

Discussion on the Current Situation and Countermeasures of Rural Fire Safety Work in China

Yan Sun*

Tangshan Fire and Rescue Administration, Tangshan, China

**Corresponding author*

Keywords: Rural, fire safety, current situation, countermeasures

Abstract: This paper aims to delve into the current situation of rural fire safety work in China and propose corresponding countermeasures. Through analyzing statistical data on rural fires, it is evident that fire incidents occur frequently in rural areas, leading to significant social and economic losses. In comparison to urban areas, there is a gap in terms of rural fire facilities, equipment, and fire brigades. Factors influencing rural fire safety work include geographical and environmental factors, socio-economic factors, as well as the fire awareness and education level of rural residents. In response to these issues, this paper puts forward a series of countermeasures, including improving the level of rural fire facilities and equipment, enhancing the capabilities and training of rural fire brigades, and strengthening fire education and awareness among rural residents. Lastly, by summarizing the current situation and looking ahead to the future, this paper aims to provide theoretical support and practical guidance for the further development of rural fire safety work in China.

1. Introduction

With the rapid development of China's economy and society, the importance of rural fire safety work is becoming increasingly prominent. However, due to the unique environmental and resource conditions in rural areas, rural fire safety work faces numerous challenges. The issue of rural fires is more pronounced and the situation is becoming more severe. Therefore, rural fire safety work has become a key component of social fire safety in our country, which not only relates to the healthy development of the rural economy but also directly affects social security and stability[1]. This paper aims to conduct an in-depth analysis of the current situation of rural fire safety work in China and propose corresponding countermeasures to promote continuous improvement and enhancement of rural fire safety work. Through analyzing statistical data on rural fires, we can uncover the patterns and main causes of fire incidents. At the same time, understanding the current status of rural fire facilities, equipment, and fire brigades helps identify existing problems and weaknesses, providing a basis for improvement. This paper presents a series of countermeasures, including improving the level of rural fire facilities and equipment, enhancing the capabilities and training of rural fire brigades, and strengthening fire education and awareness among rural residents. These countermeasures aim to comprehensively enhance the quality and efficiency of rural fire safety work from multiple aspects. It is hoped that this paper can provide valuable insights and inspiration

for relevant research and practices, contributing to the further development of rural fire safety work in China.

2. Current Situation of Rural Fire Incidents in China

According to the data released by the National Fire Rescue Bureau in 2022 regarding the national firefighting and rescue teams' response to incidents and fire situations, there were a total of 825,000 reported fire incidents, resulting in 2,053 deaths, 2,122 injuries, and direct property losses of 7.16 billion yuan. Among them, rural areas accounted for a significant proportion, with a total of 462,000 reported rural fires and 1,009 deaths throughout the year, accounting for 56% and 49.1% of the national total, respectively[2]. This percentage is higher than the proportion of rural population, which is less than 40% of the total population. Rural fire incidents continue to be a key and challenging aspect of current fire prevention and control efforts. Rural areas have relatively weak fire infrastructure, a higher proportion of elderly population, and a lower capacity for self-defense and self-rescue among the residents. Most production and business premises are small-scale workshops, often comprising self-built houses with lower fire resistance ratings, thus posing a higher risk of fire. Preliminary investigations into the causes of rural fires indicate that the number of fires caused by illegal production operations is 90% higher than in urban areas, while fires caused by careless use of fire are 48.1% higher. Additionally, fires caused by smoking, leaving fire sources unattended, playing with fire, and fireworks and firecracker displays are more than 50% higher in rural areas compared to urban areas.

3. Current Situation of Rural Fire Safety Work in China

3.1 Existence of Numerous Fire Hazards in Rural Areas

In recent years, with the development of the social economy, rural housing construction in China has gradually shifted from wooden structures to reinforced concrete structures. However, a large number of rural areas still have buildings with wooden or brick-wood structures, which not only have low fire resistance levels but also fail to meet basic safety fire distances. Although the living standards of villagers have significantly improved over the years, many of them still maintain their traditional habits. Coal, crops, hay, chicken coops, and cattle and sheep pens are commonly seen in close proximity to residential houses. In the event of a fire, these structures can easily affect one another. Additionally, many farmers still have poor fire usage habits. In some remote areas and impoverished mountainous regions, cooking with firewood is still prevalent. Firewood can be found everywhere, and after meals, the remaining open flames in the kitchen are not extinguished, nor is the residual and scattered wood near the kitchen cleaned up in a timely manner. This poses significant fire safety risks[3]. With the rapid development of China's private economy, many rural residents have started carrying out production and operational activities within the houses built on their own homestead land. These workshops often rent unapproved factories or residential buildings that have not undergone fire inspection, and the emergency evacuation routes, electrical equipment, and fire safety standards often fail to meet the requirements of fire safety regulations, greatly increasing the risk of fires. The numerous small workshops have also attracted a large number of migrant workers, and many vacant residential buildings have been converted into rental housing for migrant workers. The widespread use of shared spaces and rental housing in rural areas has become a prominent issue affecting fire safety[4].

