

TRAFFIC CONTROL TRAINING FOR POLICE OFFICERS CONTROLLING DANGEROUS GOODS TRANSPORT

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RESEARCH OBJECTIVES AND AIMS

The importance of transporting dangerous goods is immeasurable for a country's economy. As society develops and economic power increases, so does the transport of dangerous goods both as finished products and semi-finished goods. In today's world it is measured in billions of tons per day. The most common forms of transport are road, rail and water transport. Legislators recognize this field's critical importance, and accordingly the obligations of all subjects in the process of transportation, processing and storage of dangerous goods are defined. As in the academic professional scientific field of technical sciences, every student of basic studies knows that in the lifetime of a product, from raw material to end user, the longest period is in the transportation process. It is no surprise that systematic measures have been implemented to achieve maximum safety levels during transportation and emergency response.

One crucial measure involves providing specialized training to traffic police officers within the Ministry of the Interior, to adequately and professionally control participants in hazardous goods transportation, with a specific emphasis on road transport. The training process of police officers includes continuous analysis and evaluation, ensuring the successful transfer of essential knowledge, skills, and attitudes. As a result, these officers are enabled to achieve the desired level of efficiency and functionality in their work.

The aim of the study is to acquaint the professional public with the results achieved and the actions undertaken by the Ministry of the Interior in the process of training members of the traffic police in connection with the control of participants in the transport of dangerous goods. That is, the presentation of achievements in the process of training police officers for managing complex and high-risk tasks on the roads of the Republic of Serbia. It is especially emphasized that the above activity is carried out with maximally rational - restrictive use of budget funds and maximal engagement of available own capacities and interested structures in the field of cooperation and work related to hazardous substances.

RESEARCH METHOD AND APPROACH

The Ministry of the Interior hired its most experienced personnel to address both preventive (developing and implementing professional training) and responsive aspects related to dangerous goods transportation.

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An objective assessment of the need for such training was conducted, drawing on the practical experience of the authors with the firefighting and rescue units in Pančevo and their involvement in traffic police operations. The aim was to comprehensively understand the process of enhancing skills and competencies. In order to review the training process, an analysis was made of both the actions that preceded the implementation of the subject training process of police officers, as well as the existing Curriculum for the controlling of road traffic participants who carry out the transport of dangerous goods, No 01-6136/20. The analysis also included a critical review of the Handbook for trainees of professional training for the controlling of participants in road traffic carrying out the transport of dangerous goods. The Manual was created by the joint effort of professionals, both in the field of creating curricula, as well as work on interventions in emergency with dangerous substances from the National Emergency Management Training Center and experienced police officers in the field of cargo transport control the Traffic Police Directorate. Furthermore, the implementation process of the conducted training sessions was analyzed, assessing the performance of police officers during real-world incidents following the initial specialized training.

TRAINING IN THE PREVIOUS PERIOD

As Part of Basic Training

In the Ministry of the Interior, the standards of professional training and development are defined and represent a system of rules, procedures and criteria in the implementation of the analysis of the need for training, the development of curricula's, the development of training materials, the delivery of classes, the organization and implementation of training, knowledge verification and evaluation, monitoring and control of the training process and training evaluation in the Ministry of the Interior.²

Before the adoption of the above-mentioned curricula, traffic police officers received information about this topic and training through Basic police programs and professional development seminars within our organization or with the support of foreign partners. One of the first steps to a systematic approach to this topic, in the recent past, was the publication of a research study on the topic "Proceedings in controlling the transport of dangerous goods"³ and its presentation at the Expert Consultation on Fire Protection in Novi Sad held on September 15-16, 2006, organized by The Higher Education Technical School of Professional Studies in Novi Sad, University of Novi Sad. The focus of the study was on safety when controlling the transport of dangerous goods (Đurđević, Gagić 2006) and the actions of police officers in the emergency.

Professional training in the Ministry of the Interior, in addition to other forms, is realized through basic police training and specialist training.⁴ In the curricula, the legal competences and obligations of the Ministry of the Interior, as well as the knowledge and conclusions obtained on the basis of the experiential and empirical process, are implemented. In accordance with the above, the paper's content was implemented as a professional curriculum both for participants of Basic police training (regular police forces of general jurisdiction) and in the Professional Curriculum for participants of basic police training for the position of a traffic policeman, N° 01639/23-13. Both trainings are conducted at the Center for Basic Police Training in Sremska Kamenica. The instructors are professionals with long-term experience in the field of traffic police work. Particular importance is attached to the

² Article 2. Regulation on Professional Training and Development in the Ministry of the Interior

³ The work was prepared by the author of this professional work in cooperation with the current head of the Fire and Rescue Units Directorate

⁴ Article 13 paragraph 3 Regulation on Professional Training and Development in the Ministry of the Interior



fact that the teachers are certified and trained to apply the principles of andragogy. Classes are held in groups of up to 30 students. In the program content, topics related to dangerous goods are processed through two modular units. As part of the Module: Road traffic safety - Counter sabotage protection, the topic "Dangerous goods" is covered in 3 lessons of cargo classes, including: Explosives (commercial and military), Gunpowder and pyrotechnic mixtures, Inflammable substances and agents, Radioactive substances and agents, Toxic substances and agents, and Biological agents. After the last lesson, the participants are expected to be able to define the term 'dangerous goods', list the types of dangerous goods and explain their characteristics (explosives - commercial and military, gunpowder and pyrotechnic mixtures, flammable substances and means, radioactive substances and agents, toxic substances and agents, biological agents). From the domain of skills, to: recognize explosives, gunpowder and pyrotechnic mixtures. From the domain of adopted attitudes: to understand the importance of recognizing and distinguishing dangerous substances. Within the Module: Road Traffic Safety through the Modular Unit "Traffic Regulation and Control of Traffic Participants", participants are directed towards acquiring the skills to carry out control of the regularity and possession of the necessary equipment in the vehicle, especially for trucks and buses by applying knowledge and the ability to explain the importance of controlling trucks and buses.

