Traffic Cone, Height 42 In., Cone Color Orange, Cone Material Polyethylene, Collar Material Reflective with weighted base.	10	10	Under rack streetside
37	Traffic Cone, 18"	Traffic Cone, 18" Collapsible HEIGHT : 18" COLOR FINISH: Orange W/ reflective stripe CONSTRUCTION: Nylon PACKAGE QUANTITY: 6	8	8	Toter

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Jamaica (TCD #1)

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Line #	ltem	Specs/Description	Reqd	On hand	Packing Location
38	TVI Decon Sheiter, 3 Lane	TVI Decon Shelter, 3 Lane, 3 Line Decontamination System for ambulatory and non-ambulatory personnel	1	1	Center Aisle
39	Water Pump w/hose	Model # SEM-25L with suction and discharge hoses	2	2	Toter
40	Yellow Caution Tape	Barricade "Caution" 3" x 1000' Roll	5	5	Toter
41	Drager CMS Emergency Response Kit	Draeger CMS Emergency Response Kit; Colorimetric Detection System Part #4055711- The kit includes CMS analyzer and chemical specific measurement chips for detection and measurement of hazardous chemicals.	1	1	Under rack streetside
42	First Defender RMX	First Defender RMX Chemical and Explosives Handheld Detector- Weight 2.0 lbs (919g) Size 7.7 x 4.5 x 2.4 in (19.6cm x 11.4cm x 6.1cm)	1	1	12
43	Mini Rad-D	Handheld Radiation Detector, With Belt Clip	1	1	12
44	Multi-Rae Pro	Multi Rae Pro Model Number: MCB3-A3C168E-020 / Pumped / 10.6 eV ppb PID / LEL / Cl2 / NH3 / O2 / Li-ion / Non-Wireless	2	2	Rear streetside under shelf
45	Ph Paper	Package of 100	8	8	12
46	S2P Swab Sampling Powder Kit	SWB 60014	11.	11	10
47	S3 Biosampler		11	11	10
48	Small Area Sampling Kit	SAS Kit	11 .	11	10
49	Akron Tri-Bar Forcible entry Tool (Halligan Bar)	Akron Tri-Bar Forcible Entry Tool (Halligan Bar); 36" length Tri-Bar forcible entry tool drop forged heat treated alloy steel weights 8.5lbs.	2		Front rack
50	B2C Bulk Sample Collection Kit	SWB 60013	11	11	11
51	Batteries	C-Cell, Box of 12	1.	1	3
52	Ergo Kneel Handy Mat II	Size: 14" x 21"	3	3	5
53	Flashlight Intrinsically Safe Pelican	2000PL SabreLite 2000 w/Photoluminescent Shroud	4	4	3
54	Hurst LKS 31 Hand Powered Combination Tool	Hand Powered Spreader Cutter Rescue	1	1	Front rack
55	Large Area Sampling Kit	BIS Kit; BIS-40001A	. 11	11	10
56	Midland GXT 400 Two-way radio	22 Total Channels, 22 Mile Range, eVOX Hands- Free Operation	2	2	3
57	Medical Trauma Backboard	Plastic 72" x 16" x 1.75" Red	6	6	Front Wall
58	Overpack Drums	65/50 Gallon Set	1	1	Front
59	Pelican Light System	9430 Remote LED Area Lighting System Portable	2	2	Under rack curbside

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Jamaica (TCD #1)

