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Analysis of Work Safety and Natural Disaster Situation in Longgang for the First Three Quarters of 2025

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ABSTRACT: In the first three quarters of 2025, the overall situation for work safety and natural disaster prevention in the city remained stable. The total number of incidents declined, with fire outbreaks decreasing by 16.66% year-on-year, and fatal traffic accidents and associated deaths dropping by 12.5% and 30% respectively. Current risks are highly concentrated in road traffic and fire safety. Road traffic was the most significant area for work safety accidents, accounting for 80% of the total, with incidents involving e-bikes and senior citizens being particularly prominent. Residential fires, primarily caused by electrical faults, constituted the majority of fire risks. A comprehensive analysis indicates that safety risks across multiple sectors, including road traffic, fire safety, and construction, are expected to intensify in the fourth quarter due to seasonal factors and year-end pressures. Moving forward, the city will focus on preventing risks in eight key areas, deepen the investigation and remediation of hidden dangers, and enhance preparedness for natural disasters, striving to achieve the annual goal of zero growth in accidents.

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1. Overview and General Situation

From January to September 2025, the city recorded 5 work safety accidents, resulting in 5 fatalities (see Figure 1). The number of accidents and fatalities remained unchanged compared to the same period last year, with no accidents classified as "major" or above occurring.

Regarding fires, the city experienced 245 fire incidents, representing a 16.66% decrease year-on-year.

For fatal road traffic accidents, there were 14 incidents causing 14 deaths. This reflects a 12.5% decrease in both incidents and deaths compared to the same period last year (16 incidents, 16 deaths). Furthermore, it represents a 30% decrease compared to the average number of fatalities over the previous three years (20 people).

Regarding natural disasters, the primary challenges in the first three quarters stemmed from frequent typhoon landfalls and multiple extreme convective weather events. Cold air outbreaks and heavy rainfall during the Meiyu (plum rain) season also posed ongoing pressures on disaster prevention and mitigation efforts.

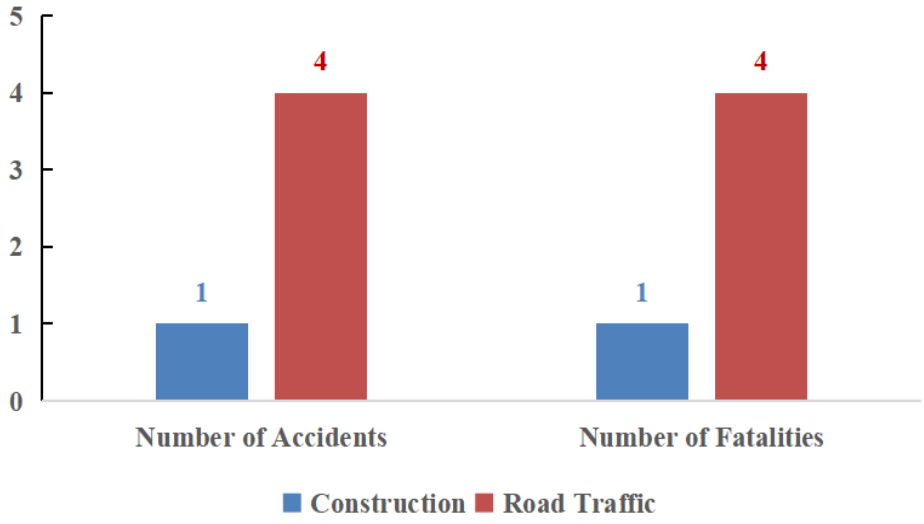


Figure 1: Number of Accidents vs. Fatalities (Jan-Sep 2025)

2. Analysis of Work Safety Situation

2.1 Current Characteristics of Work Safety Accidents

Accidents in the first three quarters were highly concentrated in specific sectors. Road traffic and construction were the most prominent areas at risk.

Of the 5 work safety accidents, 4 fatalities occurred in the road transport sector, an increase of 2 compared to the same period last year. Specific incidents included collisions involving heavy special structure trucks vs. motorcycles, wheeled loaders vs. motorcycles, three-wheeled trucks vs. electric bicycles, and medium-sized buses vs. electric bicycles (each 1 incident, 1 fatality).

