Research on Standardization Construction of Emergency Supplies Management

Wan Wang[1], Jun Wei[2], Tingxin Qing[1], Chao Zhang[1], Qian Zhou[1], and Fengjiao Xu[3](✉)

[1] China National Institute of Standardization, Beijing, China
[2] China Cybersecurity Review Technology and Certification Center, Beijing, China
[3] University of Science and Technology Beijing, Beijing, China
verax@aliyun.com

Abstract. In recent years, with the development of China's economy and society, China's emergency supplies management and standardization has also had a certain development. In the early stage of novel Coronavirus (2019-NCOV) epidemic response, there was a shortage of emergency supplies in China, which revealed that there were still many problems in emergency supplies management in China. The standardization of emergency material management plays an important role in establishing the coordination mechanism, standardizing the management process and technical requirements. This paper combs the current situation of emergency material management and standardization at home and abroad, summarizes the characteristics of existing emergency material management standardization, and puts forward some suggestions to improve the overall planning and coordination mechanism and establish a national unified emergency material management standard system in order to improve the construction of emergency material management system.

Keywords: Emergency supplies · Standardization · Major issues · Policy Suggestions

1 Introduction

Emergency materials are all kinds of materials needed in the process of dealing with emergencies, and the emergency material guarantee is an important material basis for the effective response to public emergencies, and it is an important embodiment of the country's emergency response capacity. At the 12th meeting of the Commission for Comprehensively Deepening Reform of the CPC Central Committee, General Secretary Xi Jinping stressed the need to improve the unified emergency materials guarantee system and take emergency materials guarantee as an important part of the construction of the national emergency management system. With the development of society and economy, emergency material management and standardization have also developed. In the early stage of the epidemic caused by novel coronavirus (2019-nCoV), China were unreasonable phenomena such as insufficient emergency materials and chaotic

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emergency material distribution, and these unreasonable phenomena still exposed many problems in China's management in emergency materials.

Emergency materials management is a complex and systematic project. To do a good job in the management of emergency materials, we need to pay attention to the production, reserve, dispatch, transportation and distribution of emergency materials [1, 2]. Emergency materials management standards have an important role in establishing an overall coordination mechanism, standardizing the management process and technical requirements. This paper sorts out the current situation of emergency materials management and standardization at home and abroad, summarizes the characteristics of the existing emergency materials management, and puts forward policy suggestions in the field of standardization for improving the construction of emergency materials management system. Studying the standardization of emergency material management is of great significance for improving the system, standardization and coordination of emergency material management, improving the improvement of emergency material management ability, and meeting the needs of emergency management of public safety emergencies.

2 Current Situation of Emergency Materials Management and Standardization in China

2.1 Current Situation of Emergency Materials Management in China

Since the 18th National Congress of the Communist Party of China, China has begun to coordinate emergency management from a national height, and China's emergency management has entered a new era [3]. After the 19th National Congress of the Communist Party of China, the state has built a new emergency management system with comprehensive emergency management departments leading them from the bottom [4]. From the perspective of the emergency material management process, the emergency material management includes the management of the whole life cycle of production, financing and procurement, reserve, allocation, transportation and distribution. In general division of labor, the industry and Information Technology shall undertake emergency materials and equipment, the Ministry of Transport and its Civil Aviation Administration, National Railway Administration and State Post Office shall coordinate road transportation, emergency air transportation and emergency logistics management; People's governments at all levels are responsible for the allocation and distribution of emergency materials according to the local emergency response plan. In the COVID-19 prevention and control mechanism in 2020, the State Council set up a medical materials support group (led by the Ministry of Industry and Information Technology) and the living materials support group (led by the National Development and Reform Commission and the COVID-19 Commerce Department).The Ministry of Emergency Management has proposed a decision on the use of central disaster relief materials, and the State Food and Materials Reserve Administration shall, in accordance with the use instructions of the Ministry of Emergency Management, allocate disaster relief materials to the epidemic areas. The Ministry of Transport has opened a "green channel" for emergency transport vehicles, on the premise of ensuring testing quality, quickly detect the passage of traffic and improve the operation efficiency of emergency materials.