Line #	Itom	Specs/Description	Reqd	On hand	Packing Location
60	AF 132 - Series AE Hazmat Kit	Non-Sparking Tools	1	1	Front wall
61	Skedco HazMat Skid	Adjustable strap, Single Person	4	4	Under rack curbside
62	Werner 24' fiberglass extension ladder	24 ft. Fiberglass Extension Ladder 300 Lbs. Load Capacity, Load weight capacity 300 lb., Maximum/Minimum ladder length (ft.)24/12,Weight (lb.) 59.5, Rung/Step Material: aluminum.	1	1	Center Aisle
63	Werner Ladder leveler	PK80-2 Level-Master Automatic Ladder Leveler- automatically adjusts up to 8-1/2-inches. Levels and	2	2	Center Aisle
64	Werner Quick-click Ladder Stabilizer	Werner Quick-Click Ladder Stabilizer, lightweight aluminum and features a spring-loaded locking latch and mar resistant endcaps. Standoff 10", Span 44"	2	2	Center Aisle
65	Emergency Response Guidebook Pocket Size	Emergency Response Guidebook Pocket; Size 4" x 6", Latest version, Spiral Bound, Language TBD	24	24	4
66	30 Min. Cyl and Valve Assembly PN - 804101-01	Spare 2216 psig, 30 Min, Aluminum Cyl. And Valve Assembly (+4 from Float 2)	8	8	Rack
67	Anti- Bacterial Spray	Anti-Bacterial Disinfecting Spray, 19 oz can	11	8	1
68	Blue painter's Tape	3" Wide Roll x 60 yards	5	5	1
69	Butyl Rubber Gloves	25 mil Non-Standard Size 12	50	50	9
70	Chemical tape, Kappler	2 in. x 60 yards	5	5	6
71	Compressor, Gasoline Powered	Compressor, Gasoline Powered; Bauer Oceanus G Air- 4500 PSIG 5.5 HP Gasoline Engine, 3-Stage Compressor, Air-Cooled/ Splash Lubricated Triplex		1	Under shelf curbside
72	Equipment Racking System	Installed	1	1	
73	MSA Millennium CBRN Gas mask	Large - (NIOSH Model 10006233)	5	5	8
74	MSA Millennium CBRN Gas mask	10051287 Medium - (NIOSH Model 10006231)	19	19	6,7,8
75	MSA Millennium CBRN Gas Mask Filters	Millennium CBRN Canister	24	24	6,7,8,
76	Nitrile Latex Gloves (Box of 100) XL ONLY	5 mil, Industrial Grade, Ambidextrous	5	5	9
77	Plastic Step Stool	Rubbermaid, 2 Step, Non-folding	8	. 8	Front
78	Scott C100 SCBA PI 200051-01	N-2216 psig, 30 Min. Aluminum Cyl. Neoprene Facepiece	8	8	Front Wall
79	SERVUS Lite & Tuf Vinyl Overboots	15" H, Size 13	12	12	23,24
80	Tingley HazMat Boo	t Size 12	12	12	21,22
81	Toolbox, mechanics	 3-filler set, long neck funnels; tools to work on compressor; large bottles 2-stroke oil; 5gal red safety can; 2gal safety can 	1	1	Under shelf streetside
82	Rubbermaid Action Packer Plastic Box	24 Gallon, 17" H x 18" W x 26" L, Black with Gray lic	24	24	
83	TyChem Level A Su Trainer	it, Responder Training Suit w/Serged Seams, Blue XXL (Have 3 ea XL; 1 ea XXXL; 1ea L (Will get remainder from Float 2	6	6	Front Streetside

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Jamaica (TCD #1)

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Line #	Item	Specs/Description	Reqd	On hand	Packing Location
84	TyChem F Suit	Large	12	12	8
85	TyChem F Suit	X-Large 6/case	12	12	7
86	TyChem F Suit	XX-Large 6/case *	6	6	6
87	TyChem Level A Suit, Test Kit	Lakeland Fully Encapsulating Suit Test Kit	1	1	Rear Curbside under shelf
88	master Lock, contractor Grade	Shielded Padlock, No. 40, Hardened	2	2	
89	TyChem Level A Suit, XXL	Front Entry, XXL, Lime Yellow Model #19-130-0003 (2); adding in (1) XXXL)	3	3	
90	TyChem Level A Suit, L LAKELAND	Front Entry, L, Lime yellow Model #19-130-0001	1	1	17-20
91	TyChem Level A Suit, XL LAKELAND	Front Entry, XL, Lime yellow Model #19-130-0002	3	3	
92	Trailer		1	1	
93	SCBA spare bottle rack	CLEGG	1	1	
94	Zico WalkAway Bracket ATC installs	SCBA hanging Stőrage Rack, Model UN 7 60 2 SFPHS (Dooley Tackaberry)	8	8	