The construction sector recorded 1 fatality due to a fall from height, consistent with the same period last year.

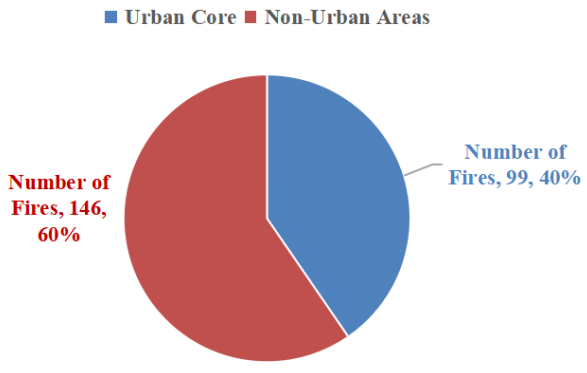
2.2 Analysis of Fire Incidents

Location: 99 fires occurred in the main urban area, while 146 occurred in non-main urban areas.

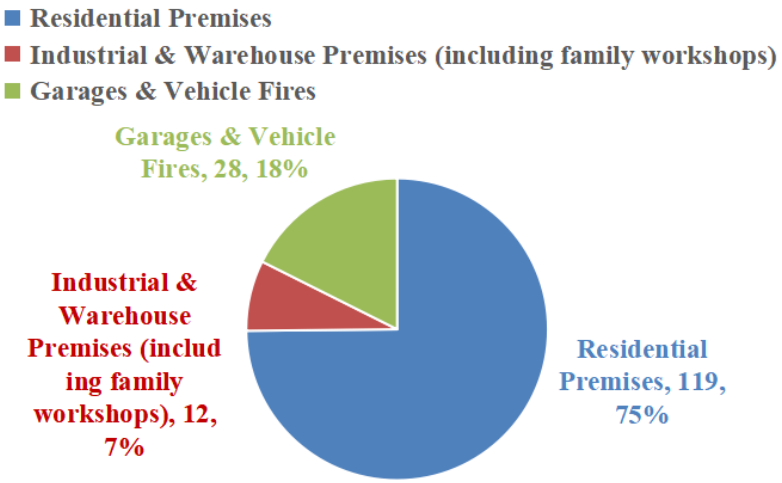
Premises: Residential fires were most common (119 incidents, 48.57%), followed by garage/vehicle fires (28 incidents, 11.42%), and factory/warehouse fires (including household workshops) (12 incidents, 4.89%).

Cause: Electrical faults (e.g., aging wiring, overload, improper installation) were the leading cause (133 incidents, 54.28%), followed by careless use of fire in daily life (43 incidents, 17.55%).

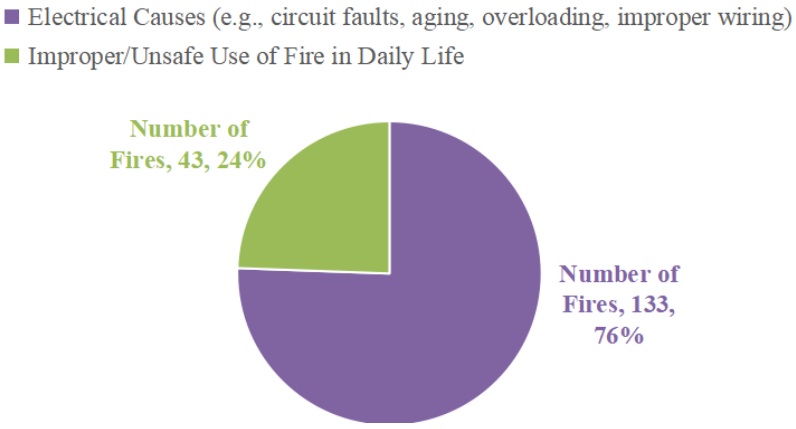
Time of Day: 198 fires (80.81%) occurred during daytime hours (6:00-22:00), while 47 fires (19.18%) occurred at night (22:00-6:00). (See Figure 2)



