UDC: 351.749:356.16(497.11)
DOI: 10.5937/pnb30-61164
Review article

Политика националне безбедности
(The Policy of National Security)
Year XVI vol. 30
No. 3/2025
pp. 135-157

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DANGEROUS GOODS AS A POSSIBLE TOOL OF COMMITTING THE CRIMINAL OFFENCE OF TERRORISM

Abstract

In times of pronounced globalization processes and no less strong multipolar geopolitical tendencies, the structure of global security is undergoing a serious endurance test, which is why the authors direct their research attention towards the growing potential of manifestation forms of terrorist activities. The phenomenon of dangerous goods is a subject of particular interest to the authors, who first define it conceptually in relation to existing theoretical sources and then examine its normative aspects. After establishing a theoretical and normative foundation, the authors establish a connection between the basic phenomenon of their research and the target problem of terrorism within the framework of criminal law. The authors present the essence of this connection through the possible role of dangerous goods as a tool of committing the criminal act of terrorism, thereby indicating the goal of their research, i.e., the criminal law categorization of the phenomenon of dangerous goods. The methodological concept adopted by the authors comprises a descriptive, historical, normative, analytical, and teleological approach. The authors analyze their research subject through four parts in the paper.

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After defining the concept and types of dangerous goods, their effective phenomenological positioning in the normative sphere of the criminal act of terrorism follows. The formal-legal segment of the paper gives way to the factual challenges of transporting dangerous goods in road traffic, which is a precursor to the final consideration of possible *modi operandi* of terrorist attacks using dangerous goods as a crime tool. It is precisely this phenomenological complexity and semantic multi-layering of the concept of dangerous goods, along with its normative and factual imprint on the construction of global security in our time, that form the backbone of the idea presented by the authors in this paper.

Keywords: dangerous goods, terrorism, tool of committing criminal acts, road traffic, security, terrorist attacks.

INTRODUCTION

A fact that is woven into the very foundations of social life, and therefore into the sustainability of a social community, is unequivocally social interaction. Human adaptability to the conditions of the natural environment, overcoming existential challenges, and ultimately tailoring the living environment to one's own needs and interests would be impossible without mutual social relations between individuals and social groups. Undoubtedly, overcoming natural obstacles and solving social problems in the development of the human community is the result of the manifestation of sociability as one of the key characteristics of a human being.

Respecting the boundaries of the conceptual field of our research subject, we will focus our thinking on the material dimension of social interaction with roads as its the civilizational expression. Considering that human sociability necessarily implies communication with other people, roads arise as an outcome of the intention to strengthen, secure, and develop social interaction. Consequently, road traffic emerges as a form of communication. Therefore, road traffic, or road transport, is actually an emerging form of social interaction that historically precedes other forms of transport. The existence of road transport has enabled and facilitated the forming and functioning of the market for goods and services. The transportation and distribution of resources,

particularly energy sources and foodstuffs, have transcended the dynamics of local and regional levels and assumed global proportions.

Dangerous goods, as the subject of our research, are the fuel for the engine of the industrial infrastructure of the modern world, which is why they are an indispensable part of the cargo transported in road traffic. Their importance in terms of global security derives from the fact of their high-frequency presence, both in national and international road traffic. It is precisely this global security significance of dangerous goods that opens up the possibility of the existence of global risks, as a phenomenological antipode with a wide range of manifestations. In the case of dangerous goods, we will limit our research attention to the potential criminal exploitation of this phenomenon, the scope of which ranges from illegal activities in the economic sphere to endangering human health and environmental pollution, as well as the possibility of carrying out terrorist attacks.

Considering that economic and environmental crime can be found in the function of the phenomenon of terrorism, we have determined the aim of the research in this paper to establish the possible phenomenological exposure of dangerous goods in the role of a criminal law category, i.e. to find an answer to the question of whether dangerous goods can be a tool of committing a criminal act of terrorism. In methodological terms, we believe that the following methodological procedures best suit the scientific profile of our research: descriptive, historical, normative, analytical, and teleological. The methodological tools mentioned are necessary for the most comprehensive research coverage of the complex phenomenological field related to the target concept, whose significance we analyze. These methods are also suitable in relation to the structure of the research flow that follows, as they are represented in key segments of the scientific consideration of the phenomenological conceptual autonomy of dangerous goods in relation to other related concepts. It is precisely this methodological arsenal that will contribute, as we deem, to confirming those determinants of dangerous goods that are *differentia specifica* in defining its conceptual uniqueness. However, to avoid the trap of a simplified approach in recognizing inter-conceptual relations, connections, and influences, and to respect the ancient message 'Hic Rhodus, hic salta', we will first become familiar with the concept and types of dangerous goods in order to determine the subject of our research more fully.

