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| --- | --- |
| Ship: |  |
| Date: |  |
| **WASTE MANAGEMENT ORGANIZATION**  **&**  **PROCESSING EQUIPMENT** | |

**This form is to be used in conjunction with Garbage Management Procedures. It supplements the common garbage management requirements applicable to managed ships by outlining ship specific procedures and the above procedures and this form constitute the Marpol V required Garbage Management Plan (and in accordance with IMO res. MEPC.220(63) “2012 Guidelines for the Development of Garbage Management Plans” and IMO res. MEPC.219(63) “2012 Guidelines for the Implementation of Marpol Annex V”)**

**This form has FIVE Sections which should be filled with the ship specific details by the onboard management, kept updated and a copy sent to the Marine Superintendent/DPA for review, approval and logging it into the S/E/MS (Safety/Environmental Management System)**

**SECTION 1**

1. **Incineration**
   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. 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
   3. Each operator of the onboard garbage incinerator shall be trained and familiar in the use of the equipment and the types of garbage that can be destroyed in the incinerator.
   4. Marine incinerators are predominantly designed for intermittent operation, hand-fired and fed by hand. The ash or vapour may be hazardous. Incinerator ash may be subject to local quarantine, sanitary or health requirements. Advice should be sought from local authorities regarding requirements that are in addition to MARPOL.
   5. 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
   6. A table giving guidelines on incineration options for shipboard-generated garbage may be found in section 3.
2. **Comminuters (or grinders)**
   1. Comminuters grind food wastes to a particle size capable of passing through a screen with openings no larger than 25 mm (1 inch).
   2. 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.
3. **Compactors (incl. Glass/Tin Crushers)**
   1. If grinding machines are used prior to compaction, the compaction ratio can be increased and the storage space decreased.
   2. 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.
   3. Compacted materials should be stored appropriately. While metal and plastic bales can get wet, paper and cardboard bales should be kept dry.
   4. A table giving shipboard generated garbage compaction options may be found in section 4.

**SECTION 2**

**GARBAGE PROCESSING EQUIPMENT**

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|  | *INCINERATOR* | *COMPACTOR* | *COMMINUTER* | *CRUSHER* |
| MAKE: |  |  |  |  |
| LOCATION: |  |  |  |  |
| SOLID WASTE LOADING DETAILS:  Capacity per charge |  |  |  |  |
| DESIGN TEMP |  |  |  |  |

**SECTION 3**

**INCINERATION OPTIONS FOR SHIPBOARD-GENERATED GARBAGE**

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| --- | --- | --- | --- | --- | --- | --- |
| *Typical examples* | *Special handling by vessel personnel before incineration* | ***Incineration Characteristics*** | | | | *On-board storage space* |
| *Combustibility* | *Reduction of volume* | *Residual* | *Exhaust* |
| Paper packaging, food and beverage containers | Minor – easy to feed into hopper | High | Over 95% | Powder ash | Possibly smoky and not hazardous | Minimum |
| Fibre and paper board | Minor – reduce material to size for feed; minimum manual labour | High | Over 95% | Powder ash | Possibly smoky and not hazardous | Minimum |
| Plastic packaging, food and beverage containers, etc… | Minor – easy to feed into hopper | High | Over 95% | Powder ash | Possibly smoky and hazardous based on incinerator design | Minimum |
| Plastic sheeting, netting, rope and bulk material | Moderate manual labour time for size reduction | High | Over 95% | Powder ash | Possibly smoky and hazardous based on incinerator design | Minimum |
| Rubber hoses and bulk pieces | Major manual labour time for size reduction | High | Over 95% | Powder ash | Possibly smoky and hazardous based on incinerator design | Minimum |
| Metal food and beverage containers, etc… | Minor – easy to feed into hopper | Low | Less 10% | Slag | Possibly smoky and not hazardous | Moderate |
| Metal cargo, bulky containers, thick metal items | Major manual labour time for size reduction (not easily incinerated) | Very low | Less 5% | Large metal fragments and slag | Possibly smoky and not hazardous | Maximum |
| Glass food and beverage containers, etc… | Minor – easy to feed into hopper | Low | Less 10% | Slag | Possibly smoky and not hazardous | Moderate |
| Wood, cargo containers and large wood scraps | Moderate manual labour time for size reduction | High | Over 95% | Powder ash | Possibly smoky and not hazardous | Minimum |