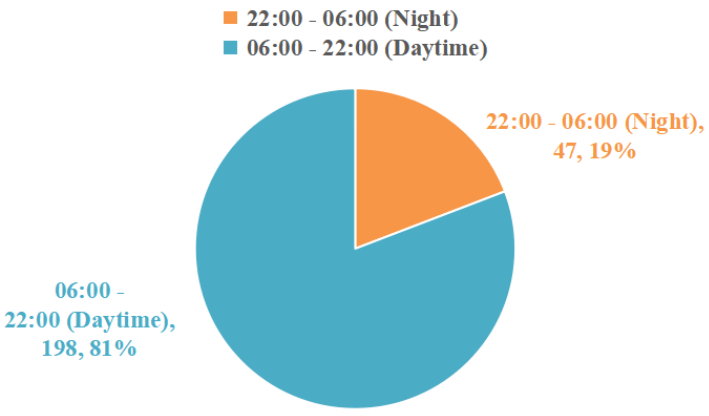
（a）Fire Incidents by Location,



(b) Premises of Fire Origin



(c) Cause of Fire



(d) Time Period of Fire

Figure 2: Fire Incidents by Location, Premises, Cause, and Time Period

2.3 Current Characteristics of Fatal Road Traffic Accidents

Analysis of the 14 fatal road traffic accidents in 2025 reveals:

Vehicle Type: Accidents involving electric bicycles and e-trikes were predominant (11 incidents, 11 deaths, 78.6%).

Violation Type: Running red lights was a major factor (6 incidents, 6 deaths, 42.8%).

Critical Time Period: The early morning hours, particularly 5:00-7:00, were high-risk (6 incidents, 6 deaths, 42.8%). See Figure 3.

Age Group: Individuals aged 56 and above were involved in 6 fatal accidents (6 deaths, 42.8%). See Figure 4.

Road Type: City trunk roads accounted for 50% of fatalities (7 incidents, 7 deaths), followed by highways (3 incidents, 3 deaths, 21.4%), rural roads (2 incidents, 2 deaths, 14.3%), and other city roads (2 incidents, 2 deaths, 14.3%, specifically on Gonghou Road). See Figure 5.