Within chapter IV, under the title "Narrower professional module - Control and regulation of traffic" through modular unit number 7: Special types of traffic control within one theoretical lesson and one intended for practice (the assignment focuses on the topic of "Control of vehicles transporting dangerous goods") after which the participants are expected to have the knowledge to state the concept of dangerous goods and the classes into which they are classified according to their properties, as well as to have the basic skills to control vehicles that transport dangerous goods.

Through Professional Development and Conditioning of Knowledge and Skills

The professional development of members of the Ministry of the Interior is planned and implemented in accordance with the Professional Development Program and within other forms of professional development.⁵ The Regulation on professional training and development in the Ministry of the Interior defines that professional training is organized and implemented within the Ministry through permanent and additional training, as well as through professional meetings and study visits. It represents the continuous improvement and development of acquired as well as the adoption of new knowledge, skills and attitudes, which resulted from practice, scientific research work or new normative arrangements of certain areas, with the aim of legal, efficient and safe performance of work. Bearing in mind that no organization can be absolutely independent and have such wide capacities, certain contents of professional training are realized outside the Ministry of the Interior in cooperation with other state bodies, domestic and foreign legal entities.

Accordingly, based on the experiences gained and the stated needs of the organizational units of the Ministry of the Interior during 2016, in accordance with the Professional Training Program for Police Officers of the Ministry of the Interior for 2016 (No 01-11374/15-8), four seminars were organized on the topic "Police Officer Actions in the Case of Chemical Accidents in transportation of dangerous goods". The purpose of these seminars was to enable the acquisition of new knowledge about dangerous substances. They aimed to elevate the skills and promote safe behavior among members of the Ministry of the Interior, particularly when intervening in accident situations. A total of 120 police officers from the traffic police and general jurisdiction police attended the training.

⁵ Article 13 paragraph 3 Regulation on Professional Training and Development in the Ministry of the Interior



During 2019, the training of members of the traffic police was organized at the international level - The TAIEX Project. The training was carried out in Belgrade in the period from May 20 to 24, 2019, with road traffic inspectors from the Ministry responsible for traffic from the Republic of Poland presenting their experiences. The participants became familiar with: the definition and conditions for transporting dangerous goods; the classification and classes of specific conditions and rules for the use of packaging; the requirements concerning vehicle construction and the approval, just as with the practical training in the application of ADR regulations during inspection supervision and so on. Thanks to this training, members of the traffic police became better acquainted with the topic and relevant issues. Subsequently, more frequent controls of road users were initiated at various locations across the Republic of Serbia.

Curriculum for the Control of Road Traffic Participants Who Transport Dangerous Goods

In the Ministry of the Interior, professional training is organized, in addition to other types, as basic police training and specialist training. As previously mentioned, the basic police training aims to train participants for the legal and efficient performance of the duties and tasks of a uniformed police officer, at the workplace of a police officer, a police officer for community work or a police officer for a specific area of work.⁶ With the aim of increasing efficiency and effectiveness in the performance of tasks within the competence of the Ministry of the Interior, specialist training is conducted through which police officers acquire knowledge, skills and attitudes necessary for the competent performance of police and other tasks in a certain area of work of the Ministry, as well as additional knowledge, skills and attitudes⁷.

The increase in safety requirements in the transport of dangerous goods is gaining importance (Sremac, Matijašević, 2021) taking into account that, at the global level, more and more attention is being paid to potential risks to people and the environment. Recognizing the importance of the matter, as well as the obligation arising from the Law on the Transport of Dangerous Goods with regard to the Professional training of police officers, the Traffic Police Directorate included this type of training as a mandatory part of the Training Plan in the Ministry of the Interior for 2022 in the form of specialist training.

In order to comply with the obligations of the Ministry of the Interior, the prescribed steps were implemented. The head of the National Emergency Management Training Center at the time took care of the application of professional training standards regarding the development of the subject training program. An analysis of the need for training was undertaken, in accordance with the main part of the analysis plan, the implementation of the necessary phases, i.e. the determination of the current state - the level of knowledge, skills and attitudes of employees and the knowledge, skills and attitudes necessary for the competent performance of tasks and tasks of members of the traffic police during the control of participants in the transport of dangerous goods. The tasks of the analysis of the need for training were considered, the target group was determined through the analysis of the results achieved after the training in accordance with the Professional Training Program for Police Officers of the Ministry of the Interior for 2016 and 2019. In addition to the above, an interview was conducted with the management of the Traffic Police Directorate and experts and Safety Consultants for Transport of Dangerous Goods from the Serbian Oil Industry, based in Novi Sad. Through the interview, the expected time and availability of members of the traffic police and the possibility of taking them

⁶ Article 32 Regulation on Professional Training and Development in the Ministry of the Interior

⁷ Article 83 Regulation on Professional Training and Development in the Ministry of the Interior



out of regular working hours were considered. And all in terms of a clearer picture of security from the perspective of economic entities over which control is exercised.

