

# VEGETABLE/PALM OIL TANKERS: CARGO TANK CLEANING PROCEDURES AND CLEANLINESS STANDARDS.

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*Palm oil tanker loading at an Indonesian river jetty*

## INTRODUCTION

Vegetable/Palm Oil is usually transported in the international trades on board chemical tankers with stainless steel or coated tanks in segmented parcels. In the domestic and short sea trades it is often carried in smaller and less sophisticated tankers with mild steel and uncoated tanks. The risk of next cargo contamination due to inadequate previous cargo tank cleaning exists in both trades, along with the risk of regulatory non-compliance due to improper tank washings disposal to the sea.

This Risk Bulletin considers the above risks and their management and will be discussed in relation to the following:

- Adherence to current standard tank cleaning procedures and independent tank cleaning guidelines in order to meet the Federation of Oils, Fats and Seeds Association International (FOSFA) requirements for tank inspection and cleanliness and shipper/charterer requirements.
- Compliance with MARPOL Annex II, the IBC Code (SOLAS Chap. 7) and the ISM Code (SOLAS Chap. 9) during the tank cleaning process.
- Observance of MMIA's P&I insurance tank cleaning warranty and the obligation to adhere to 'standard tank cleaning procedures'.

## BACKGROUND TO FOSFA INTERNATIONAL

FOSFA International is a globally recognised and represented organisation based in the UK. It provides sale and purchase contract forms, specialist arbitration, advice and superintendence on the handling and transport of edible oils, fats and seeds. FOSFA's current total of 1,179 members in 86 countries include FOSFA member webpage listings in Malaysia and Indonesia.

FOSFA membership provides free on-line access to all FOSFA technical manuals and other publications. Non-members may purchase a number of these documents e.g. FOSFA's 'Carriage of Oils and Fats' and 'Technical Guide' manuals.

FOSFA also provide a Superintendents Scheme which is supported by their Code of Practice for Superintendents (CPS) manual. The CPS manual includes advice on shipboard tank inspections and cleanliness requirements but it is normally available only to FOSFA members.

## ADHERENCE TO VEG/PALM OIL TANK CLEANING AND TANK CLEANLINESS STANDARDS

As explained in MM Risk Bulletins No. 36 on CPP Tankers and No.37 on Chemical Tankers, cargo tank cleanliness standards and tank cleaning procedure standards are intrinsically related but they are not the same thing. In brief, cleanliness standards specify the goal which must be attained through the selection and application of the appropriate cleaning processes and governing standards. These two related standards and their application are considered below.

### FOSFA VEG/PALM OIL CARGO TANK INSPECTION AND CLEANLINESS REQUIREMENTS

The FOSFA tank inspection process and the tank fitness and cleanliness requirements to be adhered to by a FOSFA Superintendent are contained in the FOSFA CPS at Part 1, Oils and Fats, Section 5.2, Ships Tank – Fitness and Cleanliness. FOSFA have kindly granted their permission to reproduce the following:

*“Obtain information by sighting the FOSFA Combined Master’s Certificate signed by the Captain/First Officer, or equivalent statement signed by the ship’s owners/authorised agent, in respect of the previous three cargoes and method of cleaning after last cargo, including note of chemicals used in cleaning.”*

*“Acceptability of tank with or without further specific testing and cleaning to be checked against current FOSFA contract terms and categorised product lists, as may be currently issued by FOSFA. Where such review requires specific testing and cleaning, this can only be progressed by the superintending organisation where specialist operatives are available and specialised laboratory facilities are close at hand. Otherwise, if tank empty and safely accessible and gas-free, inspect walls, bulkheads and bottom for cleanliness and surface condition (coated or otherwise).”*

*“Check visually so far as accessible to ensure that no internal fittings of copper or copper alloy, which are not allowed. Report on condition of tank coating. Report on residues, loose scale, hardened product adhesion to cross-members, etc. Where chemical cleaning has taken place, it is essential to check for residual chemicals. Report on any unusual foreign odour and identify if possible. Where not accessible, very limited inspection can be made from deck manholes. If the condition of tank is unacceptable, if possible advise Principal and/or reject. The Superintendent reports on the FOSFA Certificate of Compliance, Cleanliness and Suitability of Ship’s Tank, based on sighting the FOSFA Combined Master’s Certificate.”*

In addition to the FOSFA CPS inspection procedures and tank cleanliness requirements, MM members should refer to the [FOSFA Qualifications and Operational Procedures \(QOP\) of Jan 2010](#). Particular attention should be paid to:

- Part A FOSFA Qualifications, Section 2. Tanks (Materials, Coatings and Tank Blisters)
- Part B FOSFA Operational Considerations, Section 2. Tank History (Previous Cargoes) which refers to and explains the application of the [FOSFA List of Banned Immediate Previous Cargoes](#) and the [FOSFA List of Acceptable Previous Cargoes](#).