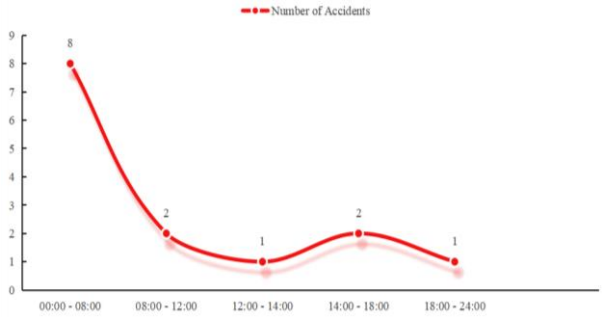


Figure 3: Time Distribution of Fatal Traffic Accidents

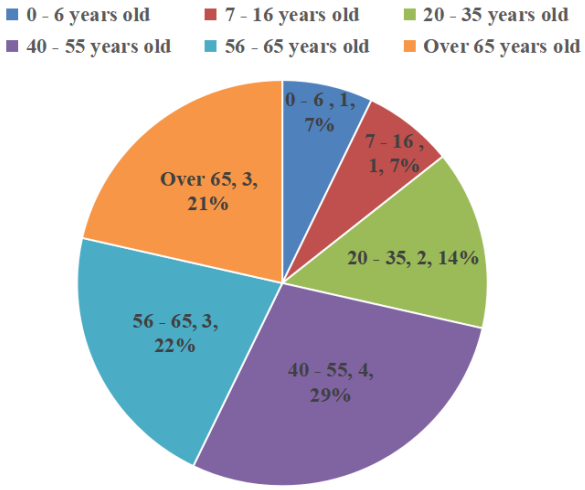


Figure 4: Age Distribution of Fatalities

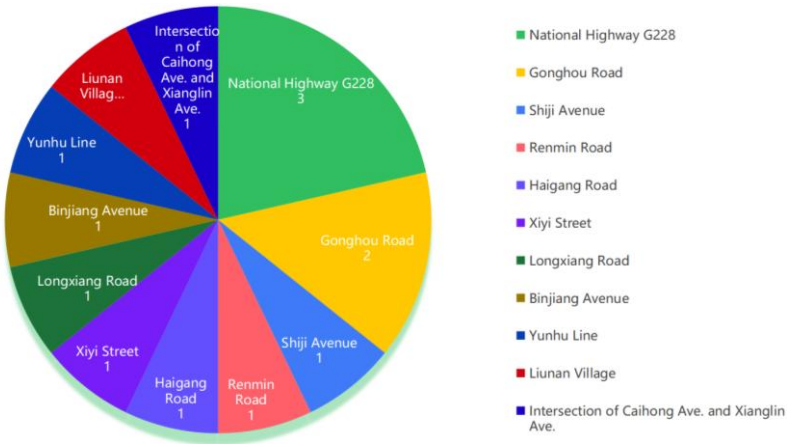


Figure 5: Road Section of Accident

3. Trend Analysis Based on Historical Data (2021-Present)

Reviewing data from the past five years (2021-2025 YTD), the city recorded 35 work safety accidents with 32 fatalities. These were distributed across sectors as follows: Industrial and Mining (13 incidents, 10 deaths), Road Traffic (9 incidents, 9 deaths), Construction (8 incidents, 8 deaths), Maritime and Fishing (2 incidents, 2 deaths), and Others (e.g., power supply; 3 incidents, 3 deaths). The industrial/mining, road traffic, and construction sectors have been particularly prone to accidents. (See Figure 6)

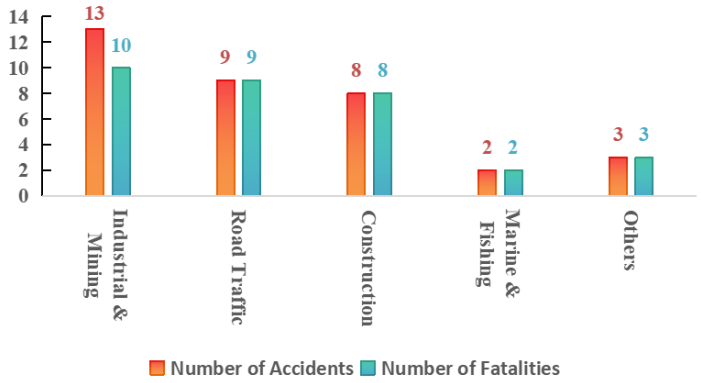


Figure 6: Work Safety Accidents and Fatalities by Sector (2021-Sep 2025)

3.1 Temporal Patterns in Work Safety Accidents

Analysis of the 35 accidents since 2021 (see Figure 7) identifies three peak risk periods:

Highest Risk: 11:00-14:00 (noon, including post-lunch period), accounting for 28.6% of accidents. This period coincides with peak fatigue and reduced concentration.

Secondary Risk: 14:00-17:00 (afternoon), accounting for 25.0% of accidents. Fatigue accumulates during sustained afternoon work.

Third Risk: 17:00-20:00 (evening), accounting for 21.4% of accidents. This coincides with the end of the workday, potentially involving rushed task completion and distracted commuting.

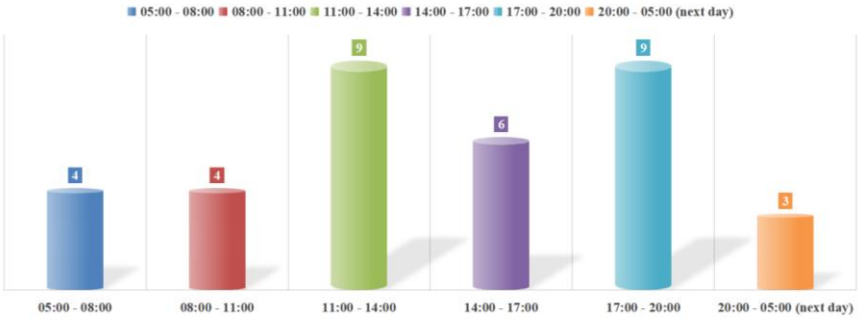


Figure 7: Time Distribution of Work Safety Accidents (2021-Sep 2025)

3.2 Seasonal Patterns in Work Safety Accidents

Based on the quarterly average for 2021-2024, accident frequency historically peaks in Q2 and is lowest in Q4 (see Figure 8). However, with 2 accidents occurring in Q4 of both 2023 and 2024, the pressure to prevent accidents in Q4 2025 remains significant.

