

Section 3. Economics and Management

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CHARACTERISTICS OF TEXTILE FACILITIES AND ISSUES ARISING IN FIRE PREVENTION AND FIGHTING

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Abstract

A textile facility is a legally constructed and operated building, structure, or location where one or more stages of the textile production chain are carried out, including fiber processing, spinning, weaving, dyeing, printing, finishing, industrial sewing, raw material and finished product warehousing, and related auxiliary activities. Textile facilities are typically characterized by containing a large amount of flammable materials, such as cotton, fabrics, synthetic fibers, and dyeing chemicals; having a high density of machinery and equipment; and concentrating a large number of workers. Textile factories are places with enclosed production spaces, limited ventilation, and complex electrical systems... This article analyzes the characteristics of textile factories and the current state of fire prevention and fighting, pointing out existing problems and limitations in this area, and then proposing solutions to improve the effectiveness of fire prevention and fighting in textile factories.

Keywords: *Textile factories; characteristics of textile factories; fire prevention and fighting*

1. Introduction

The textile and garment industry currently plays a key role in the national economic structure, identified as one of the key export sectors, making a significant contribution to GDP growth and export turnover. In particular, the industry is of great significance in creating sustainable livelihoods for millions of workers, especially in concentrated industrial zones and rural areas, where light industry is a driving force for local economic devel-

opment. As of December 2025, Vietnam had over 6,892 active textile and garment production facilities, widely distributed across key economic regions such as the Red River Delta, Southeast, North Central, and Central Coastal regions, thus contributing to the development of our national economy. However, in addition to the contribution of textile and garment facilities to the economy, these facilities also pose many fire and explosion risks due to their specific characteristics of

containing large quantities of flammable materials, such as cotton, fabrics, synthetic fibers, and dyeing chemicals; It is a place with a high density of machinery and equipment; it is a place where a large number of workers are concentrated. Textile factories are places with enclosed production spaces, limited ventilation, and complex electrical systems... According to statistics, from 2019 to the end of 2025, the number of fires in textile factories was 244 (accounting for 0.99%) of the total number of fires in Vietnam, resulting in 39 deaths (accounting for 5.64%), 104 injuries (accounting for 13.38%), and estimated property damage of approximately VND 735.38 billion (accounting for 12.7%). Many fires caused serious damage to people and property, such as: the fire on June 2, 2023, at the factory of Concord Textile Corporation Vietnam Co., Ltd. – specializing in yarn spinning and textile manufacturing, Nhon Trach 2 Industrial Park, Dong Nai province, which destroyed 1000 m² of factory space, causing serious property damage; The fire occurred at noon on July 11, 2023 at a textile company in My Phuoc 3 Industrial Park, Binh Duong province (now Ho Chi Minh City), burning down about 1,500m² – 4,000m² of factory buildings;... (Fire and Rescue Police Department, *Summary report on work from 2021 to the end of 2025*). Due to the specific characteristics of textile facilities, the main causes of fires in this type of facility are electrical equipment malfunctions due to overload; in addition, the cause due to the carelessness of workers in textile facilities is also a matter of concern; on the other hand, the cause due to technical malfunctions and violations of fire prevention regulations also account for a relatively high percentage. To limit fires in textile facilities, it is necessary to study and analyze the specific characteristics of textile facilities and on that basis propose synchronized solutions to organize fire prevention work for this type of facility.

2. Research Results

2.1. Characteristics of Textile and Garment Facilities

Characteristics of Raw Materials and Goods: The main raw materials of the textile and garment industry are cotton, yarn, fabric, and accessories (thread, foam, sponge,

paper packaging, nylon, etc.). These are all flammable substances with a rapid flame spread rate and produce a lot of smoke and toxic gases when burned. In particular, synthetic fabrics can melt, drip, and spread fire to other areas when burned. Cotton dust and yarn dust accumulating in the air or adhering to equipment can increase the risk of smoldering fires, spreading fires, or even dust explosions under certain conditions. Warehouses storing raw materials and finished products often have a high flammable load; if not properly divided and fire-resistant, they can cause fires to spread over a large area.

Characteristics of Technology and Equipment: The textile and garment production process includes many consecutive stages such as spinning, weaving, dyeing, drying, cutting, sewing, ironing, and packaging. In this system, the machinery uses high-power electric motors and operates continuously. The processes of heat pressing and drying utilize high temperatures. The electrical system often has a high density of wires, posing a high risk of overload and short circuits if not regularly inspected and maintained. Production lines are often arranged close together to save space, making it difficult to create safe distances for fire prevention and evacuation in case of an emergency.

