

तटीय जलकृषि प्राधिकरण

मत्स्यपालन विभाग

मत्स्यपालन, पशुपालन और डेयरी मंत्रालय
भारत सरकार

COASTAL AQUACULTURE AUTHORITY

Department of Fisheries

Ministry of Fisheries, Animal Husbandry and Dairying

Government of India



सत्यमेव जयते

5वीं मंजिल, इंटीग्रेटेड ऑफिस कॉम्प्लेक्स

पशु पालन व मत्स्य पालन विभाग

पशु चिकित्सालय रोड, फैनपेट, नन्दनम,

चेन्नई-600 035, तमिलनाडु, भारत

5th Floor, Integrated Office Complex For

Animal Husbandry and Fisheries Department

Veterinary Hospital Road, Fancpet, Nandanam,

Chennai - 600035, Tamil Nadu, India.

फोन/Phone : +91 44 24353784 / 24353502

ईमेल / E-mail : aquaauth@gmail.com

वेबसाइट / website : http://www.caa.gov.in



एक कदम स्वच्छता को ओर
CLEAN INDIA

F.No.: 70-3/2020 Tech

Date: 29.07.2021

ORDER

Sub : Guidelines for Solid Waste Management at coastal aquaculture establishments – Notified – Reg.

WHEREAS solid waste generation in coastal aquaculture farms and hatcheries due to the growth of coastal aquaculture sector during the last decade, has become an area of concern. In order to achieve sustainable development of environmental friendly coastal aquaculture practices the aquaculture industry needs to focus on ways to reduce the wastes (environmental impact) from coastal aquaculture establishments (Any establishment involving coastal aquaculture production including coastal Aqua hatcheries, farms, etc.).

WHEREAS the Central Government vide notification S.O. No. 1375(E) dated the 08th April, 2016 notified Solid Waste Management Rules, 2016.

WHEREAS Sub rule (i) of Rule 14 of Solid Waste Management Rules provides that "the Central Pollution Control Board shall publish guidelines from time to time in environmental aspects of processing and disposal of solid waste to enable local bodies to comply with the provision of the Rules."

WHEREAS Central Pollution Control Board/State Pollution Control Board is not involved in the regulations of coastal aqua farms and hatcheries. It is felt necessary that Coastal Aquaculture Authority shall notify the Solid Waste Management guidelines for Coastal Aquaculture as provided under Subsection (a) of Section 11 of Powers and Functions of Authority of Chapter IV of CAA Act, 2005.

WHEREAS the Authority during its 66th meeting approved the Guidelines for Solid Waste Management in Coastal Aquaculture Establishments for implementation which has been subjected to the process of stakeholders consultation at various levels.

Accordingly, the Guidelines for Solid Waste Management in Coastal Aquaculture Establishments is hereby notified for implementation with effect from 01.08.2021. It shall be applicable to all coastal aquaculture establishments including farms, hatcheries, etc.,



(V.Kripa)

Member Secretary



SOLID WASTE MANAGEMENT IN COASTAL AQUACULTURE ESTABLISHMENTS

Guidelines

August 2021

COASTAL AQUACULTURE AUTHORITY

Department of Fisheries
Ministry of Fisheries, Animal Husbandry and Dairying
Government of India



5th Floor, Integrated Office Complex for Animal Husbandry and Fisheries Department, Veterinary Hospital
Road, Fanepet, Nandanam, Chennai – 600 035

SOLID WASTE MANAGEMENT IN COASTAL AQUACULTURE ESTABLISHMENTS

1. INTRODUCTION

Rapid increase in solid waste generation from coastal aquaculture establishments viz. farms and hatcheries due to the exponential growth in coastal aquaculture during the last decade, has become an area of concern. To achieve sustainable development of environmental friendly coastal aquaculture, the aquaculture industry has to focus on methods to reduce and manage the waste generated from production including coastal aqua hatcheries, farms, Nucleus Breeding Centres (NBC), Broodstock Multiplication Centres (BMC), and Aquaculture inputs production establishments. Selection and use of appropriate reusable materials during the production cycle in the coastal aquaculture establishments can greatly reduce waste generation. In general, the wastes generated from coastal aquaculture establishments can be categorized in to two major heads: a) Wastewater and b) Solid waste.