**SECTION 4**

**COMPACTION OPTIONS FOR SHIPBOARD-GENERATED GARBAGE**

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| --- | --- | --- | --- | --- | --- |
| *Typical examples* | *Special handling by vessel personnel before compaction* | *Compaction characteristics* | | | *Onboard storage space* |
| *Rate of alteration* | *Retains 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 slow | Maximum |
| Bulky metal cargo containers, thick metal items | Impractical for shipboard compaction; not feasible | Not applicable | Not applicable | Not applicable | Maximum |

**SECTION 5**

**GARBAGE MANAGEMENT PLAN SHIP SPECIFIC PROCEDURES**

To achieve cost-effective and environmentally sound results the following combination of complementary techniques to manage garbage will be used:

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

**5.1 Designated person in charge of carrying out the Garbage Management Plan (GMP) onboard this ship is:**

(typically this should be the Staff Captain or Chief Officer or alternatively delegated to another designated officer such as an Environmental Officer)

**Assisted by:**

*(this designated person is to be assisted by departmental staff to ensure that the minimization, collection, separation and processing of garbage is efficient in all areas of the ship and that all procedures aboard are carried out in accordance with the GMP.)*

**5.2 Procedures for collecting garbage:**

**.1 Identify suitable receptacles for collection and separation:**

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| **Collection:** | **Separation:** |
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*(Separation is part of the collection process and it may take place at the source or at a separate designated station – please identify)*

**.2 Identify locations of receptacles, collection and separation stations:**

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| **Location:** | **Collection:** | **Separation Station:** |
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**.3 Describe the process of how garbage is transported from the source of generation to the collection and separation stations**

**.4 Describe how garbage will be handled between primary collection and separation stations and other handling methods commensurate with the following:**

**.1needs of reception facilities, taking into account possible local recycling arrangements:**

**.2 on-board processing and potential reuse of garbage onboard the ship:**

**.3 storage:**

**.4 discharge into the sea in those limited situations where it is permitted:**

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

*(As per the Training Induction package onboard, the Safety Familiarization Training, the VOD box training materials in use and any ship specific training information)*

**5.3 Procedures for processing garbage:**

**.1 identify personnel responsible for the operation of the processing equipment listed under Section 2:**

**.2 identify the categories of garbage that are to be processed by each of the devices listed under Section 2, having in mind the guidance given under Sections 1, 3 and 4.**

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

**.4 describe processing procedures used for the following:**

**.1 needs of reception facilities, taking into account possible local recycling arrangements**

**.2 storage:**

**.3 discharge into the sea in those limited situations where it is permitted:**

**.5 describe the training or education programmes to facilitate the processing of garbage and reuse or recycling of material:**

**.6 identify standing operating procedures or orders for the operation and maintenance of the equipment used to managed garbage (this may be done by reference to documents / manuals available onboard:**

**5.4 Procedures for storing garbage or reusable or recyclable material:**

**.1 identify the location, the intended use, and the capacities of available storage stations for each category of garbage or reusable or recyclable material**

**Category A, Plastic:**

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| **Location:** | **Intended Use:** | **Capacity:** |
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**Category B, Food Wastes:**

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| **Location:** | **Intended Use:** | **Capacity:** |
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**Category C, Domestic Waste (e.g. paper products, rags, glass, metal, bottles, crockery, etc):**

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| **Location:** | **Intended Use:** | **Capacity:** |
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**Category D, Cooking Oil:**

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| **Location:** | **Intended Use:** | **Capacity:** |
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**Category E, Incinerator Ashes:**

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| **Location:** | **Intended Use:** | **Capacity:** |
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**Category F, Operational Wastes:**

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| **Location:** | **Intended Use:** | **Capacity:** |
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**Category G, Cargo Residues:**