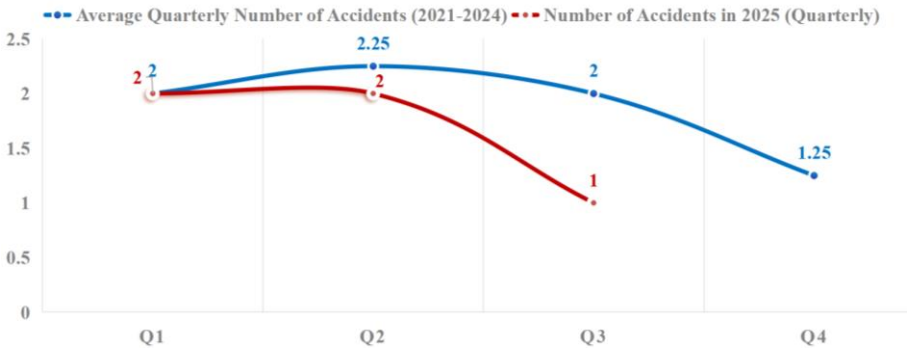


Figure 8: Quarterly Accidents 2025 vs. 2021-2024 Average - Placeholder for chart

3.3 Seasonal Patterns in Fire Incidents

In the first three quarters of 2025, the total number of fires was relatively low in Q2, and Q3 fire counts were also below the historical average for that quarter. However,

based on the 2021-2024 quarterly average, fire frequency in Q4 2025 is expected to rise compared to Q3, potentially showing a "V"-shaped trend (see Figure 9).

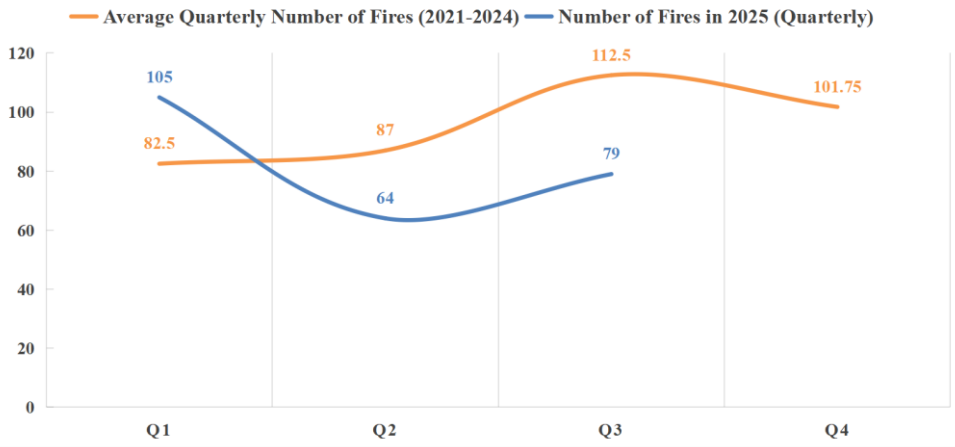


Figure 9: Seasonal Trend in Fire Incidents

4. Specifics Regarding Natural Disasters

4.1 Frequent Cold Air Outbreaks: The city experienced 7 significant cold air outbreaks

The strongest occurred on March 27, causing notable temperature drops and strong winds. A prolonged low-temperature event from January 11-13 saw the representative station in Longgang record -0.4°C (11th), with the city's lowest temperature at -2.0°C (Yunyan Ruilian Station).