CONCEPT AND TYPES OF DANGEROUS GOODS

Failure to consider the conceptual boundaries of an investigated phenomenon can lead its determination down the cul-de-sac of theoretical analysis and the unfoundedness of the conclusions subsequently drawn. It is for this very reason that a reference is made to some of the author's views, which we have defined as guidelines for determining the notion of dangerous goods as the target phenomenon of our reflection.

According to Sylwia Bęczkowska, dangerous goods are "materials or objects with dangerous properties that, if not properly controlled, pose a potential danger to the health and safety of people, infrastructure or means of transport", and an example of dangerous goods is "liquid fuels, chlorine, ammonia, gases, corrosive, radioactive, toxic and other dangerous substances transported daily by others" (Bęczkowska 2019, 1252). In this sense, Bęczkowska determines that "the transport of hazardous materials poses a significant danger to people and the environment" (1253). She points out that there are the following ways in which the harmful effects of hazardous substances spread: (1) through land, where there is no direct danger to humans but there is an evident serious environmental hazard; (2) through water, where there is no direct danger to humans but there is a direct threat to aquatic ecosystems; and (3) through the air, in which case human life and health are directly threatened. Bęczkowska cites the fact that "dangerous goods constitute an important sector of the transport market" because they are "indispensable for the functioning of industry and urban agglomerations", and that therefore "their transportation poses a potential threat to people, road safety and the environment, regardless of the vehicle used for this purpose" (1259). Close to this understanding is the view that dangerous goods are "more commonly known as hazardous materials", which are "flammable, explosive, radioactive, corrosive, oxidizing, suffocating, toxic, pathogenic or allergenic" and can "cause accidents and lead to fire, explosion and chemical poisoning or combustion with significant harm to humans and the environment" (Nowacki, Krysiuk, and Kopczewski 2016, 143).

Some authors situate the phenomenon of dangerous goods within a broader context and define it through its multiple significances in the areas of the chemical industry, production capacity, and economic development (Sattari, Macciotta, and Lefsrud 2020, 49–66). This

is why, according to some opinions, the safety of road transport of dangerous goods is a "serious, complex, socially and environmentally sensitive problem" (Ma *et al*. 2021, 1). Dangerous goods can also be collectively defined as "materials or products which by their chemical or physical properties may endanger human health, the environment and property", while in an individual sense it can be "any material, industrial or other waste which is dangerous to man and nature" in the form of "packaged, scattered and liquid dangerous goods" (Batarlienė 2020, 2).

Inevitably, there are also views in theory according to which dangerous goods in the broad sense represent a source of risk to humans and the natural environment, and in the narrow sense a primary threat to the life and health of road traffic participants and the ecological balance of their natural environment due to the potential increase in the volume of emissions of harmful substances, especially in liquid and gaseous aggregate state, as well as the consequent impact on the increase in the number of traffic accidents and road accidents (Lukasik, Kuśmińska-Fijałkowska, and Kozyra 2017, 109). In the previous theoretical period, Philippe Cassini included in the population at risk from the possible harmful effects of dangerous goods, in addition to the direct participants in road traffic, persons living or working near the roads (Cassini 1998, 133). Somewhat restrictive dangerous goods are, in some theoretical approaches, determined through the indication of emergent forms of dangerous substances such as "flammable gases, chemicals, explosives and toxic substances", which in both urban and rural environments unequivocally "carry significant risks and challenges for public safety and the environment" (Petrović *et al*. 2025, 29). The danger of dangerous goods for the safety of people and the natural environment, according to some aspects of theoretical thinking, may even be associated more heavily with its transport itself than with its physical and chemical properties because it is precisely the transport of dangerous goods that is subject to the greatest challenges to harmful consequences (Milošević, Pamučar, and Chatterjee 2021, 356). Last but not least, some authors link the risk of transporting dangerous goods to the increased presence of "greenhouse gases", believing that reducing carbon dioxide can mitigate the potential harm of dangerous substances in road transport (Ziaei and Jabbarzadeh 2021, 1).