Bearing in mind that the subject training represents the implementation of the subject training, the content of the Law on the Transport of Dangerous Goods was considered. Special attention was paid to the analysis of the Curriculum for work on interventions with dangerous goods N° 01 1632/17 and the results of the 20 classes of trainings implemented under the aforementioned program. In response to emergency with the participation of dangerous goods that may occur intentionally or unintentionally, the role of all subjects of the security system in the country is significant, proportional to the scope of the event and risk. According to the conclusions of the study "Preparedness of emergency and rescue services for responding to CBRN threats due to the use of dangerous substances" (Đurđević, 2016), the role and tasks of members of the traffic police in cooperation with members of the fire and rescue units in the case of emergency situations involving dangerous goods were analyzed.

RESULTS OF THE ANALYSIS IMPLEMENTED IN THE TRAINING CONTENT

Before submitting the draft program for adoption by the Minister, the consent of the head of the organizational unit for human resources affairs and the General Police Directorate was obtained. During 2020, the Minister of the Interior adopted the Curriculum for the controlling of road traffic participants who carry out the transport of dangerous goods, N° 01 - 6136/20. This curriculum equips participants with essential knowledge, basic skills, and the necessary attitudes required for efficient and effective performance in controlling dangerous goods.

The outline and content of the Curriculum is prescribed by the Regulation on Professional Training and Development in the Ministry of the Interior. The subject program is intended for police officers who control road traffic participants. The goal of the Curriculum is to enable the training of police officers to successfully control road traffic participants transporting dangerous goods.

As an expected general outcome after the implementation of the Curriculum, the police officer is trained to apply the acquired knowledge about dangerous substances and dangerous goods. The officer applies the acquired knowledge regarding the normative regulation of the transportation of dangerous goods on the territory of the Republic of Serbia. They recognize the content and dangers of the transported goods. In accordance with the recognized risk, the application of protection and safety measures when working with dangerous substances and, in the event of an emergency, they apply the knowledge and skills in dealing with emergency in the transport of dangerous goods and adequately coordinate other relevant services participating in the response to the emergency.

From the domain of knowledge, the expected specific outcome is the ability to define the concept of dangerous goods and dangerous substances, having knowledge of which normative acts regulate the transport of dangerous goods in the Republic of Serbia, then how many types of dangerous goods there are, and what are the characteristics of dangerous goods according to the classification of the International agreement on the transport of dangerous goods, the so-called ADR. It also involves recognizing the different markings used in the transport of dangerous goods. The trainee has basic information about the mode of action of dangerous substances and accordingly recognizes what measures need to be taken to ensure an adequate response. Possessing the knowledge of defining distances for initial isolation and implementation of protective measures towards endangered persons and goods as well as participants in the process of responding to an emergency is set as a precaution.



From the domain of skills after the completed training, the expected specific outcome is the ability to independently exercise control over participants in road traffic carrying out the transport of dangerous goods, as well as the application of methods of securing the place of occurrence of emergency in the transit post of dangerous goods; the ability to plan and organize work, both personal and small-group work in emergency events with dangerous goods; the ability to successfully prepare for intervention - visual observation; information gathering and event reconnaissance. For the purpose of personal protection, the officers learn how to adequately use the available protective equipment and independently use the "Emergency Response Guide".

From the domain of attitudes, the expected outcome is the application of professional standards in work and developing a proper attitude towards work through communication with co-workers and citizens. This behavior confirms the work of the police and the importance of the police in protecting citizens and property. They are to show self-confidence and safety when controlling participants in road traffic who carry out the transport of dangerous goods. Trained officers possess and develop a responsible attitude towards one's own health and the health of others. They collaborate with team members and act as part of a team and review attitudes and changes based on facts.

The duration of the training is defined by the curriculum, that is, the training is realized in a total duration of 40 classes, i.e. 5 working days. The training lasts a maximum of 8 classes a day, and one class lasts 40 minutes. It is planned that the training will be realized within the framework of theoretical and practical (modular) teaching. Theoretical teaching is carried out with all the participants of the training together in groups of 16 participants, and the practical teaching is carried out by the instructors with each participant individually, in groups of up to 4 students. It is indicated that the teaching in the training is realized in an appropriate teaching environment with the use of teaching and other means that meet all the conditions for the realization of teaching in the manner provided by the program content of the training and the didactic and methodological instructions, that is, by the provided teaching methods.

The trainees are expected to complete the full fund of teaching hours. A participant who is absent from classes for justified reasons is excluded from the training, with the right to attend it with the next group of participants, if such a request is sent from the organizational unit of the Ministry where the participant is employed.

Teaching Staff

The Curriculum, in accordance with the above-mentioned Regulation, defines that the classes are realized and performed by trainers, instructors and experts from the subject field of training. Trainers are employees of the Ministry trained for independent planning, preparation and delivery of lessons, in accordance with the principles of adult learning. Instructors are employees of the Ministry, who conduct classes in order to develop the practical skills of employees who have completed appropriate training in the subject area in which they conduct classes. The curriculum recognizes the possibility that experts from the subject, modular or thematic area outside the Ministry can be hired as teachers.

Entry Criteria for Trainees

In accordance with the vision of the Traffic Police Directorate, the content of the program envisages that police officers who control road traffic participants will be sent to the training.



