



**GUIDELINES ON THE STORAGE, HANDLING AND DISPENSING
AT
PETROLEUM RETAIL OUTLETS, 2024**

**MINISTRY OF INDUSTRY, COMMERCE AND EMPLOYMENT
ROYAL GOVERNMENT OF BHUTAN
THIMPHU: BHUTAN**

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Background

Retail outlets serve as the primary locations for refueling Motor Spirit (MS)/High Speed Diesel (HSD) for automotive use. Ensuring the safety of these installations is of utmost importance due to the inherent hazards associated with handling petroleum products involving both vehicles and the public. The past accidents at Petroleum Retail Outlets have underscored the necessity to reassess the operational and maintenance practices in such establishments.

MS/HSD are extensively utilized as automotive fuels, and their consumption has seen a concurrent rise with the increasing number of vehicles. Correspondingly, there has been a proliferation of retail outlets dedicated to dispensing MS/HSD across the country.

In pursuant to section 124 (2) and 235 of the Trade and Industry Rules 2023, the Ministry of Industry, Commerce and Employment hereby frames and issues the Guidelines for Storage, Handling, and Dispensing at Petroleum Retail Outlets, 2024, as follows:

Ministry of Industry, Commerce and Employment

Chapter 1 Preliminary

Title

1. This guideline is called the Guidelines on the Storage, Handling, and Dispensing at Petroleum Retail Outlets, 2024.

Commencement

2. This Guideline shall come into force on 11th Day of 2nd Month of Wood Male Dragon Year, which correspond to 21st of March 2024

Application

3. This Guideline applies to:
 - a. all petroleum retail outlets within Bhutan, including service stations, fueling stations, and any other facilities engaged in the retail sale of petroleum products; and
 - b. all entities involved in the operation, management, or ownership of petroleum retail outlets, including proprietors, lessees, operators, and any other party responsible for the day-to-day activities at such facilities.

Revocation

4. This Guideline shall revoke existing provisions on the Guidelines for Storage, Handling, and Dispensing at Petroleum Retail Outlets adopted in 2012.

Objectives

5. The main objectives of the guidelines are to:
 - a. Enhance safety in the storage and handling of Petroleum Products at Retail Outlets.
 - b. Provide the minimum design, operation, inspection, maintenance, training, and consumer safety requirements at Petroleum Retail Outlets (PRO).
 - c. Mitigate risks and promote a safer environment for all stakeholders involved.

Chapter 2

Layout and Facilities

General

6. The selected space for a petroleum retail outlet must provide sufficient space to effectively mitigate the risks associated with petroleum fuels for any individuals expected to be present or close to the retail station.
7. The layout should ensure unobstructed movement of all vehicles and adequate provision for the entry and exit of Tank trucks.
8. The location of the facilities, equipment, entrance, exit and paving shall be arranged in a manner to avoid the risk of any collision of the motor vehicles.
9. All the Retail Outlet facilities shall be accessible by mobile firefighting equipment.
10. The positioning of tanks, filling and vent pipes, dispensing equipment, road tanker decanting area, and on-site buildings should be designed to provide effective means of escape for individuals in the event of a fire or other incidents.
11. Protective measures shall be implemented to safeguard the hazardous area from potential sources of ignition.

Storage Tanks

12. Petroleum shall be stored only in underground tanks in single/ double walled [membrane], and not outside any area posing public risk.
13. The tanks shall be situated within an earthen, masonry, or concrete pit and filled with sand/earth/gravel, leaving no gaps between the tank and the concrete/masonry wall.
14. No part of the space over the buried tanks shall be used for any purpose other than installing equipment specifically meant for the withdrawal or monitoring of the contents of the tanks.

Fill Points

15. The positioning of fill points for the tank, whether offset or directly filled, must be such that any petroleum spillage and subsequent ignition do not immediately endanger the safety of the public, forecourt, or delivery staff.