Regarding architecture and construction: many textile and garment facilities, especially small and medium-sized enterprises, utilize renovated warehouses, residential buildings, or structures that do not meet fire safety standards. Some common shortcomings include: lack of fire containment and fire spread prevention solutions between production areas and storage areas; insufficient number and width of escape routes, or obstruction by goods; and the absence or ineffectiveness of automatic fire alarm and extinguishing systems.

Characteristics of labor organization: Textile factories typically employ a large number of workers, concentrated in shifts, working in enclosed spaces. This leads to: a high risk of casualties in the event of a fire; a complacent attitude among workers due to familiarity with environments containing many flammable materials; and limited awareness and skills in handling fire emergencies among some workers.

2.2. Regarding the current state of fire prevention work in textile and garment establishments

The Vietnam Fire Prevention and Rescue Police Force has organized fire prevention work, specifically: proactively advising the Government and the Ministry of Public Security to issue many legal documents, directives, and guidelines related to organizing fire prevention work in textile and garment establishments... Along with that, the Fire Prevention and Rescue Police Force of local police departments has strengthened measures to organize fire prevention work in textile and garment establishments, specifically: propaganda, building a movement for all citizens to participate in fire prevention activities, appraising designs and inspecting acceptance work on fire prevention, building and organizing fire prevention and rescue forces at textile and garment establishments... According to statistics from 2019 to the end of 2025, the Fire Prevention and Rescue Police Force of local police departments has actively organized fire prevention work in textile and garment establishments, specifically: advising competent authorities to organize the issuance of 10,656 directives, official letters, and documents on fire prevention and fighting work in general and fire prevention work for textile and garment establishments in particular; organized design appraisal and inspection of acceptance work for 6,545 textile and garment establishments; organized propaganda work, including writing 12,407 news articles on fire prevention and fighting for textile and garment establishments, building 2,753 reports and documentaries on fire prevention and fighting,... (Fire and Rescue Police Department, *Summary report on work from 2021 to the end of 2025*). From there, created many positive changes in organizing fire prevention work for textile and garment establishments, curbing the number of fires in textile and garment establishments.

Despite the achievements, fire prevention work in textile and garment facilities still has certain limitations and shortcomings, specifically: the quality of advisory and proposal work is not truly high; the dissemination and education of knowledge and laws on fire prevention and fighting for textile and garment facilities have not been carried out regularly

or extensively; the process of receiving and resolving administrative procedures in the design appraisal and acceptance inspection of textile and garment facility constructions is not yet consistent and synchronized, leading to many difficulties for investors and businesses in complying with regulations on design appraisal and acceptance inspection; The inspection and detection of fire safety violations in textile and garment establishments have not been timely, the handling of violations has not been strict, and there has been a lack of focus on inspecting the remediation of administrative violations related to fire safety and rescue in textile and garment establishments;... The reasons for these limitations and shortcomings are: the awareness of some leaders and commanders is not high enough, and they have not directed decisively in organizing fire prevention work for textile and garment establishments; the staffing of the force performing fire prevention tasks in general and for textile and garment establishments in particular currently does not meet the requirements in terms of quantity and standards as stipulated in Circular No. 37/2025/TT-BCA; some investors and heads of textile and garment establishments have not strictly fulfilled their responsibilities; Infrequent reviews and summaries of fire prevention work at textile and garment facilities have not been conducted, resulting in a lack of comprehensive analysis of prominent issues in this area. This has hindered the development of solutions to address urgent problems in these facilities. Some agencies and departments have not shown genuine interest, provided close guidance, or established coordination mechanisms. Even with coordination, there is no mechanism for monitoring and supervising the work carried out.

2.3. Regarding measures to improve the effectiveness of fire prevention work organization for textile and garment establishments in the future

1) Proactively organize the gathering of information, advise and propose to competent authorities to issue and organize the implementation of legal regulations on fire prevention, firefighting and rescue for textile and garment establishments: organize and seriously implement basic investigation work to gather information on textile and garment establishments according to the law and guid-

ance on basic professional work of the People's Police force, including building information sheets for managing textile and garment establishments, collecting necessary information such as the nature of activities, owner of the establishment, characteristics of fire and explosion hazards... of textile and garment establishments to serve digital transformation work, build digitized data in organizing fire prevention work for textile and garment establishments, thereby helping the Fire Prevention and Rescue Police force in organizing fire prevention work for textile and garment establishments to be convenient, easy, quick and accurate to serve the advisory and proposal work; Design appraisal and acceptance testing; fire safety inspection, building fire fighting and rescue forces... The Fire Police and Rescue Forces of local police departments proactively advise the Provincial Police Directorate to issue a plan to implement the regulations of the above documents to police units in their jurisdiction, with the core being officers assigned to organize fire prevention work for textile and garment facilities.

