Actual problems of the operation of apartment buildings

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Abstract. The issues related to the occurrence of accidents during the operation of multi-apartment residential buildings, and the contradictions between property relations, rights of use and liability of business entities in the current legal environment are considered. The analysis of typical accidents leading to significant losses is conducted. The significance of the main factors influencing the occurrence of accident situations, the amount of damage from accidents and the degree of responsibility attributed to various categories of business entities in terms of compensation for material damage are assessed. Options for solving problems are proposed, including technical solutions in terms of diagnosing and localizing accident situations, and measures to increase the efficiency of the organizational and legal basis for the operation of multi-apartment residential buildings.

1. Introduction

Low efficiency and a high level of costs with low quality of management during the operation of multi-apartment residential buildings are steadily a headache for management bodies and executive bodies of all levels, from the government to management companies and homeowners associations. The low reliability of housing and communal services, primarily heating systems, hot and cold water supply and sanitation, lead to significant material damage, as well as to a threat to the health, and sometimes the lives of residents. This issue is paid the closest attention to government bodies and the public every year, many decisions are made, but the severity of the problem does not decrease. Moreover, due to the increasing complexity of engineering equipment, the frequency of accidents per one building increases, and with the increase in the number of stores of buildings, the size of material damage increases.

According to the authors, the main reason for this situation is the totality of contradictions between the relations of ownership, rights and responsibilities of business entities in multi-apartment residential buildings, combined with insufficient equipment of buildings with diagnostic and safety systems. It is now becoming apparent that the existing regulatory framework for the technical regulation of the work of construction companies and management company in the field of housing and communal services requires serious analysis and changes. The analysis of the main conflicts leading to accidents is carried out. The consequences of accidents, the degree of responsibility of business entities and the degree of damage to each of the parties are assessed.

2. The problem of the diversity of ownership types

There is only one object - an apartment building, and there are many owners. The apartment building is a single complex of building structures and engineering systems. At the same time, there are various
types of premises in the house, in relation to which the ownership right is different, including individual ownership of individual premises and collective ownership of common property. As a real estate object, the premises exist as part of another real estate object - buildings, forming two categories depending on the purpose:

- main premises, which are non-residential premises in a non-residential building or residential (apartments) and non-residential premises in an apartment building;
- auxiliary premises, which are auxiliary premises in a non-residential building or common premises in an apartment building.

Each of these categories of premises has its own legal regime. Thus, the assignment of premises to the number of objects of civil rights, in fact, leads to the formation of several objects with different legal regimes: 1) the building as a whole, including an apartment building; 2) the main premises, which may belong to various owners on the basis of individual ownership; 3) common premises and land, which are a common property owned by all owners of premises on the basis of the right of common shared ownership. According to paragraph 2 of Art. 290 of the Civil Code of the Russian Federation, a specific feature of the concept of an “individualistic approach” to property existing in Russia was formed. In fact, individual property on its parts and common shared property, the elements of which are inseparable, are established on a single real estate object (building and the land occupied by it). In an apartment building, you can distinguish the main types of premises:

- residential premises;
- non-residential common premises in an apartment building, building infrastructure (stairwells, elevators, halls, passages, technical rooms, basements, ground floor);
- non-residential premises used for commercial or other purposes.

At the same time, various forms of ownership can be distinguished. Residential and non-residential premises may be individually owned by any subjects of the right of ownership, regardless of its form, and auxiliary property - only in the common shared ownership of these entities. The common property of the owners of premises in an apartment building are those parts of the house that have auxiliary, serving value and are not individual property objects. An approximate list of objects of common property is established in Part 1 of Art. 36 of the Code [1].