Recommendations for the Implementation of Teaching

Implementation of teaching is prescribed, which indicates that the process of teaching at the training should be focused on the trainees, so that they are enabled to control the process of acquiring knowledge and skills. Through interactive teaching and work in small groups, in accordance with lesson plans, the participants have the opportunity to immediately apply what they have learned in the control of participants in road traffic, which is carried out by the transport of dangerous goods. At the beginning of the training, an assessment is foreseen to check the amount of knowledge that the trainee has before the start of the training.

The training consists of lectures/exercises, a part intended for checking knowledge, practical training and correlation of theoretical and modular teaching. Teaching is carried out in accordance with the principles of adult teaching and learning, using teaching methods that include case study, modified lecture, demonstration and simulation.

Theoretical teaching and modular lectures in the elaboration of practical exercises are carried out with all course participants together or using the e-classroom, and practical teaching in the control of participants in road traffic involved in the transport of dangerous goods, is carried out by the teachers of the course with each participant individually.

As prescribed by the Regulation, at the end of the specialist training, the acquired knowledge and skills are checked and the evaluation is carried out - the final test is given as a form of checking the competence of the trainees. Competence check - the final exam, is realized by a test, that is, a practical demonstration of competence - a check of practical work.

The final test is carried out in front of an examination committee formed by the head of the organizational unit for training tasks at the suggestion of the training manager and composed of teaching staff, a representative of the Traffic Police Directorate and a representative of the organizational unit responsible for human resources management.

The trainees are deemed to have successfully completed the test, if they answer 60 percent of the questions correctly, and the practical test, if they met all the criteria - steps in the procedure or methodology in the control of participants in road traffic carrying out the transport of dangerous goods. Instruments for checking include: a test for self-assessment of knowledge, test for checking knowledge and tasks with lists with defined criteria - steps in the procedure or methodology of work for checking practical work, prepared by the examination committee. The trainees will be assessed descriptively: "passed" or "failed". If the trainees are assessed as "passed" during the check, they will be considered to have successfully completed the training. Also, it is foreseen that the trainees who are assessed as "failed" during the test, within a period of not less than one month and not longer than three months, will be referred only once for re-test. If the trainee is rated as "failed" on the re-test, it will be considered that he/she did not successfully complete the training, which the training manager will report to the organizational unit from which the trainee was sent to the training.

It is planned that trainees who successfully complete the training pass the final test receive a Certificate of Completion of Professional Training from the head of the Police Training Directorate, will be handed a certificate of successfully completed training for the exercise of control over participants in road traffic carrying out the transport of dangerous goods by head of the Police Training Directorate.

Bearing in mind that even today the training program cannot meet all requirements, the evaluation and eventual modification of the program was foreseen if the evaluation established a need as well



as in the cases of passing new regulations or adopting new standards in work. In the content of the curriculum, through 7 teaching units of theoretical education consisting of 16 classes, the following topics are covered:

- Dangerous substances - dangerous goods
- Normative regulation of the transport of dangerous goods
- Marking of means of transport and packaging of dangerous goods
- Recognizing the risk of dangerous goods
- Protection and safety measures during the control of participants in road traffic, which is carried out by the transport of dangerous goods and the security of persons
- Procedure for controlling participants in road traffic carrying out the transport of dangerous goods
- How to proceed in the event of an accident in the transport of dangerous goods.

Through the modular part of the program content, 3 modular units are covered in 22 lessons on the procedure for controlling participants in road traffic, transporting dangerous goods and securing the scene of a traffic emergency in the transport of dangerous goods.

The first modular unit is the Simulation of tactical tasks involving the control of participants in road traffic carrying out the transport of dangerous goods and the security of the scene of a traffic accident in the transport of dangerous goods.

The second modular unit is Tactical exercises for the control of participants in road traffic carrying out the transport of dangerous goods, and the third modular unit is Tactical exercises for securing an emergency event during the transport of dangerous goods.

The following topics are covered through the teaching units:

- Teaching units “Dangerous goods”: Definition of dangerous goods, Classification of dangerous goods and Definitions of classes of dangerous goods (from 1st to 9th grade)
- Teaching units “Regulation of dangerous goods transport”: National regulation of the transport of dangerous goods, International regulations on the transport of dangerous goods, Competence in the controlling of the transport of dangerous goods and Documentation for the transport of dangerous goods.
- Teaching units “Marking of means of transport and packaging of dangerous goods”:
- Danger sheets of dangerous goods, Signs for marking dangerous goods in transport, Factory marking of finished products containing dangerous goods, and Mixed transport of dangerous goods.
- Teaching units “Recognition of the risk of dangerous goods”: Basic elements and methods of identifying dangerous goods in transport and at the scene of an accident, Databases of hazardous goods and Application of the “Accident Response Guide”.
- Teaching units “Protection and safety measures when working with dangerous goods”: Mode of action of dangerous goods, Types of toxic action of dangerous goods on the human body, Method of intake and action of toxic substances, Ionizing radiation, Factors that are important when deciding on protective measures.
- Teaching units “Proceedings during the control of participants in road traffic carrying out the transport of dangerous goods”: Basic principles and elements of actions during the control of participants in road traffic carrying out the transport of dangerous goods. Control of the driver of the means of transport with dangerous goods, Control of the means of transport used to transport dangerous goods, Control of documentation during the transport of dangerous goods



and Detection and documentation of economic offenses/ misdemeanors and sanctioning of participants.

