	CIRCULAR 2014-001		
	DEPARTMENT OF MARINE SERVICES AND MERCHANT SHIPPING (ADOMS)		
	MARPOL Annex V – update - Garbage	Ref	MEPC.201(62) MEPC.219(63) MEPC.220(63)

Companies operating ships under the flag of Antigua and Barbuda.
Seafarers in ships registered under the flag of Antigua and Barbuda.

This Circular replaces Circ. 2012-005.

Introduction.
Antigua and Barbuda is a signatory to Annex V of the MARPOL Convention which deals with garbage and its management and disposal on board ships. At the 62nd meeting of the IMO Marine Environmental Protection Committee (MEPC) in 2011 an amendment to Annex V was agreed which came into force on 1st January 2013. The amendment replaces most of the existing text in Annex V of MARPOL and makes some important changes to the requirements for handling and disposal of garbage on and from ships. The amended text of Annex V came into force on 1st January 2013 and is published by the IMO as Resolution MEPC.201 (62).

At the 63rd meeting of the MEPC in 2012 a set of guidelines on implementing the new Annex V were adopted as well as a set of guidelines on the Development of Garbage Management plans. The changes are important and ships should ensure that they have incorporated them on board by 1st January 2013.

At the 64th meeting of the MEPC in 2012 having considered the challenges associated with the classification of solid bulk cargoes and discharge of associated cargo residues in accordance with the requirements of the revised MARPOL Annex V which enter into force on 1 January 2013; recognized that a transitional period for the implementation of this aspect of MARPOL Annex V would greatly facilitate maritime trade of solid bulk cargoes with minimal additional risk to the marine environment.

At the 65th meeting of the MEPC in 2013 minor amendments were made to incorporate E-waste. There are also ongoing discussions regarding modifying the format of garbage record books so companies are advised not to carry too great a stock of books in case they become obsolete.

Key changes to Annex V.
Amongst the changes is a re-definition of garbage which is now defined as:

"Garbage" means all kinds of food wastes, domestic wastes and operational wastes, all plastics, incinerator ashes, cargo residues, cooking oil, fishing gear, and animal carcasses generated during the normal operation of the ship and liable to be disposed of continuously or periodically except those substances which are defined or listed in other Annexes to the present Convention."

This definition considerably extends the scope of what comes under the requirements in Annex V. Operators and seafarers should note in particular that cargo residues will now come completely within Annex V and that;

"Operational wastes" means all solid wastes (including slurries) not covered by other Annexes that are collected on board during normal maintenance or operations of a ship or used for cargo stowage and handling and also includes cleaning agents and additives contained in cargo hold and external wash water.

The approach of the Annex is now also fundamentally changed to state that:

"Discharge of all garbage into the sea is prohibited, except as provided otherwise in regulations 4, 5, 6 and 7 of this Annex". (Regulation 3(1)).

This is a different approach from the previous version of the Annex which took a more permissive approach listing what could be discharged and assuming that discharge was normal.

Regulation 4 now deals with the discharge of garbage outside special areas. It permits some discharges but adds new limits on the disposal of food wastes and includes restrictions on discharge of cargo residues.

Regulation 6 deals with disposal of garbage within special areas. The Special Areas defined in the current version of Annex V have not changed and remain:

- The Mediterranean Sea area,
- The Baltic Sea area,
- The Black Sea area,
- The Red Sea area,
- The Gulfs area,
- The North sea area,
- The Antarctic area, and
- The Wider Caribbean Region.

Each of these areas is defined precisely in the Annex.

Within Special areas the rules on disposal of food wastes are made more stringent, and new requirements on disposal of cargo residues and cleaning agents or additives are added.

Regulation 10 of the new Annex, deals with garbage management plans and garbage record keeping. It reduces the limits at which the requirements for a garbage management plan apply from 400 GT to 100 GT

"Every ship of 100 GT or above, and every ship which is certified to carry 15 or more persons, and fixed and floating platforms, shall carry a garbage management plan which the crew shall follow".

The format and content of the garbage record book (which is required on all ships over 400GT) has been changed and the entries required in it have been expanded. The categories of garbage to be recorded have also been expanded and the layout of the tables for recording discharges has been changed. The previous text of Annex V which included Categories 1 to 6 for types of garbage is changed to show 9 Categories of garbage labelled "A" to "I". This will mean a change in the way the record book is kept and all those involved in the management of garbage on board should be aware of this.

Owners should ensure that Garbage Record Books complying with the requirements are on board ships

The placards previously required in Regulation 9 are still required but a new approved format is included in the Guidelines for Implementation. The sample placards in the guidelines are the following for most applications:

Discharge of all garbage into the sea is prohibited except provided otherwise

The MARPOL Convention and domestic law prohibit the discharge of most garbage from ships. Only the following garbage types are allowed to be discharged and under the specified conditions.

Outside Special Areas designated under MARPOL Annex V:

- Comminuted or ground food wastes (capable of passing through a screen with openings no larger than 25 millimetres) may be discharged not less than 3 nautical miles from the nearest land.
- Other food wastes may be discharged not less than 12 nautical miles from the nearest land.
- Cargo residues classified as not harmful to the marine environment may be discharged not less than 12 nautical miles from the nearest land.
- Cleaning agents or additives in cargo hold, deck and external surfaces washing water may be discharged only if they are not harmful to the marine environment.
- With the exception of discharging cleaning agents in washing water, the ship must be en route and as far as practicable from the nearest land.

Inside Special Areas designated under MARPOL Annex V

- More stringent discharge requirements apply for the discharges of food wastes and cargo residues; AND
- Consult Annex V and the shipboard garbage management plan for details.

For all areas of the sea, ships carrying specialized cargos such as live animals or solid bulk cargoes should consult Annex V and the associated Guidelines for the implementation of Annex V.

Discharge of any type of garbage must be entered in the Garbage Record Book
Violation of these requirements may result in penalties.

For fixed or floating platforms and ships operating within 500 m of them the following format is approved.

Discharge of all garbage into the sea is prohibited except provided otherwise

The MARPOL Convention and domestic law prohibit the discharge of all garbage into the sea from fixed or floating platforms and from all other ships when alongside or within 500 metres of such platforms.