a) The wastewater

The wastewater or effluents from the coastal aquaculture establishments shall be treated in the Effluent Treatment System (ETS), in accordance with the protocol prescribed by Coastal Aquaculture Authority (CAA), and shall conform to the standards for treatment of wastewater discharged from the Aquaculture establishments as provided under Article 13 of Guidelines for Coastal Aquaculture issued as Annexure I under Chapter II of CAA Rules, 2005 before it is discharged into the open water source. In the absence of standards/loads for certain parameters, the discharged water shall be in conformity with the standards of the Pollution Control Board (PCB) for

such parameters discharged into Coastal Marine waters/ open water source.

b) Solid waste

Solid waste generated from the coastal aquaculture establishments has to be managed with adequate care to protect the adjoining coastal environment from possible pollution. The establishments shall be responsible for handling the solid waste in tandem with the provisions under Solid Waste Management Rules, 2016. The coastal aquaculture establishments shall develop appropriate infrastructure for segregation, collection, storage, transportation, processing and disposal of solid/plastic waste either by its own or by engaging agencies or producers under the Solid Waste Management Rules, 2016.

2. GENERATION OF SOLID WASTE

Solid waste is generated at all the sections and from the overall maintenance of the coastal aquaculture establishments. Understanding of the various possible types of solid waste that will be generated at each production section such as brood stock / seed receiving section, maturation units, rearing sections, Post larvae (PL) packing section, harvest, ETS etc. and from the maintenance sections is essential for their proper management. Bio-waste from kitchen and food waste also come under the solid waste generated category at these units. In coastal aquafarms, solid waste is generated from the inputs used like the feed, seed and other items during grow out and harvest period.

All coastal aquaculture establishments shall minimize the use of non-recyclable products and promote the use of eco-friendly alternate material, which can be easily recycled/reused/degraded and decomposed.

3. EVALUATION OF THE WASTE

- a) Coastal Aquaculture Establishments shall identify the areas/ sections, the type and quantity of waste being generated, area for the storage and treatment of different streams of waste, determine the appropriate methods/ways to safely dispose them and prepare a solid waste management plan (SWMP) for the facility.
- b) Solid waste can be categorized in to three streams viz. Biodegradable, Non-biodegradable and domestic hazardous.

- Appropriate care to be provided in segregation and collection of three different streams of waste at source, its storage and disposal.
- c) Each area/ section shall be provided with sufficient capacity bins in three different colours for three different streams as given in section 4.b for the segregation and collection of them at source.
 - d) Sign boards and posters on handling and Compliance requirement etc. shall be displayed at the sections/ areas identified in accordance with the type of waste that is being generated at each area/section.
 - e) The facility managers shall mandate responsible individuals with written orders to perform specific functions with reference to the solid waste management activity to avoid confusion and for an effective enforcement
 - f) The establishment shall enter into agreement with appropriate/authorized agencies for the collection and disposal of:
 - Recyclable non-degradable waste
 - Sludge from ETS
 - Biodegradable non-recyclable waste
 - Non-degradable non-recyclable waste
 - Domestic sewage.
 - g) The facility manager shall plan and ensure the transportation of different waste in the prescribed vehicles from the facility to processing/ disposal sites
 - h) The facility managers shall plan and implement the reuse/recycling of the waste minimizing the transportation.
 - i) Separate records shall be maintained for clearing of waste by these agencies.
 - j) Following is the list of major types of possible wastes generated from various coastal aquaculture establishments.

MAJOR TYPES OF WASTE GENERATED AT HATCHERIES	
Section	Waste generated
Brood stock receiving area	Brood stock bags, Thermocol boxes (and sometimes carton boxes), ice packs, rubber bands used for brood stock packing and dead animals (brooders) or moribund animals.
Maturation Section	Feed packing plastic pouches or boxes, tins or any such substances, feed spill overs, feed residues and dead animals (brooders) or moribund animals.
Larval rearing section	Feed packing plastic pouches or boxes, tins, or any such substances, feed spill overs and feed residues

Packing section	Boxes or packs of the PL packing covers, rubber bands and damaged packing bags
Laboratory	Empty plastic/glass containers of chemicals, expired chemicals, damaged lab equipment, etc.
Maintenance Section	Leftovers/broken pieces of PVC pipes, small and large air hoses, damaged valves, spill overs of chemicals and other disinfectants and sponges or other scrubbers used for cleaning.
ETS	Sludge from the ETS
Domestic	Single use plastic plates, tumblers, spoons and other vessels used to serve food, food and vegetable waste, sewage, etc.
MAJOR TYPES OF WASTES GENERATED AT FARMS	
Section	Waste generated
Seed stocking	Polythene bags in which the PL has been purchased
Aqua inputs	Containers, pouches of the various inputs used. Packaging materials of feed.
Sludge removal	From culture ponds and ETS.