In a whole range of different theoretical aspects, approaches, understandings, considerations and points of view, we have decided on

a complex, but theoretically and normatively comprehensive, definition of dangerous goods that it is necessary to phenomenologically position in relation to the previous determination of the notion of dangerous substances, according to which they are "substances or mixtures that by physical and chemical properties or reactions (explosive, flammable, toxic, radiation hazard, corrosive, generally reactive) during production, transportation, storage, handling and use can endanger human health and life, pollute the environment and damage material goods" (Sremac i Matijašević 2021, 4). Therefore, *in nuce* "all those substances that have such characteristics that, due to irresponsible and/or unprofessional work, or any accident during production, storage, handling or transport, can cause consequences for health or the environment, belong to the group of dangerous substances" (Krstić i Mlađan 2007, 9). Then we consider the definition of commodities as "all products of human labor that by their properties satisfy the needs of the market where they are included in social use by trade exchange, i.e. have market, social and use value" (Tepić *i dr*. 2013). The normatively supplemented theoretical positions on dangerous substances and goods, conclude that dangerous goods are "materials and articles whose transport is prohibited or allowed" (Pravilnik o transportu opasne robe [PTOR] u Ministarstvu odbrane [MO] i Vojsci Srbije [VS], „Službeni vojni list", br. 8/2018), if carried out under the conditions prescribed by the relevant legal acts (Sremac i Matijašević 2021, 4). We consider that the whole phenomenological connection of dangerous substances with dangerous goods is the legal definition of the concept of dangerous substances as dangerous goods that are "properly packaged, marked with certain markings and labels, with correctly completed transport documents and loaded into the vehicle" (PTOR u MO i VS, „Službeni vojni list", br. 8/2018, čl. 2, st. 2).

The classification of dangerous goods is determined in accordance with the existing international regulations, according to which there are the following types distributed by classes: "Class 1 – Explosive substances and articles; Class 2 – Gases; Class 3 – Flammable liquids; or Class 4.1 – Flammable solids, self-reactive solids, polymerizable solids and explosive solids of reduced sensitivity; Class 4.2 – Self-igniting materials; Class 4.3 – Substances which in contact with water develop flammable gases; Class 5.1 – Oxidising substances; Class 5.2 – Organic peroxides; Class 6.1 – Toxic substances; Class 6.2 – Infectious substances; Class 7 – Radioactive materials; Grade 8 – Contaminants

and Class 9 – Other hazardous substances and articles" (Evropski sporazum o međunarodnom drumskom prevozu opasne robe [ADR], 2016, ECE/TRANS/257, viii).

In view of the characteristics of dangerous goods that have the potential to endanger the life and health of people, or the devastation of the environment, we consider it justified to link this phenomenon to the danger posed to the human community by the criminal act of terrorism in all its manifestations. We will illustrate this phenomenological connection by determining the importance of dangerous goods within the regulatory boundaries of one of the most dangerous criminal activities in the modern world.

DANGEROUS GOODS WITHIN THE REGULATORY FRAMEWORK OF THE CRIMINAL OFFENCE OF TERRORISM

According to some authors, basically "the concept of security is expanded horizontally" which means "that the concept of security expands from military to political, economic and social security, environmental security, or *human security*" (Bajagić 2007, 54). It is precisely in such a phenomenological environment that the harmfulness of terrorism can be noticed, as a negative social phenomenon and a contemporary threat to security, which always presents a difficult-to-solve security problem both for states and for the international system as a whole. As a term *per se*, beyond any doubt, terrorism causes fear, especially in the case of the actions of terrorist groups that "driven by the maximization of victims resort to the use of dangerous substances" (Gavrić 2022, 22). In this context, it would be unjustified to neglect the importance of biological weapons, which, due to their connection with terrorist activities, are theoretically known as "the atomic bomb of the poor" (Čobeljič *i dr.* 2003, 8 cited in: Cvetković 2013, 123). "Generally speaking, biological weapons can be defined as one of the types of weapons of mass destruction, which in a narrower sense means nuclear, chemical, biological and radiological weapons, while in a broader sense it means all toxic chemical agents if they are used as a means or target of an attack; all microorganisms and their products if they are the means or target of an attack; all industrial plants that produce and use toxic chemicals and microorganisms in the production process, as well as all warehouses and all means of transportation in which they

are stored and transported, and are the target of military or terrorist actions" (Cvetković 2012, 37 cited in: Cvetković 2013, 123). Almost certainly, "the increased danger of its use has been contributed to by the development of molecular genetics and biotechnology, which has resulted in the demise of a huge number of research laboratories whose work can be abused by ('dual use')" (Cvetković 2012, 37 cited in: Cvetković 2013, 123). According to the above, we consider justified the conclusion that radioactive, explosive, flammable, toxic substances and biological agents, by their very nature, represent dangerous substances that can be misused as a means of committing a terrorist attack, i.e. a criminal act of terrorism (Gavrić 2022, 22 cited in: Cvetković 2013, 123).