Exception: Comminuted or ground food wastes may be discharge from fixed or floating platforms located more than 12 miles from the nearest land and from all other ships when alongside or within 500 metres of such platforms.

Comminuted or ground food wastes must be capable of passing through a screen no larger than 25 millimetres.

Discharge of any type of garbage must be entered in the Garbage Record Book
Violation of these requirements may result in penalties.

For use targeting passengers the following is approved:

Discharge of all garbage into the sea is prohibited except provided otherwise

The MARPOL Convention and domestic law generally prohibit the discharge of most forms of garbage from ships into the sea.

Violation of these requirements may result in penalties.

All garbage is to be retained on board and placed in the bins provided.

For the full text of the changes and the layout of the new garbage record book operators should refer to the Resolution.

Guidelines on implementing Annex V.
The IMO guidelines for implementation of Annex V are in MEPC. Res 219(63). The guidelines are comprehensive and wide ranging. For the assistance of those involved with Antigua and Barbuda ships, Appendix 1 to this Circular contains an abbreviated part of these guidelines. Sections that are addressed purely to Governments and sections on fishing gear and disposal of animal carcasses which are specialised areas have been omitted in order to keep this Circular concise. Those wishing to see the full text should refer to the Resolution.

It is recommended that the full text of the Guidelines is made available on every Antigua and Barbuda ship for the reference of seafarers.

Garbage Management Plans.
The IMO have also prepared guidance on Garbage Management Plans as MEPC Res. 220(63). For the assistance of owners and seafarers the text of this guidance is reproduced here as Appendix 2 to this Circular.

Actions required.
The changes that came into force on January 2013 required changes to garbage record books, to the garbage management plans on many ships as well as changes to procedures on board and changes to placards and other aspects. Flag State inspectors will be expecting to see the revised Annex V fully implemented at Annual Safety Inspections after 1st Jan 2013 and it is to be assumed that from the same date Port State Control officers in all areas will have been paying particular attention to these changes.

Summary of the requirements
The table included in the Guidelines on Implementation is reproduced overleaf for guidance.

SUMMARY OF RESTRICTIONS TO THE DISCHARGE OF GARBAGE INTO THE SEA UNDER REGULATIONS 4, 5 AND 6 OF MARPOL ANNEX V

Garbage type [1]	**All ships except platforms** [4]		**Offshore platforms located more than 12 nm from nearest land and ships when alongside or within 500 metres of such Platforms** [4] **Regulation 5**
	Outside special areas Regulation 4 (Distances are from the nearest land)	**Within special areas Regulation 6 (Distances are from nearest land or nearest ice-shelf)**	
Food waste comminuted or ground [2]	>3 nm, en route and as far as practicable	>12 nm, en route and as far as practicable [3]	Discharge permitted
Food waste not comminuted or ground	>12 nm, en route and as far as practicable	Discharge prohibited	Discharge prohibited
Cargo residues [5, 6] not contained in washwater	> 12 nm, en route and as far as practicable	Discharge prohibited	Discharge prohibited
Cargo residues [5, 6] contained in washwater		> 12 nm, en route and as far as practicable (subject to conditions in regulation 6.1.2)	
Cleaning agents and Additives [6] contained in cargo hold washwater	Discharge permitted	> 12 nm, en route and as far as practicable (subject to conditions in regulation 6.1.2)	Discharge prohibited
Cleaning agents and Additives [6] in deck and external surfaces washwater		Discharge permitted	
All other garbage including plastics, synthetic ropes, fishing gear, plastic garbage bags, incinerator ashes, clinkers,	Discharge prohibited	Discharge prohibited	Discharge prohibited

cooking oil, floating dunnage, lining and packing materials, paper, rags, glass, metal, bottles, crockery and similar refuse			
Animal Carcasses (should be split or otherwise treated to ensure the carcasses will sink immediately)	Must be en route and as far from the nearest land as possible. Should be >100 nm and maximum water depth	Discharge prohibited	Discharge prohibited

[1] When garbage is mixed with or contaminated by other harmful substances prohibited from discharge or having different discharge requirements, the more stringent requirements shall apply.

[2]. Comminuted or ground food wastes must be able to pass through a screen with mesh no larger than 25 mm.

[3]. The discharge of introduced avian products in the Antarctic area is not permitted unless incinerated, autoclaved or otherwise treated to be made sterile.

[4.] Offshore platforms located 12 nm from nearest land and associated ships include all fixed or floating platforms engaged in exploration or exploitation or associated processing of seabed mineral resources, and all ships alongside or within 500 m of such platforms.

[5]. Cargo residues mean only those cargo residues that cannot be recovered using commonly available methods for unloading.

[6]. These substances must not be harmful to the marine environment.

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APPENDIX 1

Abbreviated version of the 2012 IMO Guidelines on the Implementation of MARPOL Annex V.
(This is not the full text of the Guidelines; it has been abbreviated for ease of use)

1. INTRODUCTION

1.1. The revised MARPOL Annex V with an entry into force date of 1 January 2013 prohibits the discharge of all types of garbage into the sea unless explicitly permitted under the Annex. These guidelines have been developed taking into account the regulations set forth in Annex V, as amended, of the International Convention for the Prevention of Pollution from Ships, (MARPOL) (hereinafter referred to as the "Convention"). The purpose of these guidelines is to provide guidance to governments, shipowners, ship operators, ships' crews, cargo owners, port reception facility operators and equipment manufacturers. The guidelines are divided into the following six sections that provide a general framework upon which governments can formulate programmes:

- Introduction;
- Garbage management;
- Management of cargo residues of solid bulk cargoes;
- Training, education and information;
- Port reception facilities for garbage; and
- Enhancement of compliance with MARPOL Annex V.

1.2. Under the revised MARPOL Annex V, discharge of all garbage is now prohibited, except as specifically permitted in regulations 3, 4, 5 and 6 of MARPOL Annex V. MARPOL Annex V reverses the historical presumption that garbage may be discharged into the sea based on the nature of the garbage and defined distances from shore. Regulation 7 provides limited exceptions to these regulations in emergency and non-routine situations.

Generally, discharge is restricted to food wastes, identified cargo residues, animal carcasses, and identified cleaning agents and additives and cargo residues entrained in washwater which are not harmful to the marine environment. It is recommended that ships use port reception facilities as the primary means of discharge for all garbage.