A diversity of forms of management and the right to use causes a number of conflict situations, leading to significant losses, and sometimes posing a threat to the safety and health of inhabitants. Two or more houses connected to the heat distribution node and, respectively, to one node of the commercial metering of thermal energy and heat carrier flow. As a rule, the owners of each house form a separate legal entity. Moreover, each of the houses can be served by different organizations. Existing normative acts [2] (Rules for the commercial accounting of thermal energy, heat carrier flow); [3] (Decree of the Government of the Russian Federation of May 6, 2011 N 354 "On the provision of communal services to owners and users of premises in apartment buildings and residential buildings”) do not clearly regulate the methods for distributing energy costs between consumers, the costs of maintaining property servicing different houses, as well as losses during the transport of thermal energy between houses. In addition, resource-supplying organizations often require payment of consumed resources in full from residents of a house in which metering devices are installed, and calculation according to standard loads, from houses connected to this heat point.

3. The problem of the rights and responsibilities of business entities
The owners assume the ownership of the premises includes the right to carry out work in them without proper experience and knowledge, or to hire contractors for low prices, as well as to use cheap equipment, which leads to serious accidents. Such situations arise due to the fact that with the current practice, any people can perform work in the engineering systems inside the apartments, including those without training and knowledge of safety rules. The consequence of the poor quality of work and materials is accidents leading to pipe leaks in apartments caused by the pipe joint sealing damage and/or the destruction of fittings, hoses, pipelines, radiators. In [4] it is noted: “According to statistics, the damage caused to property by flooding is three times higher than the loss from apartment thefts.
According to the Moscow Property Department, the vast majority of accidents (89%) occur in the "flooding". The analysis of arbitration cases in the field of housing and communal services leads to the same conclusion. When flooding the premises, almost everything suffers: ceilings, walls, floor coverings, doors, windows, furniture and household appliances. In the event of a short circuit due to dampness, even a complete burnout of the apartment is possible, sometimes with fatalities, as a rule these are elderly people and small children. The situation of flooding apartments with hot water from the heating system to such an extent that residents receive burns incompatible with life is also fatal.

A common cause of accidents is a defect made during the construction phase, which manifests itself during operation, including after the warranty period has expired, as well as the use of low-quality appliances and equipment in pursuit of savings. Figure 1 shows typical examples of the breakage of low-quality equipment. The warranty period is too short, as a rule - no more than 5 years. At the end of the warranty period the responsibility for the defect falls on the property owners, or on the management company, if the accident occurred in their area of their responsibility.

![Figure 1. Breakage of low-quality faucet and flexible hoses.](image)

Another common cause of emergencies is negligent attitude and/or low qualification of performers of repair and other works. However, often these "masters" remain unknown. Stimulated by existing legislation [5], a mentality has developed in Russia, the main requirement of which is the purchase of goods and services at the lowest prices, often below cost. Such prices are possible only when using low-quality materials, violation of technology and low-skilled labor. One of the fundamental principles formulated by E. Deming, a classic of quality management more than 60 years ago [6], states: "End the practice of awarding business on the basis of a price tag. Instead, minimize total cost. Move towards a single supplier for any one item, on a long-term relationship of loyalty and trust". Ignoring the fundamental principles of management in modern Russia leads to significant damage [7, 8].

4. The problem of restricting the right of access to areas of operational responsibility for the management company personal

Often, accidents arise in the area of responsibility of the management company, while its' personal does not have the right of free access to this zone, since the zone is located in a room that is owned or used by another individual or legal entity. This situation occurs when communications pass through warehouses, shops, pharmacies, cafes, fitness centers, and other institutions located in the basement or ground floors of apartment buildings. The management company in this case is not able to carry out normal maintenance in the area of its responsibility, but in case of an accident is found guilty [9-11].

Table 1 presents the most common types of accident situations, the main causes of their occurrence and the weight fraction of each of the causes in the occurrence of the accident [12].
Table 1 The types of accident situations and the causes of their occurrence.

| Types of accident situations                        | Causes of accident situations, their weights, % |
|-----------------------------------------------------|--------------------------------------------------|
|                                                     | Manufacturing defects | Construction defects | Resident's actions | Physical wear | Improper maintenance |
| Damage to fittings inside the apartment              | 50                   | 20                   | 20                | 10            | 10                   |
| Pipe joint sealing damage inside the apartment       | -                    | 80                   | 20                | -             | -                    |
| Flexible hoses damage                                | 50                   | 20                   | 30                | -             | -                    |
| Damage of radiator                                  | 50                   | 10                   | 10                | 20            | 10                   |
| Indoor pipes damage                                 | 30                   | 30                   | 20                | 20            | -                    |
| Pipes, fitting, hoses or joint seal damage in the responsibility area of management company | 30                   | 20                   | 10                | 20            | 20                   |

The weight of each of the factors under consideration (the causes of the accident) was adopted by experts on the basis of an analysis of judicial practice and a sample survey of management companies.