16. Fill points should be situated in open-air locations, ensuring that any flammable vapors resulting from routine filling operations or spillage are prevented from reaching potential ignition sources. Moreover, the vapors should not accumulate in buildings or outdoor areas to avoid posing a danger.
17. It is important to maintain a minimum safety distance of three meters around fill points, including property boundaries or any structure with potential ignition sources. The distance may be reduced if a fire-resistant wall, such as brick or concrete of at least 2 meters high and extending sideways or parallel to the boundary, is constructed. If this wall is part of a building housing a crowded population (e.g., school, hospital, residential dwelling), the distance should be increased to 12 meters.
18. Fill pipes must slope at a minimum of 1:200 towards the storage tank to facilitate smooth gravity flow and prevent product retention within the fill pipe.
19. The fill pipe should extend nearly to the bottom of the tank to prevent fire hazards arising from the generation of static charge during the free fall of the product.
20. Proper identification of fill points for various types of fuels shall be provided to avoid wrong decantation.
21. An “earthing bus’ shall be provided in the close vicinity of fill points.
22. Hose connections shall be properly tightened using screwed/ cam lock couplings.
23. The fill pipe cap used shall be of softer material like brass or aluminum.
24. The fill cap used shall have a proper locking system and the key shall be kept under the custody of the authorized person.
25. The fill points should be strategically located to ensure that the tank lorry, during decantation, is in a drive position.

Pipelines

26. Pipelines extending from tanks to dispensing points and vent pipes should be routed beneath the ground surface, avoiding placement under buildings or structures that hinder access to the pipelines after installation. Fuel pipes must be inclined toward the Underground Storage Tank.

27. The pipe system, including connections to the bulk storage vessel, shall ensure provisions to accommodate expansion, contraction, jarring, and vibration.
28. Pipelines shall be earthed and electrical continuity suitable “Jumpers” shall be provided at the flanged joints to ensure the dissipation of static charge developed due to flow of fuel in the pipeline.
29. The pipelines shall be protected against corrosion by suitable coating strapping and where necessary by cathodic protection.

Vent Pipes

30. Each tank must be equipped with an independent vent pipe of sufficient capacity unless a vapor recovery system is in place.
31. The vent point shall never be located under shade/cover.
32. Vent pipes must be safeguarded against damage caused by accidental collisions with vehicles.
33. The outlet (opening) of the vent pipe shall be covered with two layers of non-corrosive metal wire mesh.
34. The vent pipe shall be gradually sloped towards the tank to avoid choking of vent pipe due to any water ingress or due to product in the event of tank overflow.
35. The vertical portion of the vent pipe shall not be provided with any intermediate thread joint.

Dispensing equipment

36. Dispensers must be situated in an open space to ensure adequate ventilation.
37. The dispensers shall maintain a minimum distance of 6 meters. from any above-ground structure/ boundary.
38. The dispenser shall be installed on a firm foundation and protected against physical damage by vehicles.
39. In a pressurized system, dispensers should be equipped with a shear valve.

40. The length of the hose connected to the dispenser should be kept at a minimum based on operational requirements and should not exceed 4 meters under any circumstances.
41. Dispensing hoses/nozzles must be fitted with breakaway couplings.
42. The dispensing hose shall be electrically and mechanically continuous and earthed. Necessary provisions shall be available in the Dispenser to earth the receptacles other than the fuel tank of vehicles while dispensing.

Decantation

43. The road tanker delivery locations for unloading into storage tanks shall be in the open, away from the sales building, dispensing activities, and emergency escape routes.
44. The hose used shall conform to OISD-STD-135.
45. Hose length shall not be more than 5.5 meters.
46. The discharge area should be substantially leveled, incorporating drainage arrangements to effectively intercept potential spillage

Saleroom

47. There should be a separate sales room (for making payments and collecting cash memos) that is located at the safe distance from the dispensing equipment.