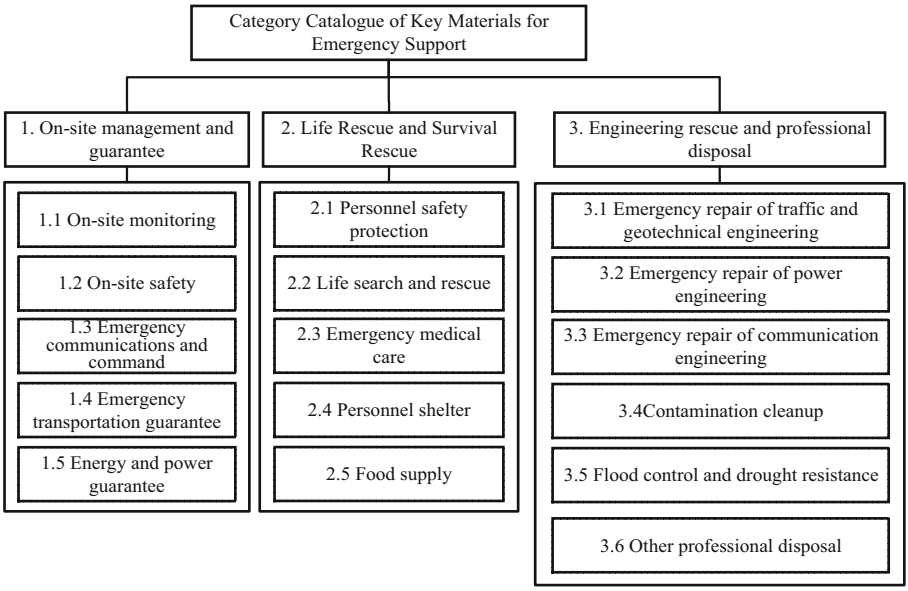

Fig. 1. Classification catalogue of key materials for emergency support (major and medium classes)

2.2 Standardization and Standardization of Emergency Material Management in China

In order to further facilitate national development and reform commission in China, guide a line response, promote emergency security work standardization, standardization, released in 2015 the emergency security key material classification directory (2015), the catalog will focus on emergency materials into large categories, class, small categories and material specific name four levels, Fig. 1 for its class and class. In the catalogue list and the specific description, the tools, materials and equipment required for emergency work are included in the catalogue list, so the "emergency materials" discussed in this study includes emergency materials, equipment, tools, materials, etc.

In terms of emergency materials management, China mainly takes the release of relevant policy and normative documents, and the number of emergency materials management standards cooperating with it is small.The preliminary statistics of 8 standardization technical committees that China has issued relevant standards for emergency materials, and the bidding committee and its areas of responsibility are shown in Table 1. In addition to standardization institutions, the Ministry of Water Resources, Ministry of Public Security, Ministry of Transport and other government departments have issued industrial standards for emergency materials management in their respective fields; some provinces and local governments have issued local standards for emergency materials.

According to preliminary statistics, China has issued more than 400 standards related to emergency materials, most of which focus on emergency materials products and technologies. More mature standardization of emergency materials has been carried out in the fields of fire protection and individual protection. Emergency materials management

Table 1. Technical committee on emergency materials

TC number	Sphere of business
SAC/TC113	Standardization of fire control equipment and materials and other professional fields nationwide
SAC/TC112	Individual protective equipment, crowd collective protection equipment and equipment attached equipment, etc.
SAC/TC307	Disaster reduction and relief materials and equipment
SAC/TC288	Emergency rescue materials and equipment in the fields of mine safety, dust explosion prevention, and production safety of chemical safety
SAC/TC225	Earthquake emergency response and rescue and other professional fields
SAC/TC351	Standardization in the areas of basic, universal and comprehensive requirements of public safety [5]
SAC/TC269	Emergency logistics and other fields
SAC/TC287	Classification and codes of emergency materials

standards have been issued, mainly focusing on the field of emergency materials reserve and emergency logistics. For example, "GB/T 38565-2020 Emergency Material Classification and Code" and "GB 30077-2013 Requirements for emergency rescue supplies of hazardous chemicals units "and" GB/T 30676-2014 Packaging and identification of emergency materials "and" WB/T 1072-2018 Emergency logistics and storage facilities and equipment allocation specifications", etc., the issued standards are relatively lack of coordination, comprehensive and other emergency materials management standards.