4.2 Heavy Meiyu Rainfall

During the concentrated rainfall period (May 17 - June 29), the city's average areal precipitation was 329.3 mm, with the representative station recording 330.8 mm, exceeding the historical average (286.2 mm). This Meiyu period was characterized by high cumulative rainfall and intense hourly rates, with 82% of stations exceeding 300 mm cumulative precipitation. A severe rainstorm on June 9 delivered an average areal precipitation of 79.2 mm, with single-station totals reaching up to 125.2 mm (Pingdeng Chaoyang) and a maximum hourly rainfall of 76.5 mm (Jiangshan Yuexing).

4.3 Frequent Typhoon Impacts

Since July, the city has been affected by 5 typhoons. Typhoon Danas (No. 4), making landfall first in Dongtou and then Rui'an, was the first recorded to land in Dongtou and the first to make dual landfalls in Wenzhou. It brought average areal precipitation of 220.8 mm and gust winds of 8-11 Beaufort scale offshore. Typhoons Wipha (No. 6), Francisco (No. 7), Kusagra (No. 8), and Otis (No. 18) also affected the city with varying degrees of rainfall and wind.

4.4 Extreme Convective Weather

On September 20, an extreme convective weather event caused sudden short-duration heavy rainfall, accompanied by thunderstorm activity and localized strong winds, severely impacting multiple areas. Several rainfall indicators broke historical records. The city's average areal precipitation was 190.5 mm, with 2 stations exceeding 300 mm (Yunyan Ruilian 304.4 mm, Yunyan Jingtou 304 mm), 4 stations exceeding 250 mm, and 12 stations exceeding 200 mm. The maximum single-station hourly rainfall reached 129.9 mm (Pingdeng Chaoyang). The maximum wind speed recorded was 21.1 m/s (9 Beaufort scale) at Xincheng Pipashan.

4.5 Prolonged High Temperatures

As of October 23, the city's average temperature for the year was 23.9°C, significantly higher than the climatological average by 4.4°C, ranking as the highest on record. High temperatures persisted even during the National Day holiday period. The number of high-temperature days reached 15, 3.7 days above the annual average. The maximum temperature recorded was 37.1°C (Jiangshan Shuanghe Station).

5. Incident Analysis

5.1 Road Traffic: High Frequency of Accidents

Ten fatal accidents occurred on highways and urban arterial roads, accounting for 71.4% of the total. These were primarily due to conflicts between motor vehicles and non-motorized vehicles, high traffic volume, and excessive speed. There is a need to strengthen strict management and inspections and improve safety infrastructure.

Accidents involving electric bicycles and tricycles are frequent, mainly attributable to weak safety awareness among riders. Common unsafe practices such as running red lights, illegal carrying of passengers, and riding against traffic are prevalent, particularly among middle-aged and older adults. Elderly pedestrians are also a high-risk group, involved in five fatal accidents. They often retain rural travel habits, failing to observe traffic signs and demonstrating poor awareness of risks and how to avoid them. Targeted safety management for key demographic groups and road sections is required. Enforcement against key traffic violations needs enhancement. The traffic accidents on February 4 and June 21 this year involved drunk driving, indicating that a sense of侥幸心理 (luck/complacency) still exists among some citizens. It is necessary to further intensify drunk driving checks to purify the road traffic environment.

5.2 Construction: Recurring Accidents

Analysis of construction accidents identifies falls from height (5 incidents), machinery-related injuries (2 incidents), and being struck by objects (1 incident) as the primary causes. This indicates deficiencies in on-site safety control, specifically the ineffective implementation of critical safety measures for work at height, machinery operation, and site management. Strengthening primary responsibility of enterprises and on-site supervision is urgently needed.

5.3 Fire Safety: Persistent Prevention Pressure

The 248 fires in Jan-Sep represent a 12% decrease (34 fewer incidents) compared to the 2021-2024 average (282 incidents), indicating some success in fire prevention. However, vigilance is required against a potential rebound in Q4. Recent years show increased fires in residential buildings and industrial enterprises during Q4. The foundational safety in these two types of premises remains weak (e.g., 4 fires in two-story brick-wood row houses; low compliance rates for rental properties 73.5% and mixed-use premises 82.8%). Responsibility fulfillment in schools, elderly care institutions, and healthcare facilities is suboptimal. Management of e-bike parking/charging areas and hot work permit procedures require standardization, highlighting shortcomings in risk.