Canopy

48. If a canopy is provided for weather protection, it should not adversely impact ventilation or hinder access to the equipment
49. Canopy heights installed at the fuel forecourt should maintain a minimum clearance of at least 300 mm from the maximum permitted height, which is normally 6 meters from the ground.
50. Canopy design should consider wind and seismic loads following IS:875 and IS:1893, respectively

Chapter 3

Electrical Power Distribution System

Design

51. In designing the Electrical Power Distribution System in a Retail Outlet, the elements or components to be considered are as follows:
- a. Total electrical load for the entire Retail Outlet;
 - b. Availability, Suitability & Reliability of the relevant agencies grid; and
 - c. Back-up arrangement, in case of power failure,

Elements of Protection

52. Safeguards must be implemented to prevent abrupt failures, including protection against neutral disconnection, overload, short-circuit, and earth fault.
53. The motors shall be protected against short circuits and overloads.
54. Measures should be in place to protect against variations in voltage, frequency, and phase imbalances.
55. For Retail Outlets operating after sunset, emergency lighting with battery backup must be installed near the dispenser and sales room.

Earthing System

56. The earthing system shall be designed in conformity with IS 3043, and the following procedures shall be adhered to:
- a. All metallic structures, pipe fittings, and enclosures of electrical equipment shall be connected to the earth.
 - b. For equipment rated up to 230 V with a 1-phase supply, the enclosure shall be grounded at least at one point.
 - c. Equipment rated above 400 V with a 3-phase supply shall have the enclosure grounded at least at two separate points.
 - d. Two earth pits shall be provided for each transformer/DG set for neutral earthing and equipment earthing.

- e. All earthing pits, excluding DG neutral and instrument/IT earthing, shall be connected through grid(s).
- f. In areas prone to lightning, a risk assessment shall be conducted to determine the need for lightning protection, and guidelines outlined in IS 2309 shall be followed

Emergency Stop System

57. An emergency stop system must be installed to immediately cut off the power supply to all metering pumps, dispensing equipment, and associated equipment, excluding certified intrinsically safe equipment, at the Sales Building. Activating any of these emergency stop push buttons must instantaneously isolate the electrical power supply to the entire Petroleum Retail Outlet.

Chapter 4 Operating procedures

Operating procedures

58. Personnel operating retail outlets must possess adequate knowledge and experience in handling Motor Spirit and High-Speed Diesel to ensure the safe and efficient functioning of the station.
59. During the unloading of product from the tank truck to the bulk storage vessels, the tank truck must be parked in the designated space for this purpose
60. The dispensing of fuel to motor vehicles should be temporarily suspended during the unloading period when fuel is transferred from the tank truck to the storage tanks.
61. All operations at the Retail Outlet shall be suspended during the period of evacuation of the storage tank for maintenance and testing.
62. Filling MS/HSD into the fuel tank of a motor vehicle is not permitted while the vehicle's engine is running.
63. The operating procedures shall be displayed at relevant locations for the unloading of the tank trucks.
64. Dos and Don'ts provided in Annexure 1 of this Guideline shall be prominently displayed in the Retail Outlet.
65. Emergency response actions should be established, understood by all involved, and prominently displayed for quick reference in the event of an emergency.

Decantation of Tank Lorries

66. Following the decanting of the product into the tank, a minimum of 50 liters of the product should be dispensed through the pump. Subsequently, a sample from the pump nozzle must be taken to determine the density of the product in the storage tank after receipt. The density, ascertained at 15°C, should then be recorded in the density register for documentation.

Forecourt Management

67. Guide the vehicle to the designated area of the retail outlet, ensuring it faces the direction of exit.
68. Do not leave the vehicle unattended during the refueling operation.
69. While refueling, ensure potential sources of ignition, such as pilot lights, electrical ignition devices, electrical appliances/gadgets, and vehicle engines are turned off.
70. Prohibit use of mobile phones while refueling or when in close proximity to the fuel dispensing equipment.
71. The delivery salesperson must ensure that the dispenser is set at Zero before dispensing the fuel.
72. Deliver product to the customer as required.
73. After completion of delivery, remove the nozzle and place it on the Pump boot.
74. At the end of the day's work, ensure that valves are closed, hoses are properly stowed and electrical equipment is switched off.
75. Important operational activities shall be logged and records of such activities highlighting receipt, inventory, level, pressure, temperature, equipment running etc shall be maintained.