In modern security and legal frameworks, the link between dangerous goods and terrorism is becoming more pronounced, which imposes the need for a precise regulatory approach to this problem. Dangerous goods such as explosives, radioactive materials, flammable and self-igniting materials, toxic chemicals, etc., can be a dangerous means of carrying out a terrorist act, which can cause serious consequences serious consequences for the environment and quality of life, as well as for the economic and political stability of the state. On the other hand, modern technological development is not possible without hazardous materials, because they are not just the product of traditional technologies, but a prerequisite for further technical - technological development of society. Given this, the question of how dangerous goods are covered by criminal law legislation, especially in relation to the crime of terrorism, becomes extremely important from a security perspective for the entire society.

As mentioned earlier, dangerous goods include substances and objects whose physical, chemical, or biological action can cause harmful effects to people, property, and the environment. In international law, the transport and handling of dangerous goods are regulated through various international treaties and conventions, all aimed at creating conditions for the safe conduct of transport processes involving dangerous goods. Based on uniform rules accepted by all countries that are signatories to international agreements, it is possible to transport dangerous goods easily and smoothly through different countries, without any restrictions on different packaging, handling, and transport standards. In domestic legislation, dangerous goods are defined through special laws and by-laws, harmonized with international acts, covering

the mode of production, storage, use, and transportation to protect safety against the misuse of dangerous substances. The importance of enforcing national regulations is reflected in the fact that a single error in the dangerous goods logistics system can have large-scale consequences (Sremac i Matijašević 2021, 19).

Criminal legislation of the Republic of Serbia in Chapter 34, Article 391 of the Criminal Code, entitled Crimes against humanity and other property protected by international law, provides as follows for the crime of Terrorism: "(1) Who with the intention to seriously intimidate the population, or to compel Serbia, a foreign state or an international organization to do or not to do something, or to seriously threaten or damage the basic constitutional, political, economic or social structures of Serbia, a foreign state or an international organization: 1) attacks the life, body or liberty of another person; 2) committing kidnapping or taking hostages; 3) destroy a state or public facility, a transportation system, infrastructure including information systems, an immovable platform in the epicontinental belt, a public good or private property in a way that may endanger human lives or cause significant damage to the economy; 4) commits hijacking of aircraft, ships or other means of public transport or transport of goods; 5) manufactures, possesses, procures, transports, supplies or uses nuclear, biological, chemical or other weapons, explosives, nuclear or radioactive material or device, including research and development of nuclear, biological or chemical weapons; 6) discharges hazardous substances or causes fire, explosion or flood or undertakes other publicly hazardous actions which may endanger human life; 7) interfere with or interrupt the supply of water, electricity or other essential natural resources which may endanger human life.

(2) Whoever threatens to commit an offence outlined in paragraph 1 of this Article shall be punished with imprisonment for six months to five years.

(3) If in the execution of an act referred to in paragraph 1 of this Article one or more persons are killed or serious damage is caused, the offender will be sentenced to a minimum of ten years in prison.

(4) If, in the commission of an act referred to in paragraph 1 of this Article, the perpetrator intentionally takes the life of one or more persons, shall be punished with imprisonment of at least twelve years or with life imprisonment.

(5) Whoever procures or enables the means for the commission of the offence outlined in paragraph 1 of this Article or removes an obstacle to its execution, or agrees with others, plans or organizes its execution, or takes other action creating the conditions for its immediate execution, shall be punished with imprisonment of one to five years.

(6) Whoever, for the purpose of committing an act referred to in paragraph 1 of this Article, sends or transfers to the territory of Serbia persons or weapons, explosives, poisons, equipment, ammunition, or other material, shall be punished with imprisonment of two to ten years", (Krivični Zakonik [KZ] 2024, čl. 391).

The Criminal Code does not explicitly use the term "dangerous goods" in the article defining terrorism; however, through the nature of the acts, one can see how elements related to dangerous goods are integrated into the normative picture of criminal law. In the basic form of the crime of terrorism, in points 5) and 6) dangerous goods are listed which are used as a means of execution, to use the specified means and/or substances to intimidate the population, "or force Serbia, a foreign state or an international organization to do or not do something, or to seriously threaten or damage the basic constitutional, political, economic or social structures of Serbia" (KZ, čl. 391, st. 1), which is punishable by imprisonment for a period of six months to five years (KZ, čl. 391, st. 2). Also, paragraph 6 of the aforementioned Article stipulates that whoever, for the purpose of carrying out the act referred to in paragraph 1 of this Article, sends or transfers to the territory of Serbia persons or weapons, explosives, poisons, equipment, ammunition, or other material, shall be punished with imprisonment from two to ten years (KZ, čl. 391, st. 6).

Dangerous goods (explosives, chemicals, poisons, radioactive substances, biological substances, etc.) actually constitute a high-risk asset, and its use by the perpetrator of a terrorist offence directly affects the classification of the offence as a serious form, which increases the responsibility of the perpetrator, determines more severe sanctions and requires special treatment in the investigation and during the conduct of judicial proceedings.