1.3. Recognizing that the Annex V regulations continue to restrict the discharge of garbage into the sea, require garbage management for ships, and that garbage management technology continues to evolve, it is recommended that governments and the Organization continue to gather information and review these guidelines periodically.

1.4. Regulation 8 of MARPOL Annex V provides that Governments must ensure the provision of adequate port reception facilities for garbage from ships and should facilitate and promote their use. Section 5 provides guidelines for these facilities.

1.5. The Convention provides definitions for terms used throughout these guidelines. Section 1.6 includes relevant aspects of these definitions, followed by other definitions which are useful for these guidelines.

1.6. **Definitions**

1.6.1. ***Dishwater*** means the residue from the manual or automatic washing of dishes and cooking utensils which have been pre-cleaned to the extent that any food particles adhering to them would not normally interfere with the operation of automatic dishwashers.

1.6.2. ***Grey water*** means drainage from dishwater, shower, laundry, bath and washbasin drains. It does not include drainage from toilets, urinals, hospitals, and animal spaces, as defined in regulation 1.3 of MARPOL Annex IV (sewage), and it does not include drainage from cargo spaces. Grey water is not considered garbage in the context of Annex V.

1.6.3. ***Recycling*** means the activity of segregating and recovering components and materials for reprocessing.

1.6.4. ***Reuse*** means the activity of recovering components and materials for further use without reprocessing.

1.7. **Application.**

1.7.1. This section provides clarification as to what should and should not be considered garbage under MARPOL Annex V.

1.7.2. Ash and clinkers from shipboard incinerators and coal-burning boilers should be considered as operational wastes within the meaning of regulation 1.12 of MARPOL Annex V, and therefore are included in the term garbage, within the meaning of regulation 1.9 of MARPOL Annex V.

1.7.3. The definition of "operational wastes" (regulation 1.12 of MARPOL Annex V) excludes grey water, bilge water, or other similar discharges essential to the operation of a ship. "Other similar discharges" essential to the operation of a ship include, but are not limited to, the following:

- boiler/economizer blowdown;
- boat engine wet exhaust;
- chain locker effluent;
- controllable pitch propeller and thruster hydraulic fluid and other oil to sea interfaces (e.g. thruster bearings, stabilizers, rudder bearings, etc.);
- distillation/reverse osmosis brine;
- elevator pit effluent;
- firemain systems water;
- freshwater lay-up;
- gas turbine washwater;
- motor gasoline and compensating discharge;
- machinery wastewater;
- pool, spa water and recreational waters;
- sonar dome discharge; and
- welldeck discharges.

1.7.4. While cleaning agents and additives contained in hold washwater, and deck and external surface washwater are considered "operational wastes" and thus "garbage" under Annex V, these cleaning agents and additives may be discharged into the sea so long as they are not harmful to the marine environment.

1.7.5. A cleaning agent or additive is considered not harmful to the marine environment if it:

- is not a "harmful substance" in accordance with the criteria in MARPOL Annex III; and

- does not contain any components which are known to be carcinogenic, mutagenic or reprotoxic (CMR).

1.7.6. The ship's record should contain evidence provided by the producer of the cleaning agent or additive that the product meets the criteria for not being harmful to the marine environment. To provide an assurance of compliance, a dated and signed statement to this effect from the product supplier would be adequate for the purposes of a ship's record. This might form part of a Safety Data Sheet or be a stand-alone document but this should be left to the discretion of the producer concerned.

1.7.7. Releasing small quantities of food into the sea for the specific purpose of fish feeding in connection with fishing or tourist operations should not be considered a discharge of garbage in the context of Annex V.

1.7.8. Fishing gear that is released into the water with the intention for later retrieval, such as fish aggregating devices (FADs), traps and static nets, should not be considered garbage or accidental loss in the context of Annex V.

2. GARBAGE MANAGEMENT

2.1. **Waste Minimization**

2.1.1. All shipowners and operators should minimize taking onboard material that could become garbage. Ship-specific garbage minimization procedures should be included in the Garbage Management Plan. It is recommended that manufacturers, cargo owners, ports and terminals, shipowners and operators and governments consider the management of garbage associated with ships' supplies, provisions, and cargoes as needed to minimize the generation of garbage in all forms.

2.1.2. When making supply and provisioning arrangements, shipowners and operators, where possible, with the ships suppliers should consider the products being procured in terms of the garbage they will generate. Options that should be considered to decrease the amount of such garbage include the following:

- using supplies that come in bulk packaging, taking into account factors such as adequate shelf-life (once a container is open) to avoid increasing garbage associated with such products;

- using supplies that come in reusable or recyclable packaging and containers; avoiding the use of disposable cups, utensils, dishes, towels and rags and other convenience items whenever possible; and

- avoiding supplies that are packaged in plastic, unless a reusable or recyclable plastic is used.

2.1.3. When considering selection of materials for stowage and securing of cargo or protection of cargo from the weather, shipowners and operators should consider how much garbage such materials will generate. Options that should be considered to decrease the amount of such garbage include the following:

- using permanent reusable coverings for cargo protection instead of disposable or recyclable plastic sheeting;

- using stowage systems and methods that reuse dunnage, shoring, lining and packing materials; and

- discharging to port reception facilities the dunnage, lining and packaging materials generated in port during cargo activities as its discharge into the sea is not permitted.

2.1.4. This section is omitted as applicable only to Governments.

2.1.5. Regulation 3 of MARPOL Annex V provides that the discharge of garbage into the sea is prohibited, with limited exceptions, as summarized in table 1. Under certain conditions discharge into the sea of food wastes, animal carcasses, cleaning agents and additives contained in hold washwater, deck and external surface washwater and cargo residues which are not considered to be harmful to the marine environment is permitted.

2.1.6. Compliance with Annex V involves personnel, equipment and procedures for collecting, sorting, processing, storing, recycling, reusing and discharging garbage. Economic and procedural considerations associated with these activities include storage space requirements, sanitation, equipment and personnel costs and in port garbage service charges.