2) Strengthen leadership and guidance in the issuance and organization of the implementation of legal regulations on fire prevention and rescue for the organization of fire prevention work for textile and garment facilities, including: focusing on issuing guiding documents to quickly and effectively implement the provisions of the Law on Fire Prevention and Rescue and accompanying legal documents for textile and garment facilities. At the same time, strengthen leadership and guidance by issuing guiding documents on the organization of fire prevention work for textile and garment facilities. Leaders and commanders should regularly inspect and supervise fire prevention work at textile and garment facilities. Leaders and commanders within the Fire Prevention and Rescue Police force need to fully understand their roles and responsibilities. Furthermore, within their functions, duties, and authority, they must be familiar with the legal regulations on fire prevention and rescue, thereby making sound leadership and guidance decisions, effectively resolving issues, and ensuring compliance with the law. This will help improve the quality of fire prevention work at textile and garment facilities in various units

and localities. Unit leaders and commanders should strengthen their guidance, inspection, and supervision of officers responsible for organizing fire prevention work at textile and garment facilities in carrying out their assigned tasks. In particular, they should inspect the fire prevention work documentation for textile and garment facilities, specifically: checking design appraisal documents and inspecting acceptance procedures. Reviewing propaganda records and building a nationwide movement for public participation in fire prevention and fighting activities; reviewing inspection reports and decisions on administrative penalties; reviewing records on the establishment and assignment of responsibilities to grassroots fire prevention and rescue forces to quickly identify shortcomings and limitations in the organization of fire prevention work and promptly direct the implementation of corrective measures.

3) Improve the quality of organization of design appraisal and inspection of fire prevention and fighting for textile and garment facilities: assign competent and qualified staff to perform the task of receiving design appraisal dossiers at the one-stop service department to serve the receiving and inspection of design appraisal dossiers to create favorable conditions for businesses in submitting design appraisal dossiers; assign qualified staff to perform the task of appraising fire prevention and fighting designs for textile and garment facilities. Furthermore, each officer assigned to conduct fire safety design review in general, and for textile and garment facilities in particular, needs to proactively update and study the latest legal regulations on fire prevention and rescue, as well as related legal documents, standards, and technical regulations on fire safety. They should develop specific comparison tables of the legal provisions for each type of facility, such as a comparison table for design review of textile and garment facilities, etc. The construction inspection process must ensure compliance with legal regulations. Only when all fire safety requirements are fully met should acceptance and operation be approved. For textile and garment manufacturing projects and facilities that have already commenced operations without fire safety design appraisal or fire safety acceptance testing, during the process of coordinating with

relevant authorities to resolve the issue, it is necessary to recommend that the investor allocate funds for the installation of fire safety equipment and related technical systems such as smoke extraction systems for corridors and basements, pressurized stairwell systems, and fire-resistant doors for stairwells, etc.

4) Organizing the construction and compilation of documents; diversifying forms; building models and handbooks for propaganda, dissemination, and education of knowledge and laws on fire prevention, firefighting, and rescue, and building a nationwide movement to participate in fire prevention and firefighting activities for textile and garment facilities: one of the factors that directly impacts the propaganda and dissemination of laws and knowledge on fire prevention and firefighting is the content of the propaganda. The content of the propaganda and dissemination is profound, easy to understand, and practical, so it always attracts the attention of listeners and readers, etc., contributing to the success of the propaganda and dissemination of laws and knowledge on fire prevention and firefighting. Selecting cadres with in-depth professional qualifications in fire prevention and firefighting, good pedagogical capacity, and experience in propaganda work, based on that core cadre force, establish a team to compile in-depth documents for propaganda and dissemination of laws and knowledge on fire prevention and firefighting for each type of facility, including textile and garment facilities. Diversify the methods of disseminating information and knowledge about fire prevention and firefighting to textile and garment establishments.