3.2 Relatively Backward Rural Fire Facilities and Equipment

There is a noticeable gap between rural areas and urban areas in terms of fire facilities and

equipment. Rural areas lag behind in terms of the distribution of fire stations, the supply of firefighting water sources, and the allocation of fire vehicles and extinguishing equipment. In China, fire stations are mostly concentrated in urban areas, with very few fire stations in townships, and even fewer in villages. The long distances between fire stations result in longer response times to reach fire incidents. In most rural areas, the villages were formed many years ago without considering the development trend of firefighting vehicles and equipment, resulting in narrow roads that cannot meet the requirements of modern firefighting vehicles for fire lanes. After a fire accident occurs within the village, the normal passage of firefighting vehicles will be greatly hindered, making it difficult for firefighting vehicles to arrive at the scene of the fire in time[5]. At present, the municipal fire hydrant system in urban areas is very complete, but the municipal pipeline network for outdoor fire hydrants cannot be extended to the vast rural areas. In more remote rural areas, only unstable natural water sources can be relied upon as firefighting water sources, resulting in a widespread problem of insufficient supply of firefighting water sources. Due to the limitations of water source conditions, firefighting water pressure is unstable, and the water source is insufficient to meet the needs of large-scale fire suppression. In terms of the configuration of firefighting vehicles and equipment, only a few economically developed rural areas are equipped with limited firefighting vehicles, most of which are old and have relatively low technical performance and equipment levels. Most rural areas have almost no firefighting vehicles and equipment of their own. Once a fire occurs, it is difficult for villagers to extinguish the initial fire and can only wait for government firefighting forces to arrive, thus missing the best opportunity to extinguish the fire.

3.3 Relatively Lagging Rural Fire Brigade Construction

The number and personnel allocation of rural fire brigades are important factors that affect rural fire safety work. In China, rural fire brigades are primarily composed of rural voluntary fire organizations. The members of these organizations are usually village cadres, party members, and young adults. However, in the market conditions of high population mobility, many young adults from rural areas go out to work, leaving behind mostly elderly, weak, sick, and women and children. As a result, the fire organizations in rural areas become ineffective, and in the event of a fire, there is little they can do. In some remote areas, there may even be a lack of fire organizations altogether. In some larger townships (key towns nationwide), there are dedicated fire brigades, but the quality and training of the firefighters are uneven. Some rural fire brigade members have lower qualifications and training levels, lacking professional skills and emergency response experience. Furthermore, due to limited funding and resources, there are limited opportunities for training and drills for the fire brigades, making it difficult to enhance their capabilities to deal with complex fire scenarios. Most personnel in rural fire brigades are part-time firefighters who also have other rural work tasks, which prevents them from engaging in fire safety work full-time, limiting the professional development of the fire brigades.

4. Measures to Enhance Rural Fire Safety Work

4.1 Strengthen Fire Safety Education and Ensure Awareness

Firstly, it is important to raise the awareness of township governments. County-level fire and rescue brigades should visit townships more frequently to provide fire safety education to township governments and make them realize the importance of fire safety work. Township governments should take the lead in prioritizing rural fire safety work and organize in-depth research by experts and scholars, taking into account the specific conditions of each region, to formulate fire safety management systems and measures that are tailored to the local area[6]. Additionally, efforts should be made to enhance fire safety awareness among rural residents. Township governments should

organize fire safety education activities specifically targeting rural residents, raising awareness about fire prevention and self-help and mutual assistance during emergencies. Fire safety education in schools and communities should be strengthened by incorporating fire safety knowledge into the curriculum to enhance the fire safety awareness of young people. Active participation of rural residents in fire drills and simulated fire rescue activities should be encouraged to enhance their practical firefighting skills. Lastly, we should not limit ourselves to traditional propaganda methods. In the 21st century, with the development of the internet, most rural areas have bid farewell to the era of information isolation. With the widespread use of smartphones and mobile platforms, rural residents can also access external information through online channels. Therefore, it is feasible to explore the use of internet platforms for rural firefighting publicity and management issues[7]. Relevant departments can use social media platforms such as WeChat Official Accounts, Kuaishou, and Douyin to create high-quality content on firefighting laws and regulations, firefighting equipment knowledge, and interpretation of firefighting cases, and build a strong propaganda matrix to improve the firefighting safety literacy of rural residents.