Page 1 of 5

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	A DETECTOR RADIATION ALTER (600-6)	E/	4
	TT TOOL BOX KIT, 16" TRADESMAN'S TOOL BAG, 3/8 MM DEEP SOCKET SET 10 PCG GT AND TO A STATE OF A STA	K	1
	A CKEMICAL, TAPE, KAPPLER. 2 IN x 60 YARD	<u>п</u>	U
	TAPE. CAUTION BARRIER. SIZE 3" X1000 ET VITY ON A	R	n Un
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	PK PAPER, STRIP. PH. WIDE RANGE 1// 100 pp. 5.		~ ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
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	EA VEST TAGE TAGE TAGE TAGE AND		6
	EA SYSTEM. REMOTE AREA LIGHTING. IS HOUR. 2000 LUMENS	2 +	<u> </u>
	BX GLOVES. MAPA BUTOFLEX. SIZE 10. CHEMICAL BEGINT AND A		
	BX CHEMUTE, DURALUME, GREEN, 12HR 50 PER BOX		
	BX CHEMUTE, DURALUME, GREEN 12HB 10 BED DOC	·	
	BX GLOVES. TOUCHNTHER CHEMICAL PRISKER. INTEGRATED. LUDLUM MEASUREMENTS	10	_
	EA DETECTOR RADIATION DAVID TO	2	
	EA BUCKET, 5 GALLON, WHITE, NRC 90 MIL, LETICA, W/ HANDLE AND TOD	6	
	EA BIN, RUBBERMAID, ACTION PACKER, BLACK WITH GRAY LID, 24 GALLON, 26" L & 16" W x 17" H EA TRASH CAN, W WHEELS, TOTTED & A DAY OF THE CARACTERISTIC AND A DAY A	ω 4	
	EA TANK, EMPTY, ALUMINUM CYLINDER AND VALVE A CONCEANED	~ ~	
-	EA SPINE BOARD. WHITE, PLASTIC 7" IBT	ω	
29,865.87	EA LITTER CONVEYOR IN TOOM		•
VALUE (U.S. S)	KIT, CONSISTS OF CBRN TRAILER MATERIALS (KIT 1 of 11)		
	ARTICLES/DATA DESCRIPTION	QUANT	
	hat we have placed an order with the person named in item 2 for the following out it is in the second secon	ve ceruiy ti	
	Amaica Liré Brigade Samaica	Articles/data	5. A
	4. Country of ultimate destination		
08. ÚR	nited States applicant 2 Name 66	Name of U	2.1
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	XL XL USE ONLY. GRAY (N	HEM. ELASTIC HOOD AND WIDDING DEVELOPMENT	ON DUCK. 72" X 16" X 1 75" T MAD	TRAITER MATERIALS (KIT 9 of 11)	TRAILER MATERIALS (KII & OT II)	TRAILER MATERIAL CONTRACTOR	TRAILER MATERIALS (KIT 7 of 11)	TRAILER MATERIALS (KTT 6 of 11)	TRAILER MATERIALS (KIT 5 of 11)	TRAILER MATERIALS (KIT 4 of 11)	TRAILER MATERIALS (KIT 3 of 11)	TRAILER MATERIALS (KIT 2 of 11)	ONTAINS VARIOUS MEDICAL SUPPLIES	RCA. ANDROID 5.0.16GB. 7* HO DISPLAY CHAPCOAL MUTTERS	IER. 42 IN. ORANGE, WEIGHTED BASE	I. SILVER REFECTIVE STRIP. OR ANGE	L BY DURACELL, 24 BATTERIES DED DOV	ILL-FACEPIECE. SINGLE-DOPT ADVIATE OF THE FACE RESPIRATOR	L RD-40, FOR USE WITH ADVANTAGE AND THE	ON. 3 ¹ X 2* X S S*, DOE	X. 65 GALLON, ENPAC VETTOW WITH UD AND WHEELS	GALLON. ENPAC. YEIJ OW WITH IT AND THE	M INSIDE, BLACK MODEL 1500	5* X 25' AMERICAN DED THE CONTRACT FURCHELE ENTRY, 36 INCHES NOT SECOND	BAR, AKRON BRASS COMBANKY TOD COMPANY	JI.	ALL ADULT PRE-OECON. DOE, PROVIDES PERSONAL PRIVACY WHILE REMOVING CONTAINED ATTAC	THE ADDRESS AND	VSEER WILLOW, BLACK WITH CASE	DED VDT LOW 52	BLE-LOCK. GARDNER BENDER, 100 PER PACK	10X50 WIDE	IRE, ADULT, BLACK	TMAX, PYLE, BULLHORN JAMOE ANDE DE TANGE		- BATTERIES	ER INDUSTRIAL SIZE C 12 ON A BACK	TCH BLUE MITTELISE 3M 200 TO TELES	HOSE ORRIT THERE AND A	GALLON DOLATION FOR THE
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Page 4 of 5

believe that it will result, directly or indirectly, in disposition of the articles/data contrary to the representations made in this certificate by any party. We further certify that all of the facts