5) Improve the quality of organizing inspection and handling of administrative violations on fire prevention and fighting for textile and garment establishments: Local fire prevention and fighting police forces need to advise the provincial police to develop a plan and implement a comprehensive inspection and review of compliance with the law on fire prevention and fighting for textile and garment establishments in the area. Notify the inspected textile and garment establishments: when conducting periodic fire prevention and fighting inspections, the inspection officer must develop and submit to the competent authority for approval the inspection notice and send it to the textile and garment establishment. Fo-

cus on inspecting the fire prevention organization records of textile and garment establishments, and inspect the management records kept at the textile and garment establishment to assess the compliance with the law by the head of the textile and garment establishment as well as the employees at the textile and garment establishment. Focus on inspecting the responsibility of the head of the textile and garment establishment. Focus on inspecting the equipment and maintenance of fire prevention and rescue systems, fire fighting electrical systems, and fire fighting water sources according to regulations. Focus on inspecting the installation and maintenance of fire alarm communication equipment connected to the fire and rescue database system and fire alarm transmission; declaration and updating of the fire and rescue database... When inspecting fire prevention and rescue, if violations of fire prevention and rescue laws are detected, in addition to drawing up a fire prevention and rescue inspection report, the inspector must also draw up an administrative violation report. This addresses the tendency of authorities to be lenient or reluctant to handle violations of fire and rescue laws by organizations or individuals. After the violations are addressed, specific corrective measures must be implemented, with a completion timeframe, and closely monitored through direct inspections or through reports and commitments from the head of the textile and garment facility.

6) Organize and build fire and rescue forces at the grassroots level and provide training and professional development in fire, rescue and relief for textile and garment facilities: consolidate and strengthen the grassroots fire and rescue team when there are changes in scale, nature of activities or when members of the grassroots fire and rescue team resign or change job positions. Furthermore, the responsibility of the head of the textile and garment facility must be enhanced in maintaining the operation of the grassroots fire and rescue team at the textile and garment facilities. Strictly implement the organization of training and professional development courses on fire and rescue for the fire and rescue force at the textile and garment facility. The Law on Fire and Rescue clearly stipulates the training and professional development in fire prevention and rescue in Articles 28, 29, and 30 of Gov-

ernment Decree No. 105/2025/ND-CP dated May 15, 2025 [4], accordingly, the subjects of training and professional development in fire prevention and rescue are the head of the facility and members of the facility's fire prevention and rescue team at textile and garment facilities. Equip with sufficient fire fighting equipment and ensure funding for fire and rescue activities of the facility's fire prevention and rescue team at textile and garment facilities...

7) Promote preliminary and final reviews, research, application of science and technology and coordination to serve the organization of fire prevention work for textile and garment establishments: in each period, each stage, it is necessary to organize preliminary and final reviews to draw lessons, advantages to be promoted, and at the same time frankly point out limitations and shortcomings in the organization of fire prevention work for textile and garment establishments. If the preliminary and final reviews are done seriously, effectively, and honestly and correctly, the quality of fire prevention work for textile and garment establishments will be improved, contributing to improving the effectiveness and efficiency of fire prevention and rescue work for textile and garment establishments. It is necessary to train, cultivate, and build a team of Fire Police and Rescue officers with basic and in-depth professional skills in each field of fire prevention, especially fire prevention work in general and for textile and garment establishments in particular; They possess the ability to access and apply advanced scientific and technical

knowledge and fire prevention and fighting technologies from around the world; they have the management skills, computer literacy, and foreign language proficiency to meet the requirements when working with foreign businesses and handling design documents in foreign languages. The Fire Prevention and Rescue Police Force advises the provincial police to proactively coordinate with departments and agencies under the provincial People's Committee to issue guiding documents and directives for the implementation of the Law on Fire Prevention and Rescue, as well as to strengthen measures to ensure fire safety for textile and garment facilities.

3. Conclusion

Organizing fire prevention work for textile and garment facilities is of great importance, contributing to ensuring fire safety and rescue operations in these facilities today. Given the current situation regarding the construction, development, and operation of textile and garment facilities, as well as the current fire and explosion situation, the Fire and Rescue Police force, under the direction of various levels and sectors, has effectively carried out this work, contributing to minimizing fire incidents. However, this work still has limitations that need to be overcome. The research results above will contribute to improving the effectiveness of fire prevention organization for textile and garment facilities, contributing to promoting sustainable economic development in Vietnam.

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