2.1.7. Compliance with the provisions of Annex V involves careful planning by the ship's owner and operator and proper execution by crew members as well as other seafarers. The most appropriate procedures for handling and storing garbage on board ships may vary depending on factors such as the type and size of the ship, the area of operation (e.g. special area, distance from nearest land or ice-shelf), shipboard garbage processing equipment and storage space, number of crew or passengers, duration of voyage, and regulations and reception facilities at ports of call. However, in view of the cost involved with the different garbage handling options, it is economically advantageous to first, limit the amount of material that may become garbage from being brought on board the ship and second, separate garbage eligible for discharge into the sea from other garbage that may not be discharged into the sea. Proper management of containers and packaging coming on board and proper handling and storage can minimize shipboard storage space requirements and enable efficient transfer of retained garbage to port reception facilities for proper handling (i.e. recycling, reuse) or land-based disposal.

2.2. Fishing gear.

2.2.1. *This section is not included here as there are no fishing vessels registered.*

2.3. **Shipboard garbage handling (collection, processing, storage, discharge)**

2.3.1. Regulation 3 of MARPOL Annex V provides that the discharge of garbage into the sea is prohibited, with limited exceptions, as summarized in table 1. Under certain conditions discharge into the sea of food wastes, animal carcasses, cleaning agents and additives contained in hold washwater, deck and external surface washwater and cargo residues which are not considered to be harmful to the marine environment is permitted.

2.3.2. Compliance with Annex V involves personnel, equipment and procedures for collecting, sorting, processing, storing, recycling, reusing and discharging garbage. Economic and procedural considerations associated with these activities include storage space requirements, sanitation, equipment and personnel costs and in port garbage service charges.

2.3.3. Compliance with the provisions of Annex V involves careful planning by the ship's owner and operator and proper execution by crew members as well as other seafarers. The most appropriate procedures for handling and storing garbage on board ships may vary depending on factors such as the type and size of the ship, the area of operation (e.g. special area, distance from nearest land or ice-shelf), shipboard garbage processing equipment and storage space, number of crew or passengers, duration of voyage, and regulations and reception facilities at ports of call. However, in view of the cost involved with the different garbage handling options, it is economically advantageous to first, limit theamount of material that may become garbage from being brought on board the ship and second, separate garbage eligible for discharge into the sea from other garbage that may not be discharged into the sea. Proper management of containers and packaging coming on board and proper handling and storage can minimize shipboard storage space requirements and enable efficient transfer of retained garbage to port reception facilities for proper handling (i.e. recycling, reuse) or land-based disposal.

2.3.4. Every ship of 100 gross tonnage and above, and every ship certified to carry 15 or more persons, and fixed and floating platforms are required to carry and implement a garbage management plan that specifies procedures to be followed to ensure proper and efficient handling and storage of garbage. A garbage management plan should be developed that can be incorporated into crew and ship operating manuals. Such manuals should identify crew responsibilities (including an Environmental Control Officer) and procedures for all aspects of handling and storing garbage on board the ship. Procedures for handling ship-generated garbage are divided into four phases: collection, processing, storage, and discharge. A generalized garbage management plan for handling and storing ship-generated garbage is presented in table 2. Specific procedures for each phase are discussed below.

2.4. **Collection**

2.4.1. Procedures for collecting garbage generated on board should be based on the\ consideration of what is permitted and what is not permitted to be discharged into the sea while en route, and whether a particular garbage type can be discharged to port facilities for recycling or reuse. The details of these procedures should be written in the garbage management plan.

2.4.2. To reduce or avoid the need for sorting after collection and to facilitate recycling, it is recommended that distinctively marked garbage receptacles be provided on board the ship to receive garbage as it is generated. Receptacles on board can be in the form of drums, metal bins, cans, container bags, or wheelie bins. Any receptacles on deck areas, poop decks or areas exposed to the weather should be secured on the ship and have lids that are tight and securely fixed. All garbage receptacles should be secured to prevent loss, spillage, or loss of any garbage that is deposited in the receptacles. Receptacles should be clearly marked and distinguishable by graphics shape, size, or location. Receptacles should be placed in appropriate spaces throughout the ship (e.g. the engine-room, mess deck, wardroom, galley, and other living or working spaces) and all crew members and passengers should be advised of what garbage should and should not be placed in them.

2.4.3. The recommended garbage types that should be separated are:

- non-recyclable plastics and plastics mixed with non-plastic garbage;
- rags;
- recyclable material:
- cooking oil;
- glass;
- aluminium cans;
- paper, cardboard, corrugated board;
- wood;
- metal;
- plastics; (including styrofoam or other similar plastic material); and
- garbage that might present a hazard to the ship or crew (e.g. oily rags, light bulbs, acids, chemical, batteries, etc.).
- E-waste generated on board (e.g. electronic cards, gadgets, instruments, equipment, computers, printer cartridges, etc.).

2.4.4. Crew responsibilities should be assigned for collecting or emptying these receptacles and taking the garbage to the appropriate processing or storage location. Use of such a system facilitates subsequent shipboard processing and minimizes the amount of garbage which must be stored on board ship for return to port.

Plastics and plastics mixed with non-plastic garbage.

2.4.5. Plastics are used for a variety of marine purposes including, but not limited to, packaging (vapour-proof barriers, bottles, containers, liners, bags, cargo wrapping material, foam cushioning material, etc.); ship construction (fibreglass and laminated structures, siding, piping, insulation, flooring, carpets, fabrics, paints and finishes, adhesives, electrical and electronic components, etc.); disposable eating utensils (styrofoam plates, bowls, food containers, cups, etc.); bags; sheeting; floats; fishing nets; fishing lines; strapping bands; wire rope with synthetic fibre sheaths; combination wire rope; rope; line; sails; and many other manufactured plastic items.

2.4.6. Regulation 3.2 of Annex V prohibits the discharge of all plastics into the sea. When plastic is mixed with other garbage, the mixture must be treated as if it were all plastic. The most stringent procedures for the handling and discharge should be followed taking into account the applicable provisions of the garbage management plan.