The importance of dangerous goods is also evident in the fact that the crime of using a deadly device is listed in Article 391c. The criminal code was introduced in response to modern forms of terrorist attacks and the use of sophisticated means to commit a crime. Also,

the crime prescribed by Article 391d. The Criminal Code Destruction and damage of a nuclear facility protects critical infrastructure and safety related to nuclear materials and facilities, such as nuclear power plants, reactors, nuclear waste deposits, etc. In this regard, international legal instruments in the form of United Nations acts, such as the International Convention for the Suppression of Acts of Nuclear Terrorism of 2005 and the Chemical Weapons Convention of 1997, clearly link dangerous substances to terrorism as a type of global threat (Zakon o ratifikaciji Konvencije o sprečavanju nuklearnog terorizma 2006; Zakon o potvrđivanju Konvencije o zabrani hemijskog oružja 2000).

The misuse of dangerous goods for terrorist purposes necessitates an integrated approach by society, which requires States to develop control mechanisms with a clear definition of criminal liability for cases where dangerous goods are used as a means of committing terrorism. One of the challenges is precisely the fact that dangerous goods are regulated through multiple sectoral regulations, which further complicates a legally uniform approach in the context of criminalising terrorist activities.

RISKS OF TRANSPORTATION IN ROAD TRAFFIC

The transportation of dangerous goods by road is an inevitable and crucial component of the modern logistics system, enabling the supply of essential goods to various industries, including medicine, agriculture, and others. However, due to the inherent characteristics of dangerous goods, such as toxicity, flammability, explosiveness, or radioactivity, this mode of transport carries serious safety risks to both human life and the environment. Any traffic accident on the road can cause catastrophic consequences, including massive threats to human health, pollution, destruction of ecosystems, and great economic losses. In addition to the technical and operational challenges, an additional danger is the possibility of misuse of dangerous substances as a means of committing criminal offences, especially in the context of committing terrorism.

The risks associated with the transport of dangerous goods do not end with accidents caused by human error or technical failures of the transport unit itself or equipment. Terrorist groups, which use various forms of violence in their arsenal, recognize hazardous materials as

potential means of causing mass fear, injury, and death. The use of chemical, biological, radioactive, or explosive materials in terrorist attacks presents not only a serious security challenge but also a new dimension of threat that threatens the stability of society (Trbojević and Svirčević 2025, 150).

Risks can be categorized into several main areas, namely: 1) risk of occurrence of hazards to human life and health; 2) risk of occurrence of environmental hazards; 3) technical risks; 4) human error; 5) infrastructural risks and 6) lack of coordination of actors in emergency situations.

The risk of danger to human life and health in the transport of hazardous materials is one of the key challenges facing modern road transport. Certain hazardous materials have the potential to cause significant loss of human life and lasting damage to human health if they are handled accidentally or carelessly. Acute toxicity, fire burns, poisoning, and long-term health problems, such as cancers or respiratory diseases, are just some of the effects that can result when hazardous materials are released into the environment. However, this risk becomes even more serious in the case of abuse by terrorists, to cause mass casualties and instill panic among the civilian population, in a way that would be far more destructive than the consequences of an uncriminalised accident. For example, chemical attacks using nerve agents such as *sarin* can cause death or serious damage to people over large areas, while biological agents such as *anthrax* can lead to the spread of infectious diseases. Such misuse of dangerous substances not only endangers immediate victims but also creates long-term psychological and social trauma in society.

The environmental hazards in the transport of hazardous materials, as well as their potential misuse as a means of carrying out terrorist attacks, pose a serious threat to the ecological balance and the long-term sustainability of natural resources. The transport of hazardous materials, such as chemicals, diesel fuel, or radioactive materials, can lead to serious environmental disasters in the event of an accident. Such accidents can result in soil, water, and air pollution, destroying ecosystems, plant, and animal life, and causing lasting consequences for local communities that depend on these resources. However, the danger of environmental damage becomes even more serious when considering the possibility that terrorists could use hazardous materials as weapons to cause environmental disaster.

Terrorist groups, having access to hazardous materials, may use them to deliberately pollute the environment and cause panic among the population. For example, by misusing chemical or toxic substances, terrorists can cause major pollution of watercourses, which could have catastrophic environmental consequences. The use of gasoline or other flammable liquids can lead to massive fires that destroy forest ecosystems and pollute the air, while biological and radioactive substances can contaminate soil and drinking water sources, causing long-term environmental and health problems.

