

FOCUS

FUMIGATION

2024

Trusted. Independent. Committed.



SGS

When you need to be sure



Fumigation and pest management

Grain and feed products are necessary for a healthy diet for humans and animals. Whole-grain foods particularly are highly recommended due to their high levels of fiber, vitamins, minerals, and other nutrients, all of which can help control cholesterol levels and blood pressure.^[1]

In recent years, global consumers have become increasingly aware of these health benefits and have begun to shop in a more health-conscious manner. Amid recent years however, global supply chains faced unprecedented disruptions leading to the need to store and protect food for longer periods to ensure consistent supplies remained available.

Fumigation is defined as the application of smoke, vapor, or gas for the purpose of disinfecting or of destroying pests.

During the storage and transportation of agricultural commodities, there is the unfortunate risk of damage occurring due to contaminations and pest infestations. To retain the quality of these commodities, reduce potential losses, and fulfill regulatory standards and contractual obligations, it's essential to be prepared to be proactive and reactive to protect your goods when such issues arise. Thus, a newly heightened demand for fumigations and pest management measures occurred.

References:

1. Mayo Clinic (2022). Whole grains: Hearty options for a healthy diet. <https://www.mayoclinic.org/healthy-lifestyle/nutrition-and-healthy-eating/in-depth/whole-grains/art-20047826>
2. The Grains and Feed Trade Association (Gafta). Approved Registers: Fumigators. <https://www.gafta.com/Fumigators>

Trust in SGS

At SGS, we specialize in all-encompassing fumigation and pest management solutions for global supply chains - preventing potential infestations or providing comprehensive treatment of products, buildings, manufacturing facilities, means of transportation and other objects against all types of pests, including beetles, mites, borers, moths, weevils, cockroaches, termites, wasps and pathogens.

In multiple countries, we are registered as Gafta-Approved Fumigators.^[2] Our industry professionals offer guidance on the most effective techniques and procedures to ensure your operations align with health, safety, environmental, and regulatory mandates. Moreover, we assist in ensuring that your cargoes are equipped with the correct paperwork for their target destinations.

Protecting your agri-commodities



“At SGS, we proudly offer an extensive range of fumigation solutions designed to cater to numerous commodities housed in diverse facilities. Our expansive network of cutting-edge laboratories and offices is strategically positioned across the globe, ensuring no location is left uncatered. We are committed to ensuring that our fumigation and pest management solutions adhere to and surpass established standards, safeguarding the safety and integrity of your agricultural commodities.”

Stas Bukhtiychuk
Operations and Technical Development Manager, SGS Global Fumigation Services

Our range of protective solutions is available for:



Agricultural Products

Grains, cereals, pulses, legumes, nuts, seeds, dried fruits, coffee beans, cocoa beans, animal feed.



Stored Commodities

Processed foods, tobacco, textiles, wood and timber.



Structures and Buildings

Warehouses, commercial buildings, industrial buildings, shipping containers and cargo.



Transportation and Shipping

Aircraft, ships, trains, vehicles and trucks.





The purpose of fumigants

“Ineffective fumigation can result in significant losses to agricultural products in storage and those for export. With strict procedures, and highly qualified technicians trained and recognized by the Plant Protection Department (PPD) of Vietnam, we provide safe and effective fumigation services for stored and exported products.”

Truong Mach

Sales Manager, SGS in Vietnam

The presence of bacteria and pests in stored grain poses a significant threat to agricultural commodities across the globe. Pests are responsible for an estimated 9%-20% of all post-harvest losses – a degree that varies depending on local preventive capabilities. This damage is due to the harmful substances produced by such pests, resulting in quantitative and qualitative losses.

Approximately 13 million tons of grain are lost annually to such infestations with an additional 100 million tons lost due to inadequate storage practices.

In today’s markets, fumigation methodologies can be divided into three forms: solid, liquid, and gas. By standard definitions, fumigation refers to toxic chemicals released in gaseous forms to target and eliminate pests and

diseases^[3] in all their life stages (egg, larva, pupa, and adult) while keeping toxicity to plants, humans, and other non-target organisms as low as possible. Fumigants must not leave harmful residues or affect the quality or seed germination of the cargo. It is additionally imperative that the method does not cause any negative environmental effects.

Over the years various methods have been employed to contact these insects. During the 19th century, the primary focus was on synthetic pesticides. Phosphine gas has been extensively utilized since the 1960s to fulfill the quarantine requirements and manage insect populations.

References:

3. United States Department of Agriculture (2023). Fumigation Handbook. <https://www.ams.usda.gov/sites/default/files/media/FumigationHB.pdf>



Advantages and disadvantages of phosphine gas

Phosphine gas is an effective and economical fumigant, widely used in the stored products industry due to its ease of use and diverse commercial formats including solid tablets, blankets, sachets, and gas cylinders. This versatility makes it suitable for various storage structures such as silos, bag stacks, pad storage, bunkers, railcars, shipping containers, and large-bulk shiploads.