- k) Plastics of any grade shall **NOT** be burnt at any time by the establishment, and they shall be handed over to the local body or the appointed agency for collecting such plastics.

Different types of Plastics as per IS 14534:1998 "Guidelines for Recycling of Plastics"

S.No	Symbol	Short Name	Scientific Name	Possible waste generated from	Recyclable/non-recyclable
1		PET	Polyethylene terephthalate	Soft drink bottles, furniture, carpet, paneling, etc.	Recyclable
2		HDPE	High-Density polyethylene	Bottles, carry bags, milk pouches, recycling bins, agricultural	

				pipe, base cups, etc.	
3		PVC	Polyvinyl chloride	Pipe, window profile, fencing, flooring, shower curtains, lawn chairs, non-food bottles, etc.	
4		LDPE	Low density polyethylene	Plastic bags, various containers, dispensing bottles, wash bottles, tubing, etc.	
5		PP	Polypropylene	Auto parts, industrial fibers, food containers, dishware, etc.	
6		PS	Polystyrene	Cafeteria trays, plastic utensils, toys, clam shell containers, insulation board, etc.	Non - Recyclable
7		O	Others	Thermoset plastics, multilayer and laminates, Bakelite, polycarbonate, nylon SMC, FRP, etc.	

4. SEGREGATION AND COLLECTION OF WASTE

- a) The Coastal Aquaculture Establishments shall segregate the waste at its source in different sections in three different categories as detailed below, classify and categorize the waste to determine the appropriate methods/ways to safely dispose them.
- b) The solid waste shall be classified and collected in bins with lids as prescribed below at each areas identified to facilitate segregation of waste at their primary collecting point.

Type of waste	Biodegradable & Non-recyclable	non-degradable & Recyclable	Non-degradable, non-recyclable & domestic hazardous
Bins colour	Green	Yellow	Red

- c) There shall be men on duty at each area identified to collect, segregate and dispose the waste based on category, every 12 hours and records shall be maintained for clearing the waste.
- d) All the work force, especially those who are assigned for handling, storing, or otherwise managing the waste, shall be trained on the intended use of these bins which may include introduction to:
 - basic procedures for waste management;
 - human and environmental risks;
 - measures of precaution in waste management, etc.
- e) The non-degradable, recyclable waste such as brood stock bags, thermocol boxes, waste generated from office stationery and general up keeping, etc. shall be stored temporarily in the area designated for temporary storage of such waste and handed over to the recycling agency on a regular basis.
- f) The biodegradable and non-recyclable waste shall be transferred to temporary storage yard designated for temporary storage of such biodegradable waste.
- g) A small in-house incinerator shall be installed at the hatcheries to handle the fresh feed wastage and the dead animals from maturation to avoid any possible contamination in the wild



- h) There shall be a temporary storage space designated for the storage of non-degradable non-recyclable waste till the disposal of the same.
- i) Care shall be taken while depositing the waste into the bins to avoid spill overs
- j) The waste shall not be dumped into the adjacent open coastal environment / public land / the drain or water bodies. This shall be adhered by all the coastal aquaculture establishments strictly.

5. TEMPORARY STORAGE AND PROPER DISPOSAL OF WASTE

i. **Recyclable non-degradable waste**

The Recyclable non-degradable waste gathered based on their characteristics and stored at the warehouse designated for the temporary storage of such waste, shall be periodically sold/handed over to the recycler based on the size, holding capacity and nature of the storage facility. Appropriate care must be taken to avoid the delay in disposal such as a fixed weekly schedule of disposal.

ii. **Non-recyclable Biodegradable waste**

- a) The coastal aquaculture establishments shall set up, operationalize the waste management system and co-ordinate with the local body for performing the associated functions.
- b) The coastal aquaculture establishments which are larger and generating larger quantity of sewage shall establish and operate an in-house Sewage Treatment Plant in accordance with the standards of Pollution Control Board.
- c) Biological waste transferred to the storage yard, shall be subjected to appropriate fermentation/biological digestion or composting process to generate manure separately.
- d) The biodegradable waste shall otherwise be handed over to the local body such as municipalities, gram panchayats, etc. for disposal.
- e) In coastal shrimp hatcheries, old animals at every quarter, dead or moribund animals shall be incinerated.
- f) Kitchen waste, sludge and other organic waste shall wherever possible, be appropriately used to prepare compost and the manure generated shall be used in the in home garden or shall be disposed through the agency appointed for collection of the same.