4.2 Increase Investment in Fire Protection and Improve Rural Fire Infrastructure

Although various levels of government departments are facing financial constraints due to the impact of the pandemic, investment in rural fire infrastructure should not be reduced but increased. This is because it is a matter of great significance for the safety of rural residents' lives and property. Township governments and functional departments at all levels should gradually incorporate the construction of rural fire infrastructure into public infrastructure development plans. This can be done in conjunction with rural poverty alleviation and development, demolition of old houses, construction of new villages, rural water-saving irrigation and human and livestock drinking water projects, rural road construction, biogas projects, hydropower construction, rural power grid upgrades, and the implementation of fire water sources and fire access routes. It is necessary to improve the supply system of fire water sources, enhance water source conditions, ensure stable fire water pressure, and meet the needs of combating large-scale fires. Upgrading and updating rural fire vehicles and firefighting equipment should be prioritized to improve equipment levels and technical performance, enabling better response to various fire scenarios. In addition, to address the issues of outdated rural firefighting infrastructure and difficulties in raising firefighting funds, priority should be given to selecting equipment with low cost, easy installation, and strong practicability. For example, traditional firefighting equipment installation is not easy to achieve in rural housing wiring, and the system operation is more complicated. In this case, networked independent smoke detectors, networked electricity monitoring equipment, and networked gas detectors can be used, and bound to the village firefighting responsible person and village residents' contact information. The equipment operating information can be centrally supervised by the platform, realizing multi-level and multi-person linkage management of rural personnel, and early warning of initial fire situations, achieving the goal of "preventing early and extinguishing small fires"[8].

4.3 Enhance the Capacity of Rural Fire Brigades and Intensify Personnel Training

Rural fire brigades play a crucial role in firefighting and emergency rescue for numerous townships and rural areas, contributing significantly to the economic development and the well-being of the people[9]. Each township should establish various forms of firefighting teams, implement policies and financial guarantees, and implement a 24-hour on-duty standby system to carry out comprehensive functions such as firefighting, firefighting publicity, fire prevention inspections, hidden danger investigation and rectification, and emergency rescue, driving to improve the firefighting safety conditions in surrounding rural areas[10]. Township governments should actively coordinate with the firefighting and rescue teams in their respective districts and counties, inviting professional firefighters to regularly train and guide rural firefighting teams,

improve the professional quality and training level of rural firefighting personnel, strengthen skills training and practical exercises, and enhance emergency response capabilities. A sound management mechanism for firefighting teams should be established, and the government should allocate special funds to reward outstanding personnel in the team, motivating rural firefighting personnel to actively participate in firefighting work and improving the cohesion and execution of the team.

5. Conclusion

A thorough analysis of the current situation of rural fire protection in China has been conducted, and a series of feasible strategies have been proposed to improve and enhance the level of rural fire protection work. By strengthening the construction of rural fire facilities and equipment, enhancing the capabilities and training of fire brigades, and increasing fire safety education and awareness among rural residents, the challenges and issues in rural fire protection work can be effectively addressed. However, achieving comprehensive improvement in rural fire protection work requires the joint efforts of government departments, fire protection organizations, social organizations, and rural residents. The government should increase investment and provide financial and policy support. Fire protection organizations should strengthen organization and management, as well as improve emergency response capabilities. Social organizations can carry out fire safety awareness campaigns to promote the popularization of fire safety culture. Rural residents should enhance their fire safety awareness and actively participate in fire drills and rescue activities. Through comprehensive measures, significant progress can be made in rural fire protection work, effectively reducing the risk of fire disasters, protecting the lives and property of rural residents, and promoting the sustainable development of rural economy and society.

References

- [1] Cao J. (2018). *Problems and Countermeasures of Firefighting in Townships in China*. *Rural Technology*(29): 121-122.
- [2] Wei M., Long T., Wu W., Gao Z. and Yang H. (2023). *Analysis of Rural Fire Factors Based on AHP-Entropy Weight Method*. *Fire Boundary (Electronic Version)*, 9(03): 159-162.
- [3] Liu Y. (2016). *Analysis of the Current Status and Countermeasures for Fire Safety in Rural Areas*. *Hunan Safety and Disaster Prevention*(09): 54-55.
- [4] Chen H. (2021). *Study on Problems and Countermeasures of Fire Safety Management in Cangnan County of Wenzhou City*. *Master of Public Administration Thesis, Northwest A&F University*.
- [5] Xue X. (2022). *Discussion on key points and methods of supervision and inspection of building fire protection facilities*. *China Plant Engineering*. (20): 191-193.
- [6] Xie B. (2014). *Research on the Benefits of Rural Fire Safety*. *Master Thesis, Hunan Agricultural University*.
- [7] Wang G. (2020). *Research on Visual Image Design of Rural Fire Fighting Propaganda Series*. *Master Thesis, Chongqing University*.
- [8] Liu H. (2023). *Be vigilant about safety "depressions" and avoid "fire camps"*, *China Emergency Management News*.
- [9] Luo Y. (2007). *Discussion on the Current Situation and Countermeasures of Fire Safety in Villages and Towns*. *Journal of Guangxi University for Nationalities (Natural Science Edition)*(s1): 65-67.
- [10] Zhang Q. (2022). *Discussion on Fire Safety Management in Rural Areas*. *China Occupational Safety and Health*, 17(03): 44-45.