Food wastes

2.4.7. Some governments have regulations for controlling human, plant, and animal diseases that may be carried by foreign food wastes and materials that have been associated with them (e.g. food packing and disposable eating utensils, etc.). These regulations may require incinerating, sterilizing, double bagging or other special treatment of garbage to destroy possible pest and disease organisms. This type of garbage should be kept separate from other garbage and preferably retained for discharge at port reception facilities in accordance with the laws of the receiving country. Governments are reminded of their obligation to ensure the provision of adequate reception facilities. Precautions must be taken to ensure that plastics contaminated by food wastes (e.g. plastic food wrappers) are not discharged into the sea with other food wastes.

Synthetic fishing net and line scraps

2.4.8. As regulation 3.2 of MARPOL Annex V prohibits the discharge into the sea of synthetic fishing net and line scraps generated by the repair or operation of fishing gear, these items should be collected in a manner that avoids their loss overboard. Such material may be incinerated, compacted, or stored along with other plastics or it may be preferable to keep it separate from other types of garbage if it has strong odour or is present in great volume. Unless such garbage is appropriately incinerated, the atmospheric incineration products could be toxic. Onboard incineration should follow regulation 16 of MARPOL Annex VI.

Recovery of garbage at sea

2.4.9. Seafarers are encouraged to recover persistent garbage from the sea during routine operations as opportunities arise and prudent practice permits, and they are encouraged to retain the material for discharge to port reception facilities.

2.5. **Processing**

2.5.1. Depending on factors such as the type of ship, area of operation, number of crew or passengers, etc., ships may be equipped with incinerators, compactors, comminuters, or other devices for shipboard garbage processing (see sections 2.8 to 2.11). Appropriate members of the crew should be trained and assigned responsibility for operating this equipment on a schedule commensurate with ship needs. In selecting appropriate processing procedures, the following should be considered.

2.5.2. Use of compactors, incinerators, comminuters, and other such devices has a number of advantages, such as, reducing shipboard space requirements for storing garbage, and making it easier to discharge garbage at port reception facilities.

2.5.3. It should be noted that special rules on incineration under domestic law may apply in some ports and may exist in some special areas. Incineration of hazardous materials (e.g. scraped paint, impregnated wood) and certain types of plastics (e.g. PVC-based plastics or other plastics containing hazardous chemicals) calls for special precaution due to the potential environmental and health effects from combustion of by-products. The problems of combustion of by-products are discussed in 2.11.3.

2.5.4. Ships operating primarily in special areas or within three nautical miles from the nearest land or ice-shelf are greatly restricted in what they can discharge. These ships should choose between storage of either compacted or uncompacted material for discharging at port reception facilities or incineration with retention of ash and clinkers. The type of ship and the expected volume and type of garbage generated determine the suitability of compaction, incineration or storage options.

2.6. **Storage**

2.6.1. Garbage collected from throughout the ship should be delivered to designated processing or storage locations. Garbage that must be returned to port for discharge at port reception facilities may require storage until arrangements can be made to discharge it ashore for appropriate processing. In all cases, garbage should be stored in a manner which avoids health and safety hazards. The following points should be considered when selecting procedures for storing garbage;

- sufficient storage space and equipment (e.g. cans, drums, bags or other containers) should be provided. Where storage space is limited, ship operators are encouraged to consider the installation of compactors or incinerators. To the extent possible, all processed and unprocessed garbage stored for any length of time should be in tight, securely covered containers in order to prevent the unintentional discharge of stored garbage;

- food wastes and other garbage to be returned to port and which may carry diseases or pests should be stored in tightly covered containers and be kept separate from garbage which does not contain such food wastes. Quarantine arrangements in some countries may require double bagging of this type of waste. Both types of garbage should be stored in separate clearly marked containers to avoid incorrect discharge and facilitate proper handling and treatment on land; and

- cleaning and disinfecting are both preventative and remedial pest control methods that should be applied regularly in garbage storage areas.

2.7. **Discharge.**

2.7.1. Although discharge into the sea of limited types of garbage is permitted under Annex V, discharge of garbage to port reception facilities should be given primary consideration. When discharging garbage, the following points should be considered:

- regulations 4, 5, and 6 of MARPOL Annex V, summarized in table 1, set forth the requirements for garbage permitted to be discharged into the sea. In general the discharge shall take place when the ship is en route and as far as practicable from the nearest land. Attempts should be made to spread the discharge over as wide an area as possible and in deep water (50 metres or more). Prevailing currents and tidal movements should be taken into consideration when discharging into the sea is permitted; and

- to ensure timely transfer of large quantities of ship-generated garbage to port reception facilities, it is essential for shipowners, operators or their agents to make arrangements well in advance for garbage reception. At the same time, discharge needs should be identified in order to make arrangements for garbage requiring special handling or other necessary arrangements. Advice should be provided to the port of the type of garbage to be discharged and whether it is separated and the estimated amounts. The port may have special discharge requirements for food wastes and related garbage which may carry certain disease or pest organisms, dunnage, batteries, medicines, outdated pyrotechnics or unusually large, heavy, or odorous derelict fishing gear, etc.

2.8. **Shipboard equipment for processing garbage,**

2.8.1. The choice of options for garbage processing depends largely upon personnel limitations, generation rate, capacity, vessel configuration, voyage route and availability of port reception facilities. The type of equipment available for shipboard garbage handling includes incinerators, compactors, comminuters and their associated hardware.

2.9. **Grinding or comminution,**

2.9.1. The discharge of comminuted food wastes may be permitted under regulations 4.1.1 and 6.1.1 of MARPOL Annex V whilst the ship is en route. Such comminuted or ground food waste must be capable of passing through a screen with openings no greater than 25 mm.

2.9.2. A wide variety of food waste grinders is available on the market and most modern ships' galleys have the equipment needed to produce a slurry of food particles and water that washes easily through the required 25 mm screen. Output ranges from 10 to 250 litres per minute. The discharge from shipboard comminuters should be directed into an appropriately constructed holding tank when the vessel is operating within an area where discharge is prohibited.

2.9.3. Size reduction of certain other garbage items can be achieved by shredding or crushing and machines for carrying out this process are available for use on board ships.

2.9.4. Information on the development, advantages and use of comminuters for processing food waste aboard ships should be forwarded to the Organization for sharing between interested parties.