Risks of a technical nature in the transport of dangerous goods, such as vehicle breakdowns, inadequate equipment, poor packaging, or lack of necessary protection, can have serious consequences, not only in the context of accidents and endangering human lives, but also in cases of misuse of dangerous goods as a means of carrying out terrorist attacks. Technical errors or inadequate transportation preparation can enable terrorists to exploit weaknesses in transportation infrastructure, security procedures, or existing security gaps, thereby achieving their goals, causing chaos, and spreading fear. Vehicles carrying hazardous materials must be technically sound and equipped with specialized equipment for safe transport. Terrorists may deliberately cause technical failures or sabotage vehicles. For example, tampering with the vehicle's systems can cause an accident with serious consequences. Also, technological weaknesses can be used to intercept or control the transport of hazardous materials, for the purpose of directing them towards targets of strategic importance (such as industrial zones, public facilities, or facilities that are safely protected). Terrorists may also exploit technical weaknesses in packaging and labeling to conceal dangerous materials and transport them undetected. For example, the smuggling of explosives or toxic substances, labeled as other "safe materials", may enable terrorists to transport weapons or dangerous chemicals to destinations where they could later be used in terrorist attacks. Marking manipulation can make it difficult for emergency services to respond, as accidents involving hazardous materials could be misidentified. Technical errors in tracking systems can lead to delays, misinformation, or accidents due to unrecorded deviations from the planned route. Such errors can be exploited by terrorists as weaknesses in tracking and communication systems to interfere with the transport of dangerous goods or to manipulate the movement of a vehicle, with the goal of directing it to a desired location.

Human-induced risks in the transport of hazardous materials, related to errors in the human factor, such as recklessness, inattention, inadequate training, poor situational judgment, or even deliberate reckless behavior, represent a key dimension of safety threats. The human factor can be decisive in the safe passage of dangerous goods or in the occurrence of accidents that can have catastrophic consequences, including the misuse of such goods for violent or terrorist purposes. Terrorists may recruit or use people within the transportation system, such as drivers, logistics workers, or administrative staff, to carry out sabotage. For example, workers with access to hazardous materials may knowingly tamper with packages, redirect transportation, or allow terrorists to access dangerous goods. Also, terrorists may use human weakness or profit motivation (such as through bribery or threats) to enable transportation or logistics employees to carry out a terrorist attack, so that dangerous materials are available to terrorists.

Infrastructure risks associated with weaknesses or inadequacies in the transport network (roads, bridges, terminals, warehouses, etc.) can have considerable consequences not only for the safety of transport but also for the wider safety of society. When these risks are combined with the potential for misuse of hazardous materials as a means of carrying out terrorist attacks, the danger is heightened. Terrorists may deliberately target infrastructure points, such as bridges or key sections of roads, in order to cause an accident. For example, placing a vehicle with a large amount of exposure on a bridge with increased traffic intensity can cause not only human casualties but also damage to important road infrastructure.

In situations where hazardous materials are used as a means to carry out a terrorist attack, inconsistencies in the response of emergency services can further aggravate the situation, increasing the damage and the number of victims. In such situations, terrorists can exploit weaknesses in the coordination of the relevant services to cause maximum damage and chaos. The integration of appropriate coordination among different services becomes key to reducing risks and preventing accidents or attacks. However, effective accident management in the transport of hazardous materials requires rapid and accurate communication between emergency services (fire brigade, police, ambulance, specialized environmental services, and others). If communications are not coordinated or there are some delays in the transmission of safety-critical information, emergency services

may respond inconsistently and out of sync, which increases risk. For example, if the fire department receives inadequate information about the hazardous material used in an attack, erroneous measures may be taken to extinguish the fire, which may lead to additional explosions and/or dangerous chemical reactions. Terrorists may exploit incoherent response, delays in the transmission of information, or poor preparedness of emergency services to maximize the effect of their attacks, causing more damage, more casualties, and destabilizing the wider community. It is therefore crucial to develop a comprehensive training system, in terms of simulation and coordination of all relevant services, in order to prevent such incidents and reduce the possibility of their abuse.

It is of the utmost importance to understand all aspects of the risks involved in the transport of dangerous goods, including the possibility of their misuse for terrorist purposes, in order to develop adequate security strategies and preventive measures to protect people, the environment, and critical infrastructure (Hassan, Šaljić, and Kraktus 2025, 2).