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| **Location:** | **Intended Use:** | **Capacity:** |
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**.2 describe how garbage is to be handled between storage stations and discharge with regard to the following:**

**.1 discharge to reception facilities, taking into account available recycling arrangements**

**.2 discharge into the sea in those limited situations where it is allowed**

**.3 describe the training or education programmes to facilitate the storing of garbage and options for reusing and recycling components of the waste srea**

*(As per the Training Induction package onboard, the Safety Familiarization Training, the VOD box training materials in use and any ship specific training information)*

**5.5 Procedures for discharging of garbage:**

**The ship’s procedures shall follow the requirements of the Operational Manual(s) in the chapter for Environmental Protection, and form SAF77 (Worldwide Environmental Cruising Standards) in order to ensure compliance with the requirements of Marpol Annex V as amended and with any other stricter requirements (e.g. Charterers requirements, affiliation to Association Standards, Memorandums of Understandings, local legislation etc).**

**Every effort is to be made to verify local legislations with the Ship’s Agents and/or local Charterers representatives.**

**APPENDIX**

**SUMMARY OF MARPOL ANNEX V GARBAGE DISPOSAL REGULATIONS AT SEA**

MARPOL Annex V prohibits disposal of garbage at sea except as listed in the table below and provided the ship is en route:

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| **Type of Garbage** | **All ships outside special areas** | **All ships within special areas** |
| Food waste comminuted or ground | Discharge permitted ≥ 3 nm from the nearest land, en route and as far as practicable | Discharge permitted ≥ 12 nm from the nearest land, en route and as far as practicable³ |
| Food waste not comminuted or ground | Discharge permitted ≥ 12 nm from the nearest land, en route and as far as practicable | Discharge prohibited |
| Cargo residues¹ not contained in wash water | Discharge permitted ≥ 12 nm from the nearest land, en route and as far as practicable | Discharge prohibited |
| Cargo residues¹ contained in wash water | Discharge permitted ≥ 12 nm from the nearest land, en route, and as far as practicable and subject to two additional conditions² |
| Cleaning agents and additives¹ contained in cargo hold wash water | Discharge permitted | Discharge permitted ≥ 12 nm from the nearest land, en route, as far as practicable and subject to two additional conditions² |
| Cleaning agents and additives¹ in deck and external surfaces wash water | Discharge permitted |
| All other garbage including plastics, synthetic ropes, fishing gear, plastic garbage bags, incinerator ashes, clinkers, cooking oil, floating dunnage, lining and packing materials, paper, rags, glass, metal, bottles, crockery and similar refuse | Discharge prohibited | Discharge prohibited |
| Mixed garbage | When garbage is mixed with or contaminated by other substances prohibited from discharge or having different discharge requirements, the more stringent requirements shall apply | |

1. These substances must not be harmful to the marine environment.

2. According to regulation 6.1.2 of MARPOL Annex V, the discharge shall only be allowed if: (a) both the port of departure and the next port of destination are within the special area and the ship will not transit outside the special area between these ports (regulation 6.1.2.2); and (b) if no adequate recep­tion facilities are available at those ports (regulation 6.1.2.3).

3. Discharge of introduced avian products, including poultry and poultry parts, is not permitted in the Antarctic area unless it has been treated to be made sterile.

* All distances in miles refer to measurements from the baselines from which territorial sea is measured and should be done at distances as far as practicable greater than the stipulated ones
* Comminuted / ground garbage must be able to pass through a screen with maximum mesh size 25 mm
* En route means that the ship is underway at sea on a course or courses, including deviation from the shortest direct route, which as far as practicable for navigational purposes, will cause any discharge to be spread over as great an area of the sea as is reasonable and practicable. The enroute requirements of regulations shall not apply to the discharge of food wastes where it is clear the retention on board of these food wastes presents an imminent health risk to the people on board
* Discharge of Cleaning Agents and Additives contained in wash water
  + 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.
* 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)
    - it is evidenced by the producer of the cleaning agent or additive that the product meets the criteria for not being harmful to the marine environment by a dated and signed statement to this effect - this might form part of a Safety Data Sheet or be a stand-alone document and **must be kept in ship’s records**