Sampling

76. The samples shall be taken in a can duly verified by the Bhutan Standard Bureau.
77. The samples shall be stored at the designated approved place.
78. The samples shall be collected in a separate receptacle for each product and transferred to a storage tank through a container fitted with the hose. The retail outlet operations shall be suspended during this transfer.

Chapter 5
Inspection and Awareness

Inspection

79. A well-designed system for periodic inspection of all facilities at retail outlets shall be maintained to ensure their safe and operable condition at all times.
80. Conduct safety audits of the retail outlet as provided in this Guideline and issue a certificate of fitness, declaring integrity concerning equipment, facilities, operations, and safety procedures.
81. All recommendations of the safety audit/ inspections shall be compiled in a time-bound manner and records maintained thereof.
82. A comprehensive checklist, as outlined in Annexure 2, shall be used to verify conformity with design intentions, operating and maintenance procedures, preventive measures, protection systems, and safety practices.
83. The earthing resistance of the retail outlet shall be checked at least once a year, and detailed records of these checks shall be maintained.

Safety inspection or Audit.

84. The safety inspection/ audit of the Petroleum Retail Outlet shall be carried out as follows:

TYPE	FREQUENCY	AGENCY
Safety Inspection	Daily	Operating personnel
Safety Audit	Once in 6 months	Company authorized Person/Agency
Electrical Audit	Once a year	Company authorized Person/Agency

Maintenance

85. A comprehensive maintenance system for all retail outlet facilities shall be developed to ensure they are kept in a safe and operable condition at all times.

86. Preventive maintenance schedules shall be provided for all equipment in accordance with the manufacturer's recommendations and established mandatory/recommendatory standards. Records of all preventive maintenance activities undertaken shall be maintained and regularly updated.

Safety equipment

87. At least two ISI-marked 10 kg DCP (Dry Chemical Powder) Fire extinguishers shall be placed at a safe location within a 3 meters radius, for each dispenser unit.
88. A minimum of one 4.5 kg CO2 fire extinguisher conforming to IS: 2878 shall be available in each electrical meter room.
89. A minimum of four sand buckets filled with dry sand should be available at the premises.
90. All the employees working on the premises must be conversant with the safe handling of petroleum products and first-hand knowledge of firefighting & emergency handling.
91. All periodic tests shall be carried out by competent/authorized persons, as applicable and records shall be maintained.
92. Fire extinguishers are to be periodically tested and maintained as per OISD-STD-142.
93. The fire extinguishers are to be checked as per the following schedule:

- | | |
|--|---------------------|
| 1) Visual check of the extinguisher | : Daily |
| 2) Condition of DCP, Hose, Nozzles and Safety Clip | : Every Month |
| 3) Weight checking of CO2 Cartridge | : Every Quarter |
| 4) Performance Testing & DCP Extinguisher | : Every Year |
| 5) Pressure Testing of Extinguisher | : Every Three years |

Emergency plan and procedure

94. The Operating Company having control over the Retail Outlet shall draw an operational emergency plan keeping in view the following:
- Major failure of fittings resulting in spillage;
 - Accidents or other emergencies, which can affect the Retail Outlet;
 - Electrical Emergencies; and
 - Any other risk arising from the existence or operation of the Retail Outlet.

95. The emergency plan outlined above shall be distributed to all personnel involved, and measures will be taken to ensure that they comprehend their roles and responsibilities in the event of an emergency.
96. The in-charge of the Retail Outlets shall establish and maintain close liaison with the Fire Service, Police, Dzongkhags/Thromdes, and the Ministry.
97. Important telephone numbers for emergency use shall be displayed prominently in the Retail Outlet.
98. Emergency Action Plan should be tested through a mock drill at least once a year.