Table 2 presents the average size of damage from different types of accident situations per year and per an average apartment building. The calculations take into account that the apartments are located on different floors and during an accident, as a rule, two to three lower apartments are poured. Accidents in the ground floor do less damage. In case of accidents in the distribution pipes passing between floors and inside the premises belonging to different owners, the damage may turn out to be significant due to the longer duration of the accident (the management company does not have the right of free access to such zones).

Figure 2 shows the weighted average distribution of liability for accidents of the parties - business entities, as well as assessing their material damage from accidents.

Table 2 The average size of damage from accident situations.

| Types of accident situations                        | Frequency, 1/year | Damage per one accident, thousand rubles | Average annual damage, thousand rubles |
|-----------------------------------------------------|-------------------|------------------------------------------|----------------------------------------|
| Damage to fittings inside the apartment              | 0.2               | 300                                      | 60                                     |
| Pipe joint sealing damage inside the apartment       | 0.4               | 50                                       | 25                                     |
| Flexible hoses damage                                | 0.3               | 300                                      | 90                                     |
| Damage of radiator                                  | 0.05              | 500                                      | 25                                     |
| Indoor pipes damage                                  | 0.05              | 500                                      | 25                                     |
| Total                                               | -                 | -                                        | 225                                    |
As a rule, suppliers of low-quality equipment cannot be brought to full liability for the damage caused. Initially, the charge is brought against the owners of the premises in which the accident occurred. The owners of the premises, in turn, are trying to bring charges against the management company. When considering such cases, the court may conclude that the accident occurred due to the poor quality of the equipment installed or poor quality of construction work. But a fairly common phenomenon is the termination of the activities of construction organizations working poorly, or it turns out that the warranty has expired. In such cases, there is no one to recover damage and material damage remains with the owners.

5. Conclusions and suggestions
The contradictions between the relations of ownership, rights and responsibilities of business entities in multi-apartment residential buildings, combined with the insufficient equipment of buildings with diagnostic and safety systems, are the main reason for the low efficiency of housing and communal services in terms of operating multi-apartment residential buildings. Despite the fact that a significant part of the problems is caused by the low quality of equipment and materials, as well as the low quality of construction works, the main damage is suffered by the owners and service organizations. The extent of damage can be significantly reduced due to operational diagnostics and localization of accidents [13]. It seems important to use, along with technical means, modern methods of analysis [7, 9, 14]. It is necessary to increase the degree of responsibility of suppliers of low-quality equipment, construction organizations and organizations that carry out repairs in buildings [15]. One of the means to increase the responsibility of construction organizations can be a significant increase in the insurance premium to a self-regulatory organization (SRO) and the practice of compensation for damage due to accidents in cases where the guilt of the construction organization is proved, even if this construction organization ceased to exist. If the accident arose as a result of the fact that the owners of the premises allowed random persons who are not members of the SRO to carry out work on the engineering equipment, or themselves carried out the work, then the responsibility should lie entirely with them.

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| Business entity     | Frequency of being brought to liability for the damage | Frequency of causing the accident |
|---------------------|-------------------------------------------------------|----------------------------------|
| Equipment suppliers | 20%                                                   | 40%                              |
| Construction company| 20%                                                   | 40%                              |
| Premise owners      | 30%                                                   | 50%                              |
| Physical wear       | 10%                                                   | 20%                              |
| Management company  | 10%                                                   | 10%                              |

Figure 2. Frequency of being brought to liability for the damage of accident and frequency of causing the accident
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