State, we will not re-export, rescil, or otherwise dispose of any of those articles/data (1) outside the country in item 4 above, or (2) to any person, including the end-user, if there is reason to We certify that we are importing the articles/data listed in item 5 for delivery to the end-user in item 3. Except as specifically authorized by prior written approval of the U.S. Department of

6. Certification of foreign consignee

TOTAL

KT KT KT KT KT KT KT KT EA BX BX BX EA KIT, CYLINDER, ALUMINUM, SCBA RESPIRATOR. COMPRESSED AIR, MSA KIT CONTAINS BREATHING MASK. AIR SUPPLY HOSE. KIT, CYLINDER, ALUMINUM, SCBA RESPIRATOR. COMPRESSED AIR, MSA KIT CONTAINS BREATHING MASK. AIR SUPPLY HOSE. KIT, CYLINDER, ALUMINUM, SCBA RESPIRATOR. COMPRESSED AIR, MSA KIT CONTAINS BREATHING MASK. AIR SUPPLY HOSE. KIT, CYLINDER, ALUMINUM, SCBA RESPIRATOR. COMPRESSED AIR, MSA KIT CONTAINS BREATHING MASK. AIR SUPPLY HOSE. KIT, CYLINDER, ALUMINUM, SCBA RESPIRATOR. COMPRESSED AIR, MSA KIT CONTAINS BREATHING MASK. AIR SUPPLY HOSE. KIT, CYLINDER, ALUMINUM, SCBA RESPIRATOR. COMPRESSED AIR, MSA KIT CONTAINS BREATHING MASK. AIR SUPPLY HOSE. SUPPORT DOCUMENTAT KIT, CYLINDER, ALUMINUM, SCBA RESPIRATOR. COMPRESSED AIR, MSA KIT CONTAINS BREATHING MASK. AIR SUPPLY HOSE. KIT, CYLINDER, ALUMINUM, SCBA RESPIRATOR. COMPRESSED AIR, MSA KIT CONTAINS BREATHING MASK. AIR SUPPLY HOSE. SUITS. COVERALL TRAINING TYVEK SUITS. DUPONT, SIXE XL. BOX OF 25 SUITS. COVERALL TRAINING TYVEK SUITS. DUPONT. SOCE LG. BOX OP 25 LYSOL DISINFECTANT SPRAY. FRESH SCENT, KILLS COLD AND FLU VIRUSES. PROFESSIONAL. 19 OZ SUITS. COVERALL. TRAINING TYVEK SUITS, TYVEK DUPONT, SPCE XXL BOX OF 25 OUTER BOOT FLAPS. DOUBLE STORM FLAP WITH HOOK & LOOP CLOSURE. TWO EXHAUST VALVES. DOUBLE ȚAPED SEAMS. /20MIU PVC. ATTACKED DUAL LAYER GLOVES. INTERNAL MULTI-LAYER LAMINATE/EXTERNAL, BUTYL ATTACHED SOCKS WITH SUIT, (LEVEL A), ENCAPSULATED. EXPANDED BACK, FRONT ENTRY.EXTRA-WIDE VISOR. 3 LAYERS.40MIL, PVC / TEFLON. 5MIU OUTER BOOT FLAPS. DOUBLE STORM FLAP WITH HOOK & LOOP CLOSURE. TWO EXHAUST VALVES. DOUBLE TAPED SEAMS. /20MIU PVC. ATTACKED DUAL LAYER GLOVES. INTERNAL MULTI-LAYER LAMINATE/EXTERNAL. BUTYL ATTACHED SOCKS WITH

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OUTER BOOT FLAPS, DOUBLE STORM FLAP WITH HOOK & LOOP CLOSURE. TWO EXHAUST VALVES. DOUBLE TAPED SEAMS. /20MIU PVC. ATTACKED DUAL LAYER GLOVES. INTERNAL MULTI-LAYER LAMINATE/EXTERNAL. BUTYL ATTACHED SOCKS WITH SUIT, (LEVEL A), ENCAPSULATED. EXPANDED BACK, FRONT ENTRY.EXTRA-WIDE VISOR. 3 LAYERS.40MIL, PVC / TEFLON. 5MIU

COVERALL, DUPONT. TYCHEM. ELASTIC HOOD AND WRISTS. BUILT IN FOOT COVERS.FOR INDUSTRIAL USE ONLY. GRAY IN

VALUE (U.S. S)

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ARTICLES/DATA DESCRIPTION

QUANTITY

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SUIT, (LEVEL A), ENCAPSULATED. EXPANDED BACK, FRONT ENTRY.EXTRA-WIDE VISOR. 3 LAYERS.40MIL, PVC / TEFLON. 5MIU