- Teaching units “How to act during an emergency in the transport of dangerous goods”: Statistical data on extraordinary events in the transport of dangerous goods, Basic principles and elements of action in the event of an extraordinary event in the transport of dangerous goods, Securing the scene and the measures aimed at securing the scene of an extraordinary event and Calling the competent authorities to take further measures in accordance with the emergency.

Through the modular units (exercises), the following topics are covered: Tactical exercise of control over participants in road traffic who transport dangerous goods in real-world conditions, Tactical exercise of dealing with emergency events (traffic accidents and other events) on the road and Case study of controlling the participants in road traffic that carry out the transport of dangerous goods and the case study of arresting persons at the scene of an emergency in the transport of dangerous goods.

ORGANIZATION AND IMPLEMENTATION OF TRAINING

As defined by the above-mentioned Regulation, for the needs of other lines of work in the Ministry, this training is organized and implemented by the Police Training Directorate. Bearing in mind that it is implemented for the needs of members of the traffic police, the subject training is implemented in cooperation with the Traffic Police Directorate. A Training Implementation Plan is prepared for each class. Adoption of the plan in question is preceded by the adoption of the annual Plan for specialized training in the Ministry of the Interior in that year and the definition of the necessary funds for its implementation. Funds are understood as funds for the provision of teaching materials according to the Plan of Material, Technical and Financial Resources for Training (Form 7)⁸. The training implementation plan contains the elements that are given in the Instructions for the preparation of the training implementation plan (Form 6)⁹. The training implementation plan more closely regulates the way of training implementation. The plan determines the following:

- Place, time and duration of the training,
- Training participants, including the training manager, deputy training manager, training organizer, teaching staff, trainees and possibly other engaged persons,
- Organization of testing - checking of acquired knowledge and skills,
- Rights and obligations of participants,
- Organization of accommodation, food and transportation for the training staff - Material, technical and financial resources,
- Organization of medical security,
- Organization of security affairs,
- Monitoring the implementation of the training,
- Conducting evaluations,
- Defining the assignment of certificates,
- Planning of eventual evaluation, and
- Method of reporting.

⁸ Regulation on Professional Training and Development in the Ministry of the Interior

⁹ Regulation on Professional Training and Development in the Ministry of the Interior



An inspection of the Technical and Financial Resources for Training for the implementation of the first 9 classes of the training has established the planned annual costs. Estimated funds include the cost of purchasing teaching materials and providing food for the participants. The expenses in question do not include compensation for the teaching staff, as they are engaged in the so-called work assignments. The accommodation of participants is in the facilities of the Ministry of the Interior, so the cost is not included. Based on the above, it is estimated that the training for one student for the Ministry of the Interior amounts to 6,875 RSD.

HANDBOOK FOR TRAINEES

Professional training standards provide that each participant should have an adequate handbook for trainees. The handbook is a teaching material intended for trainees in order to achieve the intended program outcomes¹⁰ and is made according to the prescribed standards for its technical editing¹¹.

In accordance with the standards, an adequate cover illustration was designed for the manual. In order to make it easier to use, the contents are listed at the beginning of the manual. Each teaching unit in the manual contains the objective and outcomes of the teaching unit. The teaching units, designed in the chronological order and in accordance with the program, bring about and nurture the expected attitude about the need for professional training in this area.

The teaching unit “Dangerous substances - dangerous goods” is elaborated through subheadings: Definition of dangerous goods and Definition of classes of dangerous goods.

The teaching unit “Regulation of the transport of dangerous goods” is elaborated through subheadings: Processing of national legal regulations for the transport of dangerous goods; International regulations on the transport of dangerous goods; Jurisdiction in controlling the transportation of dangerous goods, and Documentation for the transportation of dangerous goods.

Teaching unit “Marking of means of transport of dangerous goods and packaging of dangerous goods and additional risk” is dealt with through the subheadings: Risk sheets of dangerous goods; Marking boards; Mixed transport; Factory labeling of finished products containing dangerous goods, and Other types of risk labeling of dangerous goods.

The teaching unit “Recognizing the risk of dangerous goods” is elaborated through the subheadings: Basic elements and methods of identifying dangerous goods in road transport and at the scene of an emergency; Databases and Emergency Response Guidebook.

The teaching unit “Protection and safety measures involved in the control of participants in road traffic carrying out the transport of dangerous goods and the security of persons in the place of emergency” are covered through the subheadings: Ways and effects of dangerous goods; Types of toxic effects of dangerous goods on the human body and method of intake; Ionizing radiation, and Protective equipment.

Teaching unit “The way of acting during the supervision of road traffic participants who carry out the transport of dangerous goods” is more closely explained through the subheading: Basic principles in the conduct of the supervision of road traffic participants who carry out the transport of dangerous goods.

The teaching unit “Method of action during an emergency in the transport of dangerous goods” is elaborated through the subheadings: Statistical data on emergency in the transport of dangerous goods;

10 Article 12. Regulation on Professional Training and Development in the Ministry of the Interior

11 Form 4. Regulation on Professional Training and Development in the Ministry of the Interior



Basic principles and elements of handling during an emergency in the transport of dangerous goods; Securing the place and security measures during an emergency in the transport of dangerous goods, and Calling the competent authorities to take further actions in accordance with the emergency.

The Handbook was designed to facilitate interactive learning and is very user-friendly, enabling trainees to acquire necessary knowledge. Since the trainees receive the guidebook for personal use, it serves as a lasting reminder.