POSSIBLE METHODS OF COMMITTING TERRORIST ATTACKS

The lack of an integrated monitoring system at the national level, the omission of risk assessment, and the non-collection of data on the movement of dangerous goods are, without any doubt, the triple cause of the "Trojan horse" effects in the urban environment of today's agglomerations (Bęczkowska 2019, 1259). "The development of the global economy, transport networks, and the free movement of people and goods increases the risk of the spread of infection throughout the world" (Cvetković 2013, 135). In making a model for choosing the route of road transport of dangerous goods in the urban environment, it is necessary as a mandatory criterion, in addition to the speed of movement of emergency services and risks related to the impact on the environment, traffic accidents and their consequences, as well as infrastructure facilities, to take into account the possibility of terrorist attacks (Milošević, Pamučar, and Chatterjee 2021, 360). Predicting when and where a terrorist attack will occur by abusing the transport of hazardous materials in urban conditions is not possible without first determining the critical points along the route of their transport

that are attractive for terrorist activities (Milazzo *et al*. 2009, 625). Nevertheless, only practical examples of the misuse of dangerous goods in road transport will best illustrate how dangerous goods can be used as a means of committing the crime of terrorism.

We distinguish the following terrorist attacks with hazardous materials in road traffic: 1) *Beirut, Lebanon, October 23, 1981* – two simultaneous attacks with one truck with explosives on American and French military facilities, after which 241 American and 58 French soldiers were killed (Bellinger 2023, 2); 2) *Oklahoma City, United States, April 19, 1995* – a terrorist attack carried out by a truck carrying ammonium nitrate and oil bedding, in which 168 people were killed and over 800 injured (Giordano 1997, 33–40); 3) *Nasiriyah, Iraq, November 12, 2003* – a truck with a flammable substance exploded near a warehouse next to a base of Italian soldiers, causing 31 deaths and 80 people (Bunker and Sullivan 2004, 5); 4) *Tal Afar, Iraq, March 27, 2007* – two chlorine-laden trucks exploded, killing 152 people (United States Government Accountability Office [GAO] 2009, 88); 5) *Armil, Iraq, July 07, 2007* – truck attack carrying 4.5 tons of explosives at a bazaar, killing 150 people (89); 6) *Kirkuk, Iraq, July 16, 2007* – suicide truck attack with explosives that killed 85 people (89); 7) *Qahtaniya, Iraq, August 14, 2007* – four suicide truck attacks loaded with explosives at a village that killed 500 people (89); and 8) *Mogadishu, Somalia, October 14, 2017* – this attack was carried out with two trucks full of military explosives and explosive homemade bombs, which exploded near a traffic intersection killing 587 and injuring 316 people (Demir, Ali, and Boğan 2021, 1).

Based on the above examples of criminal exploitation of dangerous goods, it is concluded that such terrorist attacks have surely achieved the following goals: inflicting mass casualties, injuring large numbers of people, damaging large-scale infrastructure, and systematically spreading fear among the population. We can also assume that indications of misuse of dangerous goods can be the following indicators, as present in the road transport of dangerous goods: 1) falsified personal and driving documents of the driver; 2) falsified transport documents; 3) falsified documents about the cargo vehicle; 4) falsified documents about the trailer; 5) false data about the dangerous goods being transported; 6) false data about the transport company; 7) false delivery address and 8) false data about the place of loading (European Commission [EC] 2019, 9).

Thus, based on the analysis of the cases described, we consider that the possible means of carrying out terrorist attacks by transporting dangerous goods by road include: 1) that an explosive device detonates in the vicinity of a tank transporting dangerous material; 2) that a dangerous substance is misused as part of a device that is released by the explosion; 3) that an explosive can be misused as a dangerous goods in road transport; 4) that an explosive can initiate a terrorist attack with another type of dangerous goods; 5) that toxic substances can be misused as dangerous goods in road transport; 6) that flammable substances can be misused as dangerous goods in road transport; 7) that a freight vehicle carrying dangerous goods is hijacked for the purpose of carrying out a terrorist attack; and 8) that a freight vehicle carrying dangerous goods is decorated for the purpose of carrying out a terrorist attack.

The very existence of the above facts, relationships and circumstances fully justifies the normative determination of the phenomenon of dangerous goods with a high potential hazard as those "where there is a possibility of misuse for terrorist purposes that may lead to serious consequences such as mass loss of human life or mass destruction or especially in the case of Class 7 mass socio-economic destruction" (ADR 2016, Chapter 1.10, Clause 1.10.3.1.1).

CONCLUSION

Dangerous goods, although primarily regulated as a security and technical problem, occupy a significant place in the regulatory framework of criminal offences, especially terrorism. Criminal law regulation must keep pace with technological developments and the sophistication of terrorist methods, in order to encompass possible forms of misuse of dangerous substances. Continuous monitoring of the movements of dangerous goods, especially those with a high potential for danger (ADR 2016, Chapter 1.10, Clause 1.10.3.1.2), strengthening of the normative criminal law framework and enhancing inter-departmental and international cooperation in order to prevent and punish all forms of misuse of dangerous goods for terrorist purposes are needed.