3 Current Status of International and Foreign Emergency Materials Management and Standardization

3.1 The International Organization for Standardization, ISO

The ISO is undertaken by different technical committees for the standardization of emergency materials management in relevant fields. Standardization areas undertaken by ISO/TC292 include, including but not limited to, universal safety management standards, business continuity management standards, recovery and emergency management standards, etc. [6]. ISO/TC292 WG3 is responsible for drafting standards in the emergency management field and WG 8 for drafting standards for supply chain safety management. The ISO/TC 94 Personal safety Technical Committee is responsible for developing standards for protective clothing and protective equipment. ISO/TC21 Technical Committee on Fire Fighting Equipment Standardization and ISO/TC92 Fire Safety Standardization Technical Committee issued standards for fire fighting, fire and other fields (Table 2).

Table 2. Relevant technical committee on emergency material management of ISO

TC number	Name
ISO/TC 292	Security and resilience
ISO/TC 94	Personal safety- Personal protective equipment
ISO/TC 21	Equipment for fire protection and fire fighting
ISO/TC 92	Fire safety

3.2 The United States

The United States has established specialized agencies to manage emergency supplies. The national emergency management authority is primarily the Department of Homeland Security and its Federal Emergency Administration (FEMA), with its Washington, DC headquarters at the National Response Coordination Center (NRCC) to coordinate and guide emergency resources in the areas affected. The US Logistics Council (LMD) responsibilities include logistics policy formulation, standard establishment, mission performance, and supervisory guidance. Under the US National Emergency Management System framework system, the Logistics Support Department is fully responsible for ordering, receiving, allocating, storing and distributing all emergency supplies [7].

In terms of the standardization of emergency equipment, the US FEMA has released the Catalogue of Authorized Equipment (AEL), which hierarchical classifies some of the important emergency equipment that the FEMA concerns [8], and specifies the certification standards for materials and equipment; the US issued Target Capacity List (TCL) identifies more than 30 emergency capabilities for governments and enterprises, and the list can provide resource allocation guidance during the emergency preparedness period. The Interagency Coordinating Committee (IAB) released the Standardized Equipment Products Catalogue (SEL), which is consistent with AEL number title and description information and refining important features of equipment, etc. In the emergency equipment management system of the United States, these three classified catalogue systems are important standardized management means.

The United States has established the National Emergency Management System (NIMS), which has established unified emergency standards and norms for all levels of government in the United States, and provides a nationally unified set of methods at all levels in the United States [9]. NIMS system standardized resource management process and disposal mode, the system built resource classification library (Resource Typing Library Tool, RTLT), RTLT defined and classified emergency resources according to capacity, a total of 18 resource categories(data sources, https://rtlt.preptoolkit.fema.gov/Public), each resource has the corresponding detailed requirements of core capabilities and resource specifications, to provide the basis for resource management standardization (1Table 3, Fig. 2).

In the international construction of emergency materials management and standardization, ISO has set up a number of standardization technical committees related to emergency materials, release relevant standards, and actively promote the standardization of international emergency materials management. The emergency material management

Table 3. Number of resources for US RTLT Primary Core Capability

Primary core capability	Pcs
Community resilience	1
Critical transportation	6
Cybersecurity	8
Economic recovery	6
Environmental response/health and safety	9
Fatality management services	42
Fire management and suppression	4
Housing	4
Infrastructure systems	96
Intelligence and information sharing	5
Interdiction and disruption	2
Logistics and supply chain management	10
Long-term vulnerability reduction	1
Mass care services	37
Mass search and rescue operations	58
Natural and cultural resources	2
On-scene security, protection and law enforcement	25
Operational communications	13
Operational coordination	32
Planning	8
Public and private services and resources	1
Public health, healthcare, and emergency medical services	87
Public information and warning	4
Risk management for protection programs and activities	2
Screening, search, and detection	9
Situational assessment	11
Total	483

system is relatively sound, with specialized agency management of emergency material support, forming standardized resource management process and disposal mode; demand management of emergency material supply chain, the national emergency resources, and emergency equipment catalog, target capability list, to support the standardization of emergency material management.