2.9.5. Outside special areas, ships operating primarily beyond three nautical miles from the nearest land are encouraged to install and use comminuters to grind food wastes to a particle size capable of passing through a screen with openings no larger than 25 mm. Regulation 4 requires comminuting or grinding food wastes if the food wastes are to be discharged between three and 12 nautical miles from the nearest land. Although unprocessed food wastes may be discharged beyond 12 nautical miles, it is recommended that comminuters be used as they hasten assimilation into the marine environment. Because food wastes comminuted with plastics cannot be discharged into the sea, all plastic materials need to be removed before food wastes are placed into a comminuter or grinder.

2.9.6. When operating *inside* a special area, regulation 6 of MARPOL Annex V requires all food wastes to be comminuted or ground prior to discharge in to the sea. All discharges are to be as far as practicable and not less than 12 nautical miles from the nearest land or ice-shelf.

2.10. **Compaction.**

2.10.1. Most garbage can be compacted to some degree; the exceptions include unground plastics, fibre and paper board, bulky cargo containers and thick metal items. Pressurized containers should not be compacted or shredded without the use of specialized equipment designed for this purpose because they present an explosion hazard in standard compactors.

2.10.2. Compaction reduces the volume of garbage. In most cases, the output from a compactor is a block of material which facilitates the shipboard storage of garbage and its discharging of the material in a port facility. It should be taken into account that the output from a compactor might be subject to quarantine, sanitary or health requirements or other requirements from the port reception facilities and advice from local authorities should be sought on any standards or requirements which are additional to those set by the Organization.

2.10.3. Compactors have options including sanitizing, deodorizing, adjustable compaction ratios, bagging in plastic or paper, boxing in cardboard (with or without plastic or wax paper lining), baling, etc. Compacted materials should be stored appropriately. While metal and plastic bales can get wet, paper and cardboard bales should be kept dry.

2.10.4. If grinding machines are used prior to compaction, the compaction ratio can be increased and the storage space decreased. Careful investigation of the appropriate compaction machine should be undertaken, based on the type and volume of material that will be compacted, as not all compactor require grinding. Compaction is just one step in the solid waste management scheme and the shipowner/operator should ensure all phases of garbage management are described in their Garbage Management Plan. Proper care should be taken when handling and storing binder wrap to prevent it from accidentally entering the marine environment.

2.10.5. A compactor should be installed in a compartment with adequate room for operating and maintaining the unit and storing garbage to be processed. The compartment should be located adjacent to the areas of food processing and commissary store-rooms. If not already required by regulation, it is recommended that the space should have freshwater wash down service, coamings, deck drains, adequate ventilation and hand or automatic fixed fire-fighting equipment.

2.10.6. Information on the development and use of shipboard compactors should be forwarded to the Organization for sharing between interested parties.

Examples of garbage	**Special handling by vessel personnel before compaction**	**Compaction characteristics**			**Onboard Storage space**
		Rate of alteration	**Retainment of Compacted form**	**Density of compacted form**	
Metal, food and beverage containers, glass, small wood pieces	None	Very rapid	Almost 100%	High	Minimum
Comminuted plastics, fibre and paper board	Minor – reduce material to size for feed, minimal manual labour	Rapid	Approximately 80%	Medium	Minimum
Small metal drums, uncomminuted cargo packing, large pieces of wood	Moderate – longer manual labour time required to size material for feed	Slow	Approximately 50%	Relatively low	Moderate
Uncomminuted plastics	Major – very long manual labour time to size material for feed; usually impractical	Very slow	Less than 10%	Very low	Maximum
Bulky metal cargo containers, thick metal items	Impractical for shipboard compaction; not feasible	Not applicable	Not applicable	Not applicable	Maximum

2.11. Incineration

2.11.1. Ash and clinkers from shipboard incinerators should be considered as operational waste and, therefore, as garbage that is not eligible for discharge into the sea.

2.11.2. Incineration conducted in a shipboard incinerator can significantly reduce the need to store garbage on board the ship. Shipboard incinerators should be designed, constructed, operated and maintained in accordance with the IMO Standard Specification for Shipboard Incinerators (footnote 3). MARPOL Annex VI requires shipboard incinerators installed after 1 January 2000 to be type approved and meet specific air pollution criteria. Incinerators should only be used to incinerate materials that are specified by the incinerator manufacturer.

2.11.3. In general, shipboard incineration should not be undertaken when the ship is in port or at offshore terminal. Some ports may have domestic laws that specify additional air emission restrictions, particularly those near high population areas. The use of a shipboard incinerator may require permission from the port authority concerned.

2.11.4. Table 4 (in the Resolution) presents options for incineration of garbage, and includes considerations for special handling by vessel personnel, combustibility, reduction in volume, residual materials exhaust, and onboard storage space. Most garbage is amenable to incineration with the exception of metal and glass.

2.11.5. Some of the disadvantages of incinerators may include the possible hazardous nature of the ash or vapour, dirty operation, excessive labour required for charging, stoking and ash removal. Some incinerators may not be able to meet air pollution regulations imposed in some ports and harbours or by flag and coastal States when such matters are subject to their jurisdiction. Some of these disadvantages can be remedied by automatic equipment for charging and stoking, however, the additional equipment to perform automatic functions will require more installation space.

2.11.6. The incineration of garbage that contains a large amount of plastic involves very specific incinerator settings such as higher oxygen injection and higher temperatures (850 to 1,200°C). If these special conditions are not met, depending on the type of plastic and conditions of combustion, some toxic gases can be generated in the exhaust stream, including vaporized hydrochloric (HCl) and hydrocyanic (HCN) acids. These and other intermediary products of combustion of waste containing plastics are toxic to humans and marine life.

2.11.7. Onboard incineration of garbage may reduce the volume of garbage subject to quarantine requirements in some countries. However, incinerator ash may still be subject to local quarantine, sanitary or health requirements. Advice should be sought from local authorities regarding requirements that are in addition to MARPOL. For example, higher temperatures and more complete combustion may be required to effectively destroy organisms that present a risk.

2.11.8. Information on the development and advantages on the use of shipboard incinerator systems should be forwarded to the Organization for sharing between interested parties.

2.12. **Animal Carcasses**

2.12.1. This section is omitted to save space; those requiring guidance on this should refer to the full text of the Resolution.

