

**NOTICE TO THE TRADE**

**DATE:** February 3, 2023

**ATTENTION:** All Participants in P.L. 480 Title II Food Aid Shipments

**SUBJECT:** Bulk Vessel Fumigation with Phosphine

This notice is to advise ocean carriers that the following fumigation protocols are effective immediately for bulk food commodities.

**Concentration of aluminum phosphide (Phosphine) and recommended dwell time in the cargo holds before ventilation.**

● Fumigate all bulk vessel holds at a rate of 60 grams of phosphine gas per 1,000 cubic feet of stowage space, for a **minimum of 120 hours** from the departure of the port of loading/origin. (60 grams of phosphine gas is equivalent to 82 grams of aluminum phosphide or 55 grams of magnesium phosphide per 1,000 cubic feet).

● For best results we **recommend** all vessel holds be fumigated at 60 grams of phosphine per 1,000 cubic feet stowage space for **196 hours**, and preferably up to 360 hours from the departure of the port of loading/origin. (We appreciate that the vessel will have to ventilate to manage/avoid condensation/sweating due to humidity & temperature during the voyage.)

● Phosphine gas concentration **higher than 60 grams** per 1,000 cubic feet **should not** be used as a higher concentration of phosphine results in the insects going into a state of narcosis, and thus reduces the efficacy of the fumigation.

● Where possible, aluminum phosphide should be used instead of magnesium phosphide due to the risk of ignition and fire. At no stage should the metal phosphides, or their residues, come into direct physical contact with the bulk grain cargo. Fumigants should only be applied in accordance with the product labeling.

● The above timeline is based on ambient **cargo temperatures** which are **equal to or greater than 60 degrees Fahrenheit (15.6 degrees Celsius)**. If the temperatures, as encountered by the vessel at sea, are colder than 60 degrees Fahrenheit (15.6 Celsius), this will severely impact the release of the phosphine gas from the metal phosphide formulation, and at the same time will reduce the effectiveness of the phosphine gas due to lower metabolic levels in the insect population. Under such circumstances, the vessel’s Master is requested to contact the Fumigator and USAID for further guidance, as the fumigation hold time may have to be increased accordingly.

**Vessel cargo hold Preparation to ensure success of the fumigation:**

The Vessel’s Master is requested to:

1. Provide the fumigator-in-charge with all necessary information regarding the ship’s specific features (e.g., structural, or other systems such as piping ducts, cofferdams, pumping systems, all-weather tunnels, keel ducts, bilges, smoke/fire detection or suppression systems, electrical systems, deck lockers, etc.) that may be a source of fumigant leakage from the ship’s holds. It is highly recommended that such areas be sealed efficiently, perhaps using polyurethane foam and reinforced with silicone or other similar sealants to ensure effective sealing.

2. To accomplish an effective and efficient fumigation, it is recommended that the Master appoint a suitably trained and knowledgeable representative/crew member to accompany the fumigator during the inspection/testing of empty cargo holds prior to loading, to determine whether the holds are gas tight or can be made gas-tight and, if necessary, what work must be carried out to ensure they are gas tight.

3. Arrange to provide the fumigator-in-charge with electrical plugs suitable for connection of the recirculation fans to the ship's power supply, if required for the application method.

4. Seal off all potential fumigant leakage sources from cargo holds prior to loading.

5. Ensure the hatch covers are fully opened during the fumigant application procedure.

6. Close and seal off all hatch covers, manholes, ventilators, and other remaining openings to prevent fumigant leakage from cargo holds following application for the recommended timeline.

7. Appreciate that the release, cargo penetration and efficacy of the fumigant gas is dependent on the cargo temperature, where warmer is better. The **minimum cargo temperature** for effective phosphine fumigation is **60 F (15.6 Celsius)**.

8. The fumigator should give written guidance (based on local temperature and timeline) to the Master before departing from the vessel and have a signed copy of the delivery/discussion. The guidance issued to the Master should be discussed by the fumigator after completion of the fumigant release and sealing of the cargo holds.

**NOTE**: The fumigation application procedures are to be in compliance and in accordance with the latest version of the International Maritime Organization (IMO) Recommendations on the Safe Use of Pesticides in Ships & the International Maritime Dagnerous Goods (IMDG) Code Supplement, Occupational Safety and Health Administration (OSHA) & the Center for Disease Control (CDC) regulations and guidelines, USDA, & USAID regulations and guidelines, the Fumigant product label, the fumigant manufacturer’s instructions, and local and national phytosanitary requirements.

**Gas Monitoring & Crew Safety:** Personnel safety is paramount. The vessel’s crew should be provided (and trained) with suitable and calibrated Phosphine monitoring portable meters, so that any man-entry into enclosed spaces in the vicinity of the fumigated hold(s) are checked for air quality safety, before entry. Material Data Safety Sheets (MSDS) of the products should be easily available for reference.

Any questions concerning this Notice should be directed to the USAID Transportation Divisionat m.oaa.tcmaillistusaid@usaid.gov .