Training

99. Each POL dealer in collaboration with their principal oil company shall develop a training module of their own which should include the following:
 - a) Hazardous characteristics of the product handled.
 - b) Familiarization with operational procedures & practices.
 - c) Hands-on experience in the operation of equipment.
 - d) Knowledge of emergency and manual shutdown systems.
 - e) Immediate and effective isolation of any spill
 - f) Safety features and accident prevention.
 - g) Firefighting facilities, its upkeep and operation.
 - h) Evacuation and safe egress of the vehicles in an emergency.
 - i) Housekeeping
 - j) Decantation.
 - k) Dos & Don'ts
 - l) Emergency plan/ drills

Display of important information for customer

100. At the Retail Outlet, the license details, emergency telephone numbers of local fire service, Police and emergency instructions shall be conspicuously displayed.
101. Caution boards shall be displayed near the dispenser for customer awareness. The caution board should contain the following instructions.
 - a. Stop the engine while refueling
 - b. No smoking
 - c. Do not use mobile phones while refueling or when in close proximity to the fuel dispensing equipment

Chapter 6

Miscellaneous

Amendment

102. The ministry may propose the revision and amend the provision of the guideline in consultation with relevant stakeholders when deemed necessary.

Third-party liability

103. The ministry or its relevant department shall not be liable in case of any third-party claim due to an accident or injury caused as a result of the operation of the retail outlet.

Definitions

104. Unless the context otherwise requires:
- a. **Authorized Person:** A person trained and assigned to carry out a specific job by the dealer.
 - b. **Dispenser:** The equipment provided in the retail outlet for delivering MS/HSD to the Auto Fuel Tank of motor vehicles/approved receptacles.
 - c. **Fill Point:** The point of inlet pipe connection of a bulk storage tank for MS/HSD where the hose is connected for filling the products into the tank.
 - d. **Vent Pipe:** The pipe fitted on an underground tank in Petroleum Retail Outlets for breathing
 - e. **Petroleum Retail Outlet:** The area is provided with facilities and specially designed for storage and dispensing to the fuel tanks of motor vehicles and any other approved receptacles.
 - f. **Tank Truck/Tank Lorry/ POL Tank Lorry:** A truck mounted with a properly designed and approved tank for transportation of MS/HSD in bulk to the dispensing station.

Annexure-1: DOs & DON'Ts

DOs

- i. Prohibit use of mobile phones while refueling or when in close proximity to the fuel dispensing equipment.
- ii. Stop the engine before refueling.
- iii. Ensure a 10 kg DCP Fire Extinguisher is available near the Dispenser.
- iv. In case of any spill/ fire observed, press the “EMERGENCY STOP” button on the Dispenser.

DON'Ts

- i. Do not start the engine/ drive away the vehicle till the filling nozzles have been disconnected from the filler cap of the vehicle.
- ii. Do not refuel the vehicle during the period MS/HSD is being decanted to the tank
- iii. Do not smoke
- iv. Do not use a naked flame

Annexure-2: Daily Checklist

Date:

Time:

Sl	Particulars	Remarks
(To be carried out by individual DSM on rotational basis)		
1	All the dispensing units externally & internally clean. In the sand below dispensing units there is no spillage of product and inflammable waste.	Y/N
2	All the piping connections of dispensing units & tank farms are leak free & there is no sweating in the joints.	Y/N
3	Wire mesh in the product vent is not choked with foreign matter.	Y/N
4	Fire Extinguishers are in place and are valid for use as on date.	Y/N
5	Roads & pathways are clear of any obstructions.	Y/N
6	Safety signs are in place. (No smoking, Mobile Phone switch off)	Y/N
7	Tank farm is clean and free of dry vegetation.	Y/N
8	The sand in the fire buckets is dry and without any lumps.	Y/N
9	All the light fixtures at the periphery, canopy and the saleroom are in working condition.	Y/N
10	No employee of the Retail Outlet is in an intoxicated state.	Y/N
11	Daily briefing (Dos and Don'ts) on Safety before starting of shift has been carried out.	Y/N
12	There are no electrical faults observed in the entire Retail Outlet.	Y/N