6. Risk Outlook for Key Sectors in Q4

6.1 Road Traffic:

Inclement weather (low temperature, cold waves) can lead to icy, slippery roads, significantly impacting driving safety. Risks increase on accident-prone sections like National Highway 228, Longxiang Road, and Gonghou Road. Increased freight transport and logistics activity during Q4 elevated risks of fatigue, speeding, and overloading.

6.2 Maritime and Fishing

Q4 is the peak season for maritime transport and fishing, leading to high-frequency, high-density activities and prominent accident risks. Adverse autumn/winter weather (strong winds, cold waves, fog) reduces visibility, increasing the risk of ship collisions.

6.3 Fire Safety:

As temperatures drop, increased use of electricity and gas for heating raises fire risks, especially in "Two Types" of premises and "Nine Small Categories" of venues. Winter also sees more instances of e-bikes being charged illegally indoors, further aggravating fire risks.

6.4 Industrial, Mining & Hazardous Chemicals

Production pressure may lead to procedural violations and equipment overload. Low temperatures can increase material brittleness and reduce equipment reliability, raising risks of mechanical injury and leaks from containers/pipelines. The dry, cold climate facilitates static electricity accumulation for certain chemicals, while complex winter working conditions can lead to不规范操作, increasing risks of fire, explosion, and poisoning.

6.5 Construction

The common practice of "rushing work year-end" compresses schedules and increases overlapping operations, heightening on-site safety management pressure.

Autumn/winter conditions (low temperature, rain, snow, wind) pose significant challenges for outdoor work at height, increasing collapse and fall risks.

6.6 Urban Operation

Peak seasonal demand for gas strains supply networks, increasing leakage risks, especially in aging pipelines. Low temperatures can damage gas infrastructure, disrupting supply.

6.7 Natural Disasters

Frequent cold air outbreaks with significant temperature fluctuations during Q4 can adversely affect production, life, transportation, energy supply, and agriculture. Persistent heat and drought since summer have increased combustible materials in forests. Increased agricultural fire use and recreational visitors to mountainous areas make fire source management difficult, significantly elevating the forest fire risk.

7. Recommendations

7.1 Strengthening Accident Prevention in Eight Key Sectors

Adhering to a problem-oriented approach, we will continue to advance the Three-Year Campaign for Fundamental Improvement of Work Safety and the Hundred Key Tasks Enhancement Action. Reforms for specific safety issues (e.g., e-bikes, hot work in crowded places, building insulation materials, cold storage safety) will be deepened. Safety supervision across the eight major risk areas will be intensified to strictly prevent accidents in road traffic, construction, maritime/fishing, and other sectors, aiming to achieve the "zero growth" target for accidents and fatalities in 2025.

7.2 Effectively Conducting Hazard Investigation and Rectification

Utilizing the "3030" closed-loop control mechanism, the autumn-winter special campaign will ensure listed and dynamic tracking of hazards, guaranteeing effective investigation and rectification across all sectors. Simultaneously, various hidden dangers identified through provincial/municipal inspections and guidance must be

addressed within deadlines. Lessons should be learned to establish long-term safety mechanisms and improve intrinsic safety.

7.3 Effectively Conducting Natural Disaster Prevention Work

Responsibilities for forest fire prevention and extinguishing must be further consolidated. Strict management of agricultural and ritual fire use is essential to prevent fire sources entering forests or上山. Professional teams at all levels should enhance readiness, pre-positioning personnel and equipment in key areas to achieve "early detection, early response, early extinguishment." Given the increased risk of rain, snow, and freezing disasters in autumn/winter, monitoring, early warning, and risk assessment must be strengthened, with timely disaster risk alerts issued. Sufficient materials and equipment should be prepared in advance, and rescue forces coordinated, ensuring full preparedness for emergency response.

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