On the one hand, it is necessary to monitor the flow of dangerous goods using tracking and communication systems, in order to prevent abuses and threats to the safety of people, property, and the environment,

while on the other hand, it is essential to regulate and harmonise criminal legislation at the international level. This would provide legal certainty, facilitate cooperation between states, and allow for more effective sanctioning of responsible actors. We believe that the security challenges of criminal exploitation of dangerous goods, especially in the context of road transport, are determined by the following Latin sentences: 1) *Quod verum, tutum*; 2) *Omni luci est umbra*; and 3) *Acta non verba*. It is precisely on the interconnectedness of the meanings of their messages, as we believe, that the working motto of the competent authorities is based on deterrence, prevention, and suppression of the possibility of misuse of dangerous goods as a means of carrying out terrorist attacks, which takes the form of the following acronym: **U**nhesitatingly; **R**apidly; **G**uardly; **E**fficiently; **N**otably; **T**rained.

In modern times, when the threat of terrorist attacks is becoming increasingly sophisticated and unpredictable, an urgent and decisive response by security agencies is needed. Preventing such illegal acts requires not only courage and intervention in action, but also clearly defined tactics, a high degree of training, and readiness among all security actors. Without delay, all actors must act in a coordinated, swift, and efficient manner, as any moment of hesitation could put human lives and societal stability at risk.

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ОПАСНА РОБА КАО МОГУЋЕ СРЕДСТВО ИЗВРШЕЊА КРИВИЧНОГ ДЕЛА ТЕРОРИЗМА

Резиме

Као централну категорију свог истраживања аутори у овом раду одређују опасну робу и њен кривичноправни феноменолошки потенцијал, који се остварује у функцији средства извршења кривичног дела тероризма. У уводном делу рада, аутори позиционирају појмовно поље опасне робе наговештавајући структуру кључних делова у својој даљој теоријској и практичној анализи циљног појма и његовог кривичноправног значаја. Посебну важност у одређивању феноменолошких граница опасне робе, аутори дају нормативном детерминисању овог појма истичући нарочиту повезаност значења терминолошког односа опасне материје – опасна роба – опасан терет и то у околностима транспорта у друмском саобраћају. Одређивање појма праћено је типологијом опасне робе у складу са важећим међународним прописима Споразума о међународном друмском превозу опасне робе. Након анализирања и утврђивања постојања узајамних веза појма опасне робе са одредбама Кривичног законика Републике Србије које се односе на дефинисање бића кривичног дела тероризма, аутори издвајају као суштинске следеће ризике транспорта опасне робе у друмском саобраћају: 1) ризик од настанка опасности по живот и здравље људи; 2) ризик од настанка опасности по животну средину; 3) техничке ризике; 4) људску грешку; 5) инфраструктурне ризике и 6) недостатак координације субјеката у хитним ситуацијама. Након анализе случајева терористичких напада злоупотребом опасне робе, који су довели до смрти и рањавања више стотина лица, аутори

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одређују као могуће начине криминалне експлоатације опасне робе у друмском саобраћају у виду терористичких активности: 1) детонирање експлозивног уређаја у близини цистерне која превози опасне материје; 2) злоупотреба опасне супстанце као дела уређаја који је експлозијом ослобађа; 3) злоупотреба експлозива као опасне робе у друмском транспорту; 4) злоупотреба експлозива за иницирање терористичког напада другом врстом опасне робе; 5) злоупотреба токсичне супстанце као опасне робе у друмском транспорту; 6) злоупотреба запаљиве материје као опасне робе у друмском транспорту; 7) отмица теретног возила којим се превози опасна роба ради извршења терористичког напада тим возилом и 8) крађа теретног возила којим се превози опасна роба ради извршења терористичког напада тим возилом. У супротстављању безбедносним изазовима од терористичких напада злоупотребом опасне робе, аутори предлажу предузимање следећих активности: 1) континуирано праћење токова кретања опасне робе (посебно оне са високом потенцијалном опасношћу), јачање нормативног кривичноправног оквира и унапређивање међуресорне и међународне сарадње у циљу превенције и кажњавања свих облика злоупотребе опасне робе у терористичке сврхе. Аутори закључују да се наведени модел поступања неизоставно базира на храбрости, интервентности, тактичности, неодложности и обучености.

Кључне речи: опасна роба, тероризам, средство извршења, друмски саобраћај, безбедност, терористички напади.

* This paper was received on August 29, 2025, and accepted for publication at the Editorial Board meeting on October 15, 2025.