3. MANAGEMENT OF CARGO RESIDUES OF SOLID BULK CARGOES.

3.1. Cargo residues are included in the definition of garbage within the meaning of Annex V, regulation 1.9 and may be discharged in accordance with regulations 4.1.3 and 6.1.2. However, cargo material contained in the cargo hold bilge water should not be treated as cargo residues if the cargo material is not harmful to the marine environment and the bilge water is discharged from a loaded hold through the ship's fixed piping bilge drainage system.

3.2. Cargo residues are considered harmful to the marine environment and subject to regulations 4.1.3 and 6.1.2.1 of the revised MARPOL Annex V if they are residues of solid bulk substances which are classified according to the criteria of the United Nations Globally Harmonized System for Classification and Labelling of Chemicals (UN GHS) meeting the following parameters:

- Acute Aquatic Toxicity Category 1; and/or
- Chronic Aquatic Toxicity Category 1 or 2; and/or
- Carcinogenicity Category 1A or 1B combined with not being rapidly degradable and having high bioaccumulation; and/or
- Mutagenicity Category 1A or 1B combined with not being rapidly degradable and having high bioaccumulation; and/or
- Reproductive Toxicity Category 1A or 1B combined with not being rapidly degradable and having high bioaccumulation; and/or,
- Specific Target Organ Toxicity Repeated Exposure Category 1 combined with not being rapidly degradable and having high bioaccumulation; and/or
- Solid bulk cargoes containing or consisting of synthetic polymers, rubber, plastics, or plastic feedstock pellets (this includes materials that are shredded, milled, chopped or macerated or similar materials).

3.2.2. Cargo residues that are harmful to the marine environment may require special handling not normally provided by reception facilities. Ports and terminals receiving such cargoes should have adequate reception facilities for all relevant residues, including when contained in washwater.

3.2.3. Solid bulk cargoes should be classified and declared by the shipper as to whether or not they are harmful to the marine environment. Such declaration should be included in the information required in section 4.2 of the IMSBC Code.

3.2.4. Ports, terminals and ship operators should consider cargo loading, unloading and onboard handling practices in order to minimize production of cargo residues. Cargo residues are created through inefficiencies in loading, unloading, onboard handling. Options that should be considered to decrease the amount of such garbage include the following:

- ensuring ships are suitable to carry the intended cargo and also suitable for unloading the same cargo using conventional unloading methods;
- unloading cargo as efficiently as possible, utilizing all appropriate safety precautions to prevent injury or ship and equipment damage and to avoid or minimize cargo residues; and
- minimising spillage of the cargo during transfer operations by carefully controlling cargo transfer operations, both on board and from dockside. This should include effective measures to enable immediate communications between relevant ship and shore-based personnel during the transfer operations and when feasible, enclosure of conveyance devices such as conveyor belts. Since this spillage typically occurs in port, it should be completely cleaned up immediately following the loading and unloading event and handled as cargo; delivering it into the intended cargo space or into the appropriate unloading holding area.

Provisional classification of solid bulk cargoes under the revised MARPOL Annex V between 1 January 2013 and 31 December 2014

.1 for the purposes of complying with regulations 4.1.3 and 6.1.2 of the revised MARPOL Annex V, shippers of solid bulk cargoes should classify those cargoes using the seven criteria in paragraph 3.2 of the *2012 Guidelines for the implementation of MARPOL Annex V*. Shippers should notify the competent authorities of the port State of loading and unloading of the basis for the provisional classification. As stated in paragraph 3.4 of the 2012 Guidelines, solid bulk cargoes should be classified and declared by the shipper as to whether or not they are harmful to the marine environment. Such declaration as to whether or not the cargo is harmful to the marine environment should be included in the information required in section 4.2 of the International Maritime Solid Bulk Cargoes Code;

.2 between 1 January 2013 and 31 December 2014, if adequate and reliable data on a solid bulk cargoes carcinogenicity, mutagenicity, reproductive toxicity, or specific target organ toxicity – repeated exposure are not available, shippers of solid bulk cargoes should still make every effort to ensure that their solid bulk cargoes are classified to the extent possible using the seven criteria in paragraph 3.2 of the 2012 Guidelines;

.3 also, between 1 January 2013 and 31 December 2014, while shippers are acquiring adequate and reliable data on a solid bulk cargoes carcinogenicity, mutagenicity, reproductive toxicity or specific target organ toxicity – repeated exposure, Administrations should accept provisional classifications of solid bulk cargoes that are based on the other criteria as contained in paragraphs 3.2.1, 3.2.2 and 3.2.7 of the 2012 Guidelines:

- data concerning acute aquatic toxicity; and/or
- data concerning chronic aquatic toxicity; and/or
- data concerning the synthetic polymer, rubber, plastic or plastic feedstock content of the solid bulk cargoes; and

.4 **as of 1 January 2015, shippers' classifications of solid bulk cargoes should be made using the seven criteria listed in paragraph 3.2 of the 2012 Guidelines.**

5 PORT RECEPTION FACILITIES FOR GARBAGE

5.1 The methodology for determining the adequacy of a reception facility should be based on the number and types of ships that will call at the port, the waste management requirements of each type of ship as well as the size and location of a port. Emphasis should also be placed on calculating the quantities of garbage, including recyclable material from ships which are not discharged into the sea in accordance with the provisions of Annex V.

5.2 It should be noted that, due to differences in port reception procedures and additional treatment among ports, port reception facilities may require the separation on board of:

.1 food wastes (e.g. animal derived products and by-products because of risk of animal diseases);
.2 cooking oil (animal derived products and by-products because of risk of animal diseases);
.3 plastics;
.4 domestic waste, operational waste and recyclable or reusable material;
.5 special items like medical waste, outdated pyrotechnics and fumigation remnants;
.6 animal wastes, including used bedding from the transport of live animals (due to risk of disease) but excluding drainage from spaces containing living animals;
.7 cargo residues; and
.8 E-wastes such as electronic cards, gadgets, equipment, computers, printer cartridges, etc.

5.3 Ship, port and terminal operators should consider the following when determining quantities and types of garbage on a per ship basis:

.1 types of garbage normally generated;
.2 ship type and design;
.3 ship operating route;
.4 number of persons on board;
.5 duration of voyage;
.6 time spent in areas where discharge into the sea is prohibited or restricted; and
.7 time spent in port.