In order to make it easier to use what is presented in the manual through the teaching units, corresponding illustrations have been implemented in accordance with ADR. The presentation of the transport of mixed dangerous goods is particularly simplified. The schematic representation of the positioning of the relevant subjects of the System for responding to emergency on the scene is expressed very vividly and allows for easy memorizing.

The instructional units are aligned with the curriculum, guiding trainees chronologically toward an informed perspective on the need for professional competence in this field. In addition to the mentioned guidebook, trainees also receive additional work material as a supplementary teaching tool. The material represents scripts made by security advisors in the oil industry of Serbia. The material in question is the product of the latest experience in transport by this company. The teaching supplements are the result of experience in the transportation of dangerous goods and cargo. These materials are invaluable aids in enhancing trainees' capabilities.

REALIZED TRAININGS

In the period since the adoption of the training program, and in accordance with the training implementation plans, 14 courses were held with a total of 224 police officers as training participants.

Place of Implementation of the Training

The theoretical teaching is carried out at the "Avala" Teaching Center - an environment designed for optimal knowledge and skills transfer. Accommodation and meals in the center are provided for all participants. Practical training occurs at the "Belgrade - Vrčin" toll plaza on the highway (state road IA, order A1).

Persons Who Are Engaged for Teaching

For the training's implementation, experts with more than twenty years of work experience in the organization of security in the transport of dangerous goods, monitoring and control of participants in the transport of dangerous goods, as well as preparation, planning and organization of response to extraordinary events involving hazardous materials, were assigned. All engaged teachers have the skills to apply the principles of andragogy. Distinguished experts in the relevant field were engaged, both from within and outside the Ministry, in the sense that this involved the representatives from the Ministry of Construction, Transport, and Infrastructure, as well as from the company "Oil industry of Serbia J.S.C. Novi Sad". A special emphasis in the training, often delivered by former and current employees of the National Emergency Management Training Center, was given to safety measures and recognition of the risk related to transportation of dangerous goods.



Trainees

The Traffic Police Directorate, in accordance with the already recognized importance, proportionally to the workload and according to the planned activities, assigns police officers from the regional police administrations to work at the executive level. Police officers with experience in controlling road traffic participants in accordance with the Law on Road Traffic Safety, tachograph control, etc., are appointed. It should be noted that the trainees of the 1st class were participants of the intermediate and operative level of leadership. Through the above-mentioned interview, interlocutors from the Traffic Police Directorate pointed to the implementation of the planned construction of an adequate organizational system within the Administration itself, which will be in charge of the subject area of work.

Applied Didactic-Methodological Approach in Training Implementation

In the course of training implementation, the program is divided into the theoretical teaching (lectures), the practical teaching (exercises), and the knowledge assessment segment. The training adheres to anagogical principles and adult learning methodologies, so that participants are empowered to take an active role in acquiring knowledge and skills independently.

The practical component of the training for traffic police officers takes place in real-world conditions-specifically, on the Belgrade-Niš highway at the “Beograd-Vrčin” toll plaza.

Participants directly encounter real individuals involved in the transport of dangerous goods. The advantage here is that this segment is done in smaller groups (from 2 to 4 participants per job position), allowing each trainee to take on the role of a controller.

If we take the theory of readiness that Cvetković (2020) explains with a theoretical point of view that is used as a framework to explain how the community changes and how it changes in terms of readiness for prevention, in this case the prevention of chemical accidents in transport, we must take into account the potential risks to life in the event of a chemical incident during transportation, traffic police officers responsible for controlling road participants undergo specialized training to apply safety measures effectively, using the newly-acquired knowledge and skills. From the report on events (Form ID 1), which is kept for each emergency event by the Fire and Rescue Units within Directorate of the Sector for Emergency Situations, it can be stated that at each emergency event with dangerous goods and in connection with the transport of dangerous goods, there is the presence of members of the traffic police. From the above-mentioned report on emergencies, a significant fact can be observed that the members of the traffic police reported the emergencies. They were on regular traffic control tasks at the time of the emergency. Out of the total number of reports, 95% of emergencies were reported by members of the traffic police. This fact indicates that they are the ones who are the first to be exposed to the incident. Together with members of the fire and rescue units, they play a crucial role in preventing the spread of effects and consequences. Due to the life-threatening nature of chemical incidents that can occur during transportation, police officers who control traffic participants must undergo specialized training for implementing safety measures. As indicated in the preface of the translation “Emergency Response Guidebook 2016” (Đurđević 2017) this guidebook serves as a basic guideline for safe response to incidents and informs about the actions of all participants. Bearing in mind the quality of the aforementioned guide, it was implemented as part of the training implementation.

The Emergency Response Guidebook: A Guidebook for First Responders During the Initial Phase of a Dangerous Goods/Hazardous Materials Transportation Incident (ERG) is used by emergency response personnel (such as firefighters, paramedics and police officers) in Canada, Mexico, and the



United States when responding to a transportation emergency involving hazardous materials. First responders in Argentina, Brazil, and Colombia have recently begun using the ERG as well. It is produced by the United States Department of Transportation, Transport Canada, and the Secretariat of Communications and Transportation (Mexico). The first iteration was published by the United States Department of Transportation (USDOT) in December 1973, as Emergency Services Guide for Selected Hazardous Materials.