**Note:** Part B, Section 2. also explains that loading to ‘short sea vessels’ (load to disport

distance under 2,000 n.mi.) with mild steel tanks is allowed 'provided the three previous cargoes have all been oils and fats for edible and oleo chemical use and/or molasses'.

## INDEPENDENT CARGO TANK CLEANING PROCEDURES

FOSFA advise that they do not provide guidelines on Veg/Palm Oil preload tank cleaning processes and the utilisation of chemical cleaning products. Instead, FOSFA's direct enquiries made on this subject to well-known and independent tank cleaning guides such as the two guides noted below. The advice does not exclude the use of alternative suitable tank cleaning operations.

- Dr. Verwey's Tank Cleaning Guide, 10th Ed. 2019.
  - Published by Witherby in hard copy or E-format at a cost of GBP 375.00.
  - Advertised as providing cleaning guidelines for more than 400 bulk liquid cargoes (inclusive of petroleum, chemical and vegetable oil products) and a cleaning matrix of "some 140,000 combinations of 'previous' to 'next' cargo".
- Miracle Tank Cleaning Guide and Cargo Database.
  - Published and updated continuously by ChemServe GmbH. Available as an interactive software product only at a cost of about USD 900.00.
  - Cleaning guidelines extend to about 9,000 petroleum, chemical and vegetable oil products which is supported by a cleaning matrix.

Reference to and the proper application of the appropriate cleaning procedures described in either of the above guides or suitable alternatives, together with reference to FOSFA's Lists of both Banned and Acceptable Previous Cargoes, should produce a cargo tank cleanliness result which meets with FOSFA's CPS and QOP requirements. This outcome can only be confirmed by a FOSFA certified Superintendent's issue of a FOSFA Certificate of Compliance, Cleanliness and Suitability of Ship's Tank as referred to above.

## VEG/PALM OIL TANK CLEANING REGULATORY COMPLIANCE

Studies by Environment Canada (Fingas, Fieldhouse and Jokuty, 2001) have shown that significant Vegetable Oil spills or operational discharges of Vegetable Oil may have devastating effects on birds by

causing hypothermia and on intertidal organisms by smothering. Other sources advise that such spills or discharges in significant quantities may also solidify and accumulate into what are commonly known as 'bergy bits'. These accumulations have created substantial environmental damage on colder climate North European beaches with consequent high removal costs.

As a consequence of the pollution issues, the carriage of Vegetable Oils by sea and spills or the operational discharge of any of their residues into the sea are regulated by MARPOL, Annex II, Regulations for the Control of Pollution by Noxious Liquid Substances (NLS) in Bulk, and the associated International Bulk Chemical Code (IBC) 2008 (2020 Ed.). These regulations and their impact on Veg/Palm Oil Tank cleaning are outlined below.

- **MARPOL, Annex II** – Regulations for the Control of Pollution by Noxious Liquid Substances (NLS) in Bulk apply to all tankers carrying NLS which are 150 GT or over, whether engaged in international or domestic trade.

MM Members should refer to the MARPOL Consolidated Ed. 2017 as updated by the IMO's 2020 Supplement which is available on line. In brief, the content of Annex II includes but is not limited to:

- Details of Chemical Tanker design, equipment, surveys and certification as required for Type 1, 2 and 3 Tankers.

**Note:** The details of Type 1, 2 and 3 Tankers are contained in the IBC Code and are summarised in the IBC Code outline section below.

- The categorisation of NLS into Cat. X 'major hazard', Cat Y 'hazard', Cat Z 'minor hazard').

**Note:** Palm Oil (in all forms) is, for the reasons noted above, categorised as a Cat Y 'hazard' NLS. As a consequence, and subject to the particular type of Palm Oil and product name, this commodity may only be carried on board either a double hull Type 2 Tanker or a Type 2(k) Tanker. The (k) designation is important because it entitles a flag state to provide an exemption to permit carriage on board a single hull Type 3 Tanker according to regulation 4.1.3 of Annex II of MARPOL 73/78 which includes additional cargo tank location requirements for vegetable oils.

- The obligation to provide a flag state approved Procedures and Arrangements (P&A) Manual which details all of a tanker's cargo tanks, lines, pumps and equipment in a standard format and endorsed by flag state.

- Restrictions on the discharge of NLS tank washings into the sea, inclusive of prohibiting the use and discharge of any tank cleaning chemicals unless they meet the requirements of Annex II, Reg. 13.5.2 and are listed in the [IMO Provisional Categorization of Liquid Substances MEPC.2/Circ.15, Annex 10](#).

**Note 1:** IMO Res. [MEPC.315\(74\)](#) (Cargo residues and tank washings of persistent floating products) amends MARPOL, ANNEX II, Regs.1 and 13, and Appendices 4 and 6 and comes into force on 1 Jan 2021. It will apply only in North Western and Western European Waters as well as the Baltic and Norwegian Sea. It will obligate the pre-washing of Veg/Palm Oil cargo tanks after cargo discharge at ports in those areas and the discharge of tank washings to shore reception.