Appendix 2

2012 GUIDELINES FOR THE DEVELOPMENT OF GARBAGE MANAGEMENT PLANS
For compliance with regulation 10 of the revised MARPOL Annex V

1. INTRODUCTION

1.1. In 2011, IMO adopted amendments to MARPOL Annex V which require that:

- every ship of 100 gross tonnage and above, and every ship certified to carry 15 or more persons, and fixed or floating platforms shall carry a garbage management plan;

- every ship of 400 gross tonnage and above, and every ship certified to carry 15 or more persons engaged in voyages to ports or offshore terminals of another Party, and every fixed or floating platform shall be provided with a Garbage Record Book; and

- every ship of 12 metres or more in length overall, and fixed or floating platforms shall display placards which notify the crew and passengers of the ship's disposal requirements of regulations 3, 4, 5 and 6 of the Annex as applicable.

  These provisions are included in regulation 10 to the revised MARPOL Annex V with an entry into force date of 1 January 2013.

1.2. These Guidelines provide direction on complying with the requirements for a ship's garbage management plan, and are intended to assist the shipowner/operator in the implementation of regulation 10.2 of the revised MARPOL Annex V. It is assumed that the author of the garbage management plan is familiar with the requirements of the revised MARPOL Annex V and the IMO Guidelines for the Implementation of MARPOL Annex V.

1.3. Shipowners and operators should also consult other available technical guidance on shipboard garbage handling such as, ISO 21070 "Standard for the Management and handling of shipboard garbage" which outlines best management practices for shipboard garbage management and, to the extent it is consistent with the revised MARPOL Annex V, should be incorporated in any garbage management plan.

1.4. A ship's garbage management plan should detail the specific ship's equipment, arrangements and procedures for the handling of garbage. The plan may contain extracts and/or references to existing company instructions.

2. REGULATORY REQUIREMENTS

2.1. Regulation 10.2 of MARPOL Annex V reads as follows:

"*Every ship of 100 gross tonnage and above, and every ship which is certified to carry 15 or more persons, and fixed or floating platforms, shall carry a garbage management plan which the crew shall follow. This plan shall provide written procedures for minimizing, collecting, storing, processing and disposing of garbage, including the use of the equipment on board. It shall also designate the person or persons in charge of carrying out the plan. Such a plan shall be based on the guidelines developed by the Organization and written in the working language of the crew.*"

3. PREVENTION OF POLLUTION FROM GARBAGE,

3.1. To achieve cost-effective and environmentally sound results, many garbage management planners use a combination of complementary techniques to manage garbage, such as the following:

- reduction at source;
- reusing or recycling;
- onboard processing (treatment);
- discharge into the sea in those limited situations where it is permitted; and
- discharge to a port reception facility.

3.2. When requisitioning stores and provisions, shipping companies should encourage their suppliers to remove, reduce, all packaging, at an early stage, to limit the generation of garbage on board ships.

3.3. When garbage is generated aboard a ship, procedures should be defined to enable the crew to sort the material that can be reused onboard the ship or recycled at an appropriate port reception facility.

3.4. Ship's garbage is made up of distinct components, some of which are regulated in MARPOL Annex V, while others may be regulated locally, nationally or regionally. Each component of the garbage should be evaluated separately to determine the best management practice for that type of garbage.

4. MATTERS WHICH SHOULD BE ADDRESSED IN THE GARBAGE MANAGEMENT PLAN.

4.1. Designated person in charge of carrying out the plan.

- In accordance with regulation 10.2 of the revised MARPOL Annex V, the plan shall designate a person in charge of carrying out the plan. The person should ensure the garbage management plan is followed.

- This person should be assisted by ship's crew to ensure that the minimization, collection, separation and processing of garbage is appropriate and efficient in all

areas of the ship.

4.2. Procedures for collecting garbage.

- Identify suitable receptacles for collection and separation. (Separation of garbage for the purposes of these Guidelines is considered part of the collection process. Separation may take place at the source or at a separate designated station.)

- Identify the locations of receptacles and collection and separation stations.

- Describe the process of how garbage is transported from the source of generation to the collection and separation stations.

- Describe how garbage is to be handled between primary collection and separation stations and other handling methods relating to the following;
  - ◊ needs of reception facilities, taking into account possible local recycling arrangements;
  - ◊ onboard processing and potential reuse of garbage aboard the ship;
  - ◊ storage; and
  - ◊ discharge into the sea in those limited situations where it is permitted.

- Describe the training or education programmes to facilitate collection of garbage and sorting of reusable or recyclable material.

4.3. Procedures for processing garbage,

- Identify personnel responsible for the operation of the processing equipment.

- Identify available processing devices and their capacities.

- Identify the locations of processing devices and processing stations,

- Identify the categories of garbage that are to be processed by each of the available processing devices.

- Describe how material that can be reused or recycled is to be handled between primary processing stations and the storage or transfer stations.

- Describe processing procedures used for the following;
  - ◊ needs of reception facilities, taking into account available recycling arrangements;
  - ◊ storage; and
  - ◊ discharge into the sea in those limited situations where it is permitted.

- Describe the training or education programmes to facilitate the processing of garbage and reuse or recycling of material.

- Identify standard operating procedures for the operation and maintenance of the equipment used to manage garbage. This may be done by reference to documents.

4.4. Procedures for storing garbage or reusable or recyclable material,

- Identify the locations, the intended use, and the capacities of available storage stations for each category of garbage or reusable or recyclable material.

- Describe the condition of how the garbage will be stored (for example, "food - frozen"; "cans – compacted and stacked"; "paper – compacted and should remain dry", etc.).

- Describe how garbage, including reusable and recyclable material, is to be handled between storage stations and discharge with regard to the following;
  - ◊ discharge to reception facilities, taking into account available recycling arrangements; and,
  - ◊ discharge into the sea in those limited situations where it is allowed.

- Describe the training or education programmes to facilitate the storing of garbage and options for reusing and recycling components of the waste stream.

4.5. Procedures for discharging of garbage,

- Describe the ship's procedures to ensure and demonstrate compliance with the requirements of the revised MARPOL Annex V for the discharge of garbage.