In the Republic of Serbia, members of professional fire and rescue units have been using the “Emergency Response Guidebook” since 2009. Financial support for the translation and printing of the manual entitled “Emergency Response Guidebook 2008” was provided by AD “Methanol vinegar complex” from Kikinda and “Victoria Group” SCR from Novi Sad, and the same was translated by the Ministry of Environment and Spatial Planning, Department of control and supervision.

As for the “Emergency Response Guidebook 2016”, which is currently in use, financial support for translation and printing in 2017 was provided within the framework of the international CBRN project P44 “Strengthening of first response capabilities to chemical, biological, radiological and nuclear (CBRN) substances, threats and regional cooperation in Southeast Europe, South Caucasus, Moldova and Ukraine” organized by the European Commission and the United Nations through the Center for Excellence consortium. The coordinator of translation and distribution was the head of the National Emergency Training Center at the time, the creator of this study.

Testing the Level of Acquired Knowledge and Skills

The realization of the specialist training was followed by an assessment the level of acquired knowledge and skills; complex tests taken before the examination committee were used to check whether the participants had adopted the expected level of knowledge and skills. So far, all the participants who attended the subject training have successfully completed the final test. Checking the level of acquired knowledge is carried out for the purpose prescribed by the training program and is also used in the evaluation of the quality of the training. It has already been indicated that at the beginning of the training, the amount of knowledge that the trainee has before the start of the training is assessed through the so-called entrance test. Then, after the theoretical classes, a phase test is conducted and at the end of the course a final test is taken. Satisfactory success in the implementation of the training can be assessed through the reports on the training. On the entrance test, trainees gave correct answers to an average of 52% of the questions. That is, the lowest result was 35% and the highest was 70%. All trainees successfully passed the planned phase test. It is highly commendable, as seen in the training reports, that an average value of 87.5% was achieved on the final test. That is, the lowest result was 75% and the highest was 100% of the questions. The achieved results indicate a significant success in the level of skills of the training participants after the training. In addition, the stated result indicates the quality of teaching. All trainees received a Certificate of Completion of Professional Training from the Police Training Directorate.

Work of Police Officers After Training

During the preparation of the final specialist thesis (Đurđević 2015) at the specialist studies of the University of Criminal Investigation and Police Studies, by looking at the statistical data of the National Association of Oil Companies of the Republic of Serbia, it was determined that the transport of dangerous goods (beyond stationary systems like gas pipelines and oil pipelines) indicate that transport on the territory of the Republic of Serbia is in accordance with the transport worldwide. Specifically,



63% of transportation occurs via road, 10% via rail, 27% via water, and a mere 0.1% via air. Members of the traffic police perform daily vehicle controls, particularly during international initiatives like those organized by ROADPOL. These efforts are aimed, among other things, at the control of cargo vehicles transporting dangerous goods, including those that transport goods on territory of the Republic of Serbia, within the Republic of Serbia or transiting. Controls are carried out with the inspectors of the relevant Ministry of Construction, Transport and Infrastructure, and other subjects responsible for supervising and controlling dangerous goods.

On average, in accordance with the Annual Reports on Emergency Events (Report ID2) which are kept by the Fire and Rescue Units Directorate, Ministry of the Interior, in the previous 10 years, members of the Ministry encounter approximately 80 technical interventions involving hazardous materials. Technical intervention with dangerous substances is the intervention of the fire-rescue unit at extraordinary events that occur at facilities and systems for the production, storage, transport and distribution of dangerous substances. Most of these incidents occur with traffic vehicles, accounting for approximately 37.09%. Specifically, technical interventions related to dangerous goods primarily take place in road transport (52.41%), followed by railway transport (46.9%), river transport (0.69%), and air transport (0.45%).

The assessment of training success and the attainment of projected preparedness levels in the field of transporting dangerous goods involve comparing the outcomes with the consequences observed after the response of competent services. Notably, when we compare the mentioned number of emergency incidents involving dangerous goods with the total number of emergency incidents on the territory of the Republic of Serbia in which fire-rescue units on the territory of the Republic of Serbia intervene, we come to the conclusion that about 1.54 incidents occurred per week in the previous 10 years with a growing tendency. Over the last two years of training for controlling participants in road transport of dangerous goods, no recorded incidents escalated into catastrophic consequences. A certain number of trainees participated in several events related to the transport of dangerous goods, both for emergency and in the process of successful control of students in the transport of dangerous goods. In the previous period, there was no evaluation of the implemented trainings in the working positions of the trainees. Workplace evaluation analyzes the impact of acquired knowledge and skills on work after the training. The reaction of the trainees at the mentioned events is satisfactory, and it can be said that the impact of this training is unequivocally evident.

It is necessary to recall the tank car derailment and the ammonia leakage incident that occurred on December 25, 2022, along the Niš - Dimitrovgrad main track, between Pirot and Staničenje. One person died (a foreign citizen - a truck driver who stopped to see what had happened) and 51 citizens reported to the hospital due to symptoms of poisoning. The release of ammonia into the atmosphere resulted in two traffic accidents on the state road 1A, row A4. In one traffic accident, 7 passenger vehicles were involved (4 people were injured), while in another traffic accident, property damage occurred involving a single vehicle. Despite these multiple events, the swift and organized response by the members of the Ministry of the Interior prevented much larger number of casualties and facilitated the unhindered movement of goods and people along alternative routes.