**Note 2:** In all other areas, apart from Arctic and Antarctic waters, tank washings from Veg/Palm Oil cargo tanks may continue to be discharged into the sea subject to the restrictions imposed by MARPOL, Annex II, Reg. 13. This permits remaining Cat Y cargo residues (to a 'stripping limit' total of between 75 and 300 liters + 50 liters tolerance) to be legally discharged, provided that: 1. The discharge is made below the waterline 2. While en route at a minimum speed of 7 knots 3. At least 12 nautical miles from the nearest land, and 4. In water depths exceeding 25 m.

- **IBC Code 2008** – Supplements MARPOL, Annex II, by prescribing the standards for the design, construction, equipment and operation of chemical tankers.

MM Members should refer to the IBC Code 2008 (2020 Ed). In brief, the content of the IBC Code includes but is not limited to:

- Chemical Tanker Type designations, which determine whether Cat X, Y or Z NLS are permitted to be carried on board. They are:
  - **Type 1** – Double Hull and 'Certified to carry products with very severe environmental and safety hazards which require maximum preventive measures to preclude an escape of such cargo'.
  - **Type 2** – Double Hull and 'Certified to carry products with appreciably severe environmental and safety hazards which require significant preventive measures to preclude an escape of such cargo'.

- **Type 3** – Single Hull and ‘Certified to carry products with sufficiently severe environmental and safety hazards which require a moderate degree of containment to increase survival capability in a damaged condition’.
- A table of over 250 NLS (Chapter 17) which advises the Type 1, 2 or 3 tanker on board which each listed and categorised (Cat. X,Y or Z) NLS may be carried.
- The requirement to carry an International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk (NLS Certificate).

**Note:** The IBC Code 2008 has been amended by IMO Res. [MEPC.318\(74\)](#) and [MSC.460 \(101\)](#) which both come into force on 1 Jan. 2021.

## MMIA STANDARD TANK CLEANING PROCEDURES WARRANTY

The MMIA P&I terms of entry for a Tanker engaged in carrying Veg/Palm Oil will normally include the following tank cleaning warranty:

*“Warranted vessel to comply with the standard tank cleaning procedures and the use of appropriate cleaning agents in respect of loading of different grade of cargoes and/or product. Otherwise the Association reserves the right to reject in whole or in part, any claims arising therefrom”.*

A question sometimes raised by members is whether the words ‘*the standard tank cleaning procedures*’ refer to the cleaning procedures already contained in their vessel’s operating manual and/or the approved ISM Code Manual (or NCVS equivalent) procedures or whether these words may refer to compliance with an external set of industry tank cleaning procedures?

As discussed above, FOSFA do not provide specific guidelines on tank cleaning procedures and instead advise all enquiries on this subject to refer to independent tank cleaning guidelines. These include the Dr Verwey’s and Miracle guides which, from an industry viewpoint, may be considered as ‘best practice’. MM therefore recommends that their Members should also be guided accordingly.

With reference to “*the use of appropriate cleaning agents*”, MM Members should ensure that any chemicals used during the tank cleaning process meet the requirements of MARPOL Annex II, Reg. 13.5.2 and the related IMO Circular referred to previously. They should also ensure that cargo shippers/charterers are notified in advance and approve of such usage.

## CONCLUSION AND TAKEAWAY

The transport of Veg/Palm Oil by sea is subject to the commercial risk of cargo contamination and claims due to failures to implement both industry 'best practice' tank cleaning procedures and FOSFA tank cleanliness requirements. There is also a regulatory compliance risk of fines and clean-up costs which can arise from a failure to ensure strict adherence to MARPOL Annex II and IBC Code requirements.

By way of assistance in managing and avoiding the above mentioned risks and associated losses, MM recommends to its Members that they:

1. Ensure that a PDF copy of this Risk Bulletin is provided to the masters and ship managers of all of their tankers which are engaged in the carriage of Vegetable/Palm Oil.
2. Instruct their ship managers and DPAs to check the content of Chemical Tanker Operating Manuals and/or IBC Code P&A Manuals and/or ISM Code or NCVS equivalent SMS Procedures to ensure they include specific reference to:
  - a. Tank cleaning guides such as Dr Verwey's or Miracle Guide and the necessity for their application when cleaning cargo tanks for a Vegetable/Palm Oil cargo product type or grade change.
  - b. The FOSFA Cargo Tank Inspection and Cleanliness requirements as providing a clear and reliable Veg/Palm Oil tank cleanliness benchmark.
  - c. Compliance with both MARPOL Annex II and the IBC Code, as amended.
3. Require Shippers and/or Charterers to provide the full details of all cargo tank cleaning requirements, preferably by reference to tank cleaning guides such as Dr Verwey's or Miracle Guides, and to the tank cleanliness requirements by reference to the FOSFA CPS and QOP as described above. This would best be accomplished in writing and at the time the contract of carriage and/or charterparty is negotiated and agreed.

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