iii. **Non-recyclable, non-degradable waste and domestic hazardous**

- a) All Chemicals/disinfectants and the waste generated from the laboratory shall be collected with utmost care and disposed as per the protocol prescribed for disposing them.
- b) A designated space for sanitary landfills shall also be used to dispose the solid waste.

iv. **Sludge removal**

- a) A sludge pump shall be set up for the removal of sludge at Effluent Treatment System (ETS) of coastal aquaculture establishments especially hatcheries and disposed through the local body.
- b) In the case of coastal aquaculture farms, the sludge shall be treated with the established procedures during dry out or scrapped if required, from the bottom of the ponds after the harvest and disposed appropriately
- c) The sludge depending on the quantity shall be removed periodically every week or after each cycle of production and shall be thickened in a gravity thickener or by dissolved air floatation.
- d) The organic solids in the sludge shall be digested through biological process to reduce total mass of solids.
- e) The sludge shall be dewatered, dried and handed over to the local body / agency appointed for such purpose as and when it is collected or on a periodical basis with temporary storage.
- f) The sludge shall otherwise be reused as manure after treating with chlorine, dechlorinating and removing salinity by washing and drying.

v. **Management of waste from Fuel, Lubricants and other consumables**

- a) A storage room for fuel/oil, lubricants and other consumables for operating generators and mechanical equipment shall be designated at farms and hatcheries.
- b) Farms and hatcheries shall identify and comply with legal requirements if any for storing fuel/oil, lubricants and other consumables.
- c) The containers of oil, lubricants and other consumables in the storage room, shall be periodically checked and maintained without any leakage.



- d) Proper warning signs shall be displayed where lubricants or fuel is stored. Put a correct protocol in place including storage, labelling and usage of oils or lubricants.
- e) Hatchery operators and farmers shall impart training to the staff operating the Generators and mechanical equipment and care shall be taken not to spill oil/lubricants while changing or collecting.
- f) The used oil collected shall be stored in a leak-proof can or container and it shall be handed over to government approved/authorized contractors only.
- g) Maintain the records of hazardous waste sold to subcontractors of hazardous waste.

6. MANAGEMENT OF AIR AND NOISE POLLUTION

- a) The ambient air quality standards and standards for noise for different areas/ zones shall be maintained as specified by the State Government for industrial, commercial, residential or silence areas / zones for the purpose of implementation of noise standards for different areas.
- b) The farm/hatchery operator shall take measures for abatement of noise including noise emanating from generators and other machineries and ensure that the existing noise levels do not exceed the ambient air quality standards specified under Noise Pollution (Regulation and Control) Rules, 2000.
- c) Farm/hatchery operators while planning developmental activity shall take into consideration all aspects of noise pollution as a parameter of quality of life to avoid noise menace and to achieve the objective of maintaining the ambient air quality standards in respect of noise.
- d) Farm/hatchery located in an area comprising not less than 100 meters around hospitals, educational institutions and courts shall observe the standards of noise pollution as specified for silence area / zone.
- e) Records of control measures adopted and implemented shall be maintained at the farm/hatchery.

7. GROUND WATER TESTING MANAGEMENT

Ground water salinization is major area of concern to all coastal aquaculture establishments. Hence, testing the potability of ground water from the fresh water well, aquifers, open wells in and around 1km radius of



the premises of the establishments, etc. (inclusive of the *in-situ* freshwater resources) shall be performed by all the coastal aquaculture establishments every six months and the records shall be maintained for the same. In case of changes in the quality of the ground water especially the salinity, appropriate measures shall be taken by the coastal aquaculture establishments to identify the cause and implement remedial measures to rectify the same with immediate effect.

8. RECORD KEEPING

- a) Records/registers shall be maintained at each area/ section identified for generation of waste with the details of type, quantity and frequency of removal of waste.
- b) Records for the disposal of sludge, sewage and other recyclable and non-recyclable waste shall be maintained at the establishments.
- c) Records will be subject to periodic random inspection and vetting by Coastal Aquaculture Authority

9. EVALUATION OF COMPLIANCE

- a) The establishment shall periodically evaluate the activities of the waste management system and in case of non-compliance noticed, identify appropriate method to be adopted to rectify deficiencies in the system.
- b) Coastal Aquaculture Authority shall evaluate the activities of the waste management system in all the coastal aquaculture establishments and in case of non-compliance noticed, suitable action shall be initiated in accordance with the provisions of CAA Act 2005, its rules and Guidelines as well as in accordance with the provisions of Solid Waste Management Rules 2016 and other related legal instruments in vogue.

