

## FUMIGATION COMPANIES COMMITTEE TECHNICAL NOTE Number 002/2023

### Fumigation procedures and time required for effective and safe application.

#### INTRODUCTION

The fumigation procedure is the last step before the ship undocks and heads towards its destination. As it is the last step before undocking, fumigation is a procedure permeated with tension, as it involves safety issues in the application procedures. The fumigator company must follow the entire procedure to the letter, but it is common for shipping agents and terminals to put pressure on the companies during the application in order to anticipate the ship's departure.

However, we must keep in mind that this procedure, in addition to being extremely technical, has a high risk, as it involves the handling of pesticides that are applied in the holds of ships, with chemical treatment that can continue throughout the voyage to the ship's destination.

Therefore, the lives of several people are directly involved in fumigation procedures, from the applicators and other workers at the loading port, the ship's crew throughout the voyage, the company responsible for gas free, and for the removal of sleeves/sachets, when necessary, in addition to the people involved in discharging of the goods at the port of destination.

Therefore, in view of the complexity of the activity and the safeguarding of the lives of all people involved, it is **extremely important that the fumigation procedures are carried out in the safest possible way. But, for this to happen, it is necessary that fumigation companies have at least enough time to**

**conduct such services.**

#### FUMIGATION PROCEDURES FOR SHIP'S HOLDS

In order to fumigate the holds of ships, the fumigation company must follow a series of safety procedures and protocols, among which are summarized:

- Personnel access and fumigation materials to the ship.
- Distribution of equipment and pesticides in the holds to be fumigated.
- Sealing all hold's drains and any other place that allows air to escape to maintain its tightness.
- Isolation of the area to prevent the entrance of unauthorized persons without the proper PPE.

#### *Beginning of the application in ship holds*

- If using the "Tablets" method (method in which the tablets are spread directly on the cargo): the team must open the fumigant bottles one by one and then enter the hold to start the application. On average, a ship with a dosage of 1g/m<sup>3</sup> has around 42 bottles of 1kg each per hold to be opened and applied, totalling around 294 bottles in a ship with 7 holds. Ships with a dosage of 2 g/m<sup>2</sup> will have double of this quantity, i.e., an average of 84 cans of 1 kg per hold, totalling 588 bottles of 1 kg for 7 holds. In addition, the team must enter the hold of the ship and apply it to the entire surface of the cargo, burying the fumigant as a safety procedure. For holds that are not completely filled, the ladders

of the switchboards must be used, or, if this is not possible, ladders provided by the ship must be used — which can further increase the time for the procedure.

- If the method is “Sleeves”: Initially, all the fumigant bottles are opened and then distributed one at a time in the sleeves (as Technical Note FCC 001/2021 of this committee). The fumigation team must enter the hold to distribute the product over the entire surface of the cargo, burying the sleeves individually, anchoring them outside the hold using ropes or steel cables.

- After applying the fumigant, the fumigation team must collect all empty packaging and materials used to return them to company's facilities and give them the correct destination.

- Once the application is complete and holds closed, the fumigation team must measure the gases around the holds to ensure that there are no gas leaks. If a leak is detected, it must be repaired with the help of the ship's crew, usually using materials such as: foam, silicone, asphalt blanket ("Ramnek tape"), etc.

- Once all these procedures are completed, all fumigation documentation must be signed, transferring all instructions and responsibilities to the ship's captain or person appointed by him.

#### TIME NECESSARY FOR THE FUMIGATION PROCEDURE

In view of the complexity, risk level, and importance of this operation, this committee, **considers that at least 3 hours of free time should be available for fumigation.**

**\*Free Time:** the time exclusively used for the fumigation procedure, from the moment the ship's captain authorizes the beginning of the procedure until the end of it. If the procedure must be interrupted due to weather conditions,

failure to close holds, draft, or any other occurrence at the end of loading, this should not be counted as “free time” for the fumigation.

#### STAFF INCREASE — INEFFECTIVE IN DECREASE OF FUMIGATION TIME

The procedures adopted to carry out fumigation on ships must follow a product application methodology that guarantees the safety and integrity of workers, in addition to the quality and efficiency of the entire fumigation process. Even if the number of people in the work teams were increased, the time required to apply the procedures and the efficiency of fumigation would not change. Regardless of the number of workers on the ship's deck, each stage of the application process presents dynamics and safety requirements that must be followed by everyone.

The first factor in this dynamic does not concern only the procedures adopted by the fumigation company. Initially, the ship must follow guidelines and adopt procedures from the Captain or the chief officer, who are responsible for the way that the holds of the ship will be opened and closed. The opening of holds is usually done individually, one hold at a time, and it may take up to two minutes to completely open a single hold, with the same time required for closing it. This procedure is carried out by a single crew member of the ship, rarely done by two, requiring the fumigation team to wait for the complete closing of a hold to start opening the next one. Accelerating these procedures for opening and closing the holds of ships to start the fumigation procedures are not the responsibility of the companies that carry out the fumigation.

The second factor refers to the safety requirements to work on the ship's deck. The space on the surface of the cargo above the cargo in the hold is a limiting factor for carrying out work safely, as teams with a large number of workers will not be able to fit in this space, making it difficult to carry out the fumigation and risking the safety of workers.

Opening several holds at the same time causes

concern. In addition to the problem reported with the limitation of a maximum of two crew members per ship to carry out the opening and closing procedure, there are unfavourable weather issues when keeping all holds open at the same time, both in relation to the safety of people on the ship's deck, as well as regarding the quality of the stored cargo.

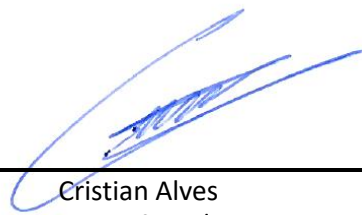
Another factor that can influence the working time of the fumigation team are failures in the opening and closing system of the hatch covers, since, until they are resolved, the fumigation team is not allowed to move on to the next hold.

Therefore, this committee of fumigation companies, through its knowledge and extensive experience operating in all Brazilian ports, **recognizes that the fumigation time does not decrease due to the increase in the number of workers in the team**, taking into account the efficiency and quality of the procedures for carrying out fumigation, as well as concern for the safety and health of workers.

#### CONCLUSION

The fumigation procedure is a crucial step for the export of Brazilian grains. All those involved in port operations are responsible for ensuring adequate time for safe and effective treatment, in order to achieve excellence in the export of Brazilian grains.

Therefore, anyone who acts in disagreement with these technical guidelines must be aware that their actions may have an impact on the safety of the people involved in the operations and on the plant health of the exported goods.



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