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ANNEX 7

REPORTING TEMPLATES

A7.1 Site Assessment Forms (Land & Marine) – Template

National Chemical Emergency Response Site Assessment Form (Land)

Nan Inci	ne: dent Sit	e:			Date:	Time:					
1.	Natur	re of Incident:									
	eak	□Explosion		lSpill	□Fire	C	Derailment				
□Ot	her										
2.	Locat	ion of Release									
3.	Conta	uner Type:									
□Tr	uck	□Rail	□Car	$\Box Dr$	um	□Vessel					
□Cy	linder	□Other									
4.	Is the	container labe	elled? If so.	what does	s it conta	in?					
			,					_			
5. Colo Smel Phys Phys	5. Give some characteristics of the material Colour Smell Physical Effects Physical State (solid/liquid/gas)										
6.	Is the	material enter	ring any of	the follow	ing areas	:					
□At	mospher	ee □Wa	ter or Storm	ı drains	□Wate	er Sources	□Soil				
7. Dire Heig Colo	If the ction ht our	material is air	borne, plea	se provide	details o	on any vaj	pour clouds o	or plumes:			
Odo	ur										
8.	Are th	nere any fatalit	ies or injuri	es?							
9.	Is the	spill containe	d?								
10. Add	Has t itional (he site been ev Comments:	vacuated? _								

A7.2 National Chemical Emergency Response Site Assessment Form (Marine)

Name: Local Time:	Date: GMT/UTC Time:								
1. Position/Location of Incident (include	if relevant, Latitude, Longitude, Speed, Bearing)								
2. Nature of Incident:									
Leak Spill Fire Collision Explo	sion \Box Cargo Shifting \Box Cargo Reaction								
□Grounding □Loss of Packages Overboa	rd Dother								
3. Ship Details: Name, Country, Internation	nal Maritime Organisation (IMO) number, Passage								
4. Weather and Sea Conditions (speed, dir WeatherSea	rection, temperature, wave heights etc.):								
5. Hold/Packaging Type:									
Bulk DPackages DContainer	□Intermediate Bulk Container (IBC) □Number of								
tanks/capacities Other									
6. Is the container labelled? If so, what de Chemical Name	oes it contain?								
UN Number IUP	AC/CAS Number								
Container Volume Quan	tity at Risk								
7. Give some characteristics of the chemi	ical								
Colour (Ddour								
Physical Effects									
Physical State (solid/liquid/gas)									
8. Is the spill contained?									
9. Is the chemical being released from th	e ship? If yes, where?								
10.Are any vessel systems affected? If yes, which systems?									
11. Are there any fatalities or injuries? Ho	ow many?								
12.What are the Search and Rescue Needs?									
13.Additional Comments:									

A7.3 Chronological Log – Template

Name:			Agency:
Location	of Incident/	/Facility:	Date:
TIME (e.g. 9:00	-9:30)	ACTIVITY	

Additional Comments:

Signature and Date

A7.4 Facility Investigation Report (Contents)

The Facility Investigation Report is the facility's account of the incident. The report must include but not be limited to information on:

- a. Time and location of incident, type and quantity of material involved
- b. Cause of the incident and any immediate corrective action taken
- c. All steps taken by Primary Responders, regulatory agencies as well as the Facility to contain the chemical release
- d. Any clean-up or monitoring (soil, water or air quality tests) effected as a part of the emergency response
- e. Disposal of contaminated materials
- f. The development of a comprehensive EPRP for the facility to minimize the risk of a reoccurrence or alternately amendments to existing EPRPs or procedures in light of the incident
- g. Any further measures to be employed by the Facility to prevent a possible repeat of the incident

A7.5 Final Incident Report (Contents)

- 1. Investigation findings
 - 1. who, what, when, how, why
 - 2. root cause of the incident and corrective actions
 - 3. critique of the incident
 - 4. assessment of damage
 - 5. cost of incident, expenditures and liability
 - 6. gaps and recommendations regarding occurrence of the incident
- 2. Analysis/Critique of Response by area (i.e. what worked well, what didn't)
 - a. Communication/Flow if information
 - b. Procedures and overall management
 - c. Response roles and activities
 - d. Coordination role and activities
 - e. Overall response effort
 - f. Gaps and Recommendations regarding the response to the incident
- 3. Suggested amendment(s) to the Chemical Emergency Response Protocol based on lessons learnt from the investigation of the incident and analysis of the response to the incident

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