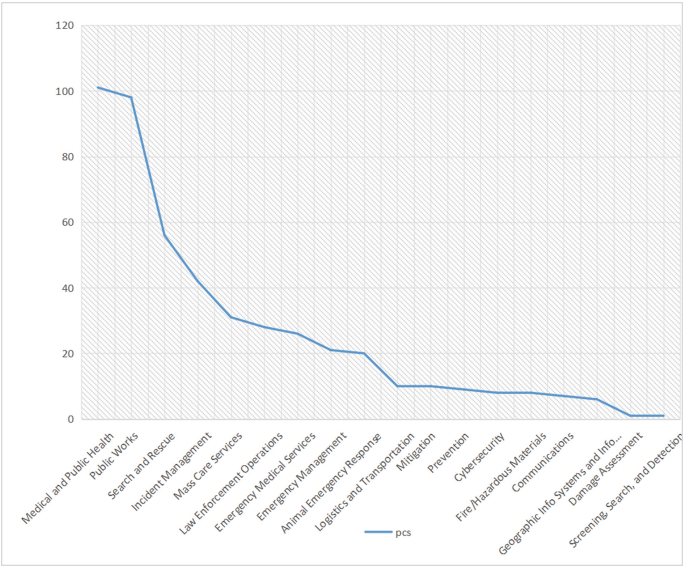

Fig. 2. US RTLT system resource category and numbers

4 Conclusion and Outlook

By combing the emergency material management standards and comparing the standardization of international emergency material management, the basic problems of the standardization are summarized.

First, the lack of macro coordination. China Development and Reform Commission, the Ministry of Emergency Management, the Health Commission, the Ministry of Transport and other ministries and commissions have emergency material management authority within their functions. However, but the response of major public emergencies usually requires the linkage of multiple departments. At present, China still lacks the top-level design and overall planning of emergency material management. Similarly, the study found that the standards related to emergency materials were scattered among eight technical committees, including the National Technical Committee for the Standardization of Personal Protection Equipment (SAC/TC112), and lack overall coordination among each other. Second, the lack of important standards is serious. China has issued more than 400 relevant standards for emergency materials, most of which are emergency materials products and technical standards, such as technical requirements for fire protection and personal protection equipment. There is a serious lack of emergency materials management standards. Third, the whole chain has not yet formed a chain of "measurement-standard-inspection, testing, certification and recognition" in the field of emergency materials. Take this epidemic as an example, due to the lack of certification support in the production, procurement, reserve, deployment, transportation and distribution of emergency materials, all departments are unable to form a certification-based cooperation system. Fourth, there is a lack of standardized emergency material management information system. The existing information system relies on different

classification, coding and information description, which cannot realize interconnection and meet the large-scale and regional material management needs of major and major emergencies.

Standardization is an important means to improve the management level of emergency materials. It is suggested to strengthen the following aspects: First, improve the overall coordination mechanism. Improve the cross-departmental emergency material management coordination mechanism to realize the overall management and guidance of emergency resource management of various departments and governments at all levels; under the emergency material management coordination mechanism, design and establish a set of cross-departmental that can be quickly converted and combined with peace and war. Standardized coordination mechanism to meet the special needs of large-scale deployment and production capacity mobilization in emergency response situations, realize the overall coordination and systematic advancement of emergency resource management standardization work, so as to realize the scientific management of emergency materials according to the standards. Second, establish a unified national emergency material management standard system. Further sort out the existing standardization institutions and standards, check the omissions and fill vacancies according to the standardization requirements of emergency resource management and the problems exposed in this epidemic, establish a unified national emergency material management standard system, and solve the incomplete coverage of standards and the overlap between standards, The lack of key standards and other issues, to achieve standardized management of emergency supplies throughout the life cycle. In the field of emergency supplies, a whole-chain "measurement-standard-inspection and testing-certification and accreditation" overall technical solution is formed to establish a cooperative basis for mutual recognition of related parties. Third, speed up the development of important standards for emergency supplies management. Based on the actual needs of emergency material management, strengthen standard guidance, and be problem-oriented, and accelerate the development of basic and general standards in the field of emergency material management. Finally, speed up the construction of a national standardized information system for emergency supplies management. Establish standardized information such as classification and coding of emergency supplies, descriptions of emergency supplies, and certification of emergency supplies, and support a standardized information system for real-time upload and update of emergency supplies and equipment data from all types of emergency supplies at all levels, in order to achieve scientific and scientific emergency supplies. Standardization and refined management provide a technical platform.

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