Globally acknowledged as a residue-free treatment, phosphine leaves no harmful remnants post-fumigation, making it safer for the environment than alternatives like methyl bromide due to its rapid dispersion through stored commodities and swift breakdown post-fumigation. These unique characteristics differentiate from other fumigants like sulfuryl fluoride, carbonyl sulfide, propylene oxide, ethyl formate, and hydrogen cyanide. Furthermore, phosphine (Hydrogen Phosphide) is the only fumigant approved by the International Maritime Organization (IMO)'s Recommendations on the Safe Use of Pesticides in Ships and the International Maritime Dangerous Goods (IMDG) Code Supplement.^[4]

However, the broad usage of phosphine has resulted in significant phytosanitary risks, including widespread insect resistance. This resistance is influenced by various factors such as pest genetics and ecology, resistance mechanisms, and operational considerations related to the chemical's application.

The main reason for this resistance is non-adherence to fumigation protocols, such as maintaining the correct phosphine concentration and exposure time at a specific temperature. Challenges can also occur due to poor sealing and maintenance of the fumigation structure, leading to excessive gas loss and inadequate dosing. Other potential issues include inconsistent monitoring of phosphine concentration, failure to maintain the minimum target level of phosphine, and substandard hygiene and sanitation practices, which can encourage the growth of resistant insects and re-infestation of previously fumigated commodities.

Despite these challenges, with proper application and adherence to fumigation protocols, phosphine can continue to be a highly effective and environmentally friendly solution for pest control in the stored products industry.

References:

4. Gafta (2018). The Gafta Standard for Fumigation. https://www.gafta.com/write/MediaUploads/Trade%20Assurance/Gafta_Standard_for_Fumigation_WEB.PDF



Choosing the right methods for your cargo

"The fumigation team at SGS consistently reaches out to inquire and communicates effectively to establish an estimated time. You can sign directly on the tablet without needing any paperwork. When the cargo arrives at its destination, we have never experienced any issues."

Ms. Waraporn Manapood

Supervisor, Chemical Innovation Co. Ltd.

Applying the right fumigation regimes is a crucial step in pest control, but it should not be seen as the only solution. It's important to understand that traditional methods of estimating infestations, such as sample collection and visual examination, may not always provide a comprehensive picture, particularly when infestations are less than one individual per kilogram or when immature stages of hidden infestations have not yet emerged.

However, combining fumigation with comprehensive control measures can significantly improve its effectiveness. This approach not only safeguards our customers but also mitigates risks, including insect and pest infestations, mold and spoilage, fire, and explosion hazards, harmful fumigant residues, and potential demurrage and rejection.

Our specialized solutions cover an extensive array of services. These include quarantine and pre-shipment treatments, combating insects and mites, treating bulk and bagged products in different storage facilities, and conducting in-transit vessel fumigation. In addition, we offer disinfection of vacant cargo spaces, handle fumigant removal and disposal, and perform gas-free concentration measurements.

At SGS, we can ensure a more effective and reliable pest control process, enhancing the safety and quality of your agricultural products but also contributing to a healthier and more sustainable environment.

Our global network

Equipped with cutting-edge techniques, materials, and tools, our mobile teams confidently tackle all insect and pest infestation issues. They work rapidly and efficiently to guarantee immediate and reliable intervention all while complying with local and international regulations.

Located in over 30 countries worldwide, our fumigation teams, are ready to earn your trust.

Our global supervision and fumigation services bring a host of notable benefits. Clients have access to our network, rich with local expertise, enabling us to provide customized solutions to meet distinct regional requirements. We centralize and collect information through our coordination center, facilitating efficient data handling and faster information dissemination. This efficient communication model allows for swift decision-making based on the provided information, ensuring quick responses to any emerging issues. Moreover, we offer a single point of contact for the customer, streamlining communication and improving the overall customer experience. In areas where we do not directly perform fumigation, we offer our customers supervision services, significantly reducing all associated risks.

With SGS, you can have peace of mind knowing that your pest control needs are in the hands of a dedicated team of professionals committed to achieving the highest possible outcomes.

Our fumigation solutions are available in:

Algeria	Ecuador	Kazakhstan	Mozambique	Poland	Sri Lanka	Uganda
Bangladesh	Egypt	Kenya	Myanmar	Portugal	Taiwan	Vietnam
Bulgaria	Estonia	Latvia	Pakistan	Romania	Thailand	
Canada	France	Lebanon	Paraguay	Senegal	Tunisia	
Cote d'Ivoire	Germany	Lithuania	Peru	Spain	Turkey	



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Contact us

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The SGS logo consists of the letters 'SGS' in a bold, white, sans-serif font. A thin orange horizontal line is positioned below the letters, and a thin orange vertical line is positioned to the right of the letters, forming an L-shape.

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