Furthermore, it is essential to highlight the improved efficiency in controlling actors involved in the transportation of dangerous goods. An illustrative event that occurred at the Preševo toll booth on state road 1A, row A1, in the direction of the Preševo-Niš border crossing. A convoy of vehicles – a tractor and a trailer 3 tanker – bearing registration numbers from Serbia, were halted. The cargo being transported consisted of diesel fuel (UN 1202) totaling 30,618 liters. The carrier was a domestic com-



pany, while the recipient of the goods operated within Montenegro, with the final delivery destination being Sisak, Croatia.

The control revealed numerous irregularities under the Law on Transport of Dangerous Goods and serious violations of the provisions of the Law on Road Traffic Safety, namely:

- The driver did not have a driver's license, i.e. it had been suspended due to negligent and improper driving by a decision dated March 21, 2012, issued by the Police Directorate in Valjevo;
- The driver had not been issued an ADR certificate;
- The validity of the ADR certificate had expired on the cargo vehicle (tractor);
- The incorrect CMR documentation (the name of the dangerous goods to be transported was not entered);
- The tank trailer did not have a periodic inspection document.

Liability measures were taken against the driver in accordance with the law and the relevant

Ministry of Construction, Transport and Infrastructure was informed.

Finally, we will explore the event on state road 1A, row A1, at the border crossing Preševo (entering the Republic of Serbia). A set of vehicles (tractor and trailer-tanker), with Serbian registration plates was controlled. The driver, a citizen of the Republic of Serbia, possessed additional documents from other countries. The dangerous material was being transported - fuel for UN 1863 jet engines. The carrier and recipient of the goods was a domestic company, while the goods were sent from the territory of the Republic of North Macedonia, and the place of delivery was the Republic of Serbia. However, serious violations of the Road Traffic Safety Act were identified:

- The driver holds a driver's license issued by the authorities of the Republic of Croatia.
- An ADR certificate was issued by the authorities of the Federation of Bosnia and Herzegovina.
- The driver possesses a professional driver's card (CPC) issued by the authorities of the Republic of Slovenia.
- Further investigation revealed that the driver was subject to an active ban on driving a motor vehicle for the category he was operating for 8 months.
- Additionally, the driver's license issued by the authorities of the Republic of Serbia was invalid by decision and confiscated.

Liability measures were taken against the driver in accordance with the law and the relevant Ministry of Construction, Transport and Infrastructure was informed.

FINDINGS/CONCLUSIONS

The old saying stating that "a chain is only as strong as its weakest link"¹² aptly applies when assessing the system's readiness to manage the transportation of dangerous goods within its territory. This intricate system involves various entities: legal representatives within organizations, individuals responsible for handling goods during loading and unloading, and those managing the actual transport. At the administrative level, international bodies ensure compliance with regulations governing dangerous goods transportation.

¹² The phrase "A chain is only as strong as its weakest link" or similar variations are often attributed to the philosopher Thomas Reid, who was known for his 18th-century works on human cognition and perception.



As recognized by Cvetković (2020), in the expert literature on disasters, very little attention is given to researching the role of intervention - rescue units in different phases of disaster response - preventively (before the event), during and after the disaster. In addition to regular action, police actions depend on the type, intensity, consequences, but also the level of training, skills and equipment, and consistency of plans and procedures for engagement and action.

In order for the system to show the best results, which is the delivery of goods to end users without unexpected and unwanted events - emergency incidents, every part of the system and each person participating in the transport process must undergo adequate training. This paper presents the training of members of the traffic police whose task is to control participants in the transport of dangerous goods in road transport.

We can freely conclude that the competent Ministry started the training of members of the traffic police in accordance with the norms that define the field of training in the Ministry. Through the analysis of the training results realized before the preparation of this curriculum, the expressed needs and capacity of the Traffic Police Directorate and the obligations of the traffic police according to the norms that define the transport of dangerous goods, a quality curriculum was created. In the teaching content of the program, all obligations defined by both laws and by-laws are implemented. It can be considered that cooperation was carried out very successfully through the teaching content - combining the work of the police and firefighters, rescuers in the event of an accident. It was also indicated that it is a large content and that, as such, it deserves a special course, that is, that it cannot be adequately conveyed in a small fund of lessons as it was given in the basic training. It is noticeable that when defining the number of hours, the expected time for processing the content and the availability of police officers were balanced.

The handbook for training participants was created with the aim of facilitating easier navigation and interpretation of the regulations governing the transport of dangerous goods and the international ADR agreement. The content of the manual represents a significant relief in the work of police officers of the traffic police who, after completing the training, will control vehicles and drivers, that is, participants in road traffic who carry out the transport of dangerous goods. Bearing in mind the growing trend of extraordinary events with dangerous goods, it is necessary to update the statistical data in the subject manual on an annual basis. A significant number of courses and seminars on this topic are organized at the international level. It is necessary to consider and include, if deemed useful, the conclusions reached at the mentioned international trainings and seminars. Implementation of new knowledge, regardless of whether it was created through an experiential knowledge cycle or a processed conclusion made after experiments. After the interview with the participants of the training, the practical exercises in the control process, as well as the simulation of the response to emergency events with dangerous substances, were pointed out with the highest attention. Working in real conditions increases the level of adopted and accepted new knowledge. Working in groups of 2 to 4 participants enables greater concentration of the participants on the topic being discussed. The training program provides for the possibility of processing the theoretical content through distance learning, the so-called e-classroom. This method would enable more adequate preparation of the trainees for passing the phase test and greater readiness for practical exercises.

The described training program effectively covers essential topics, providing officers with the necessary knowledge and skills. The methods for knowledge transfer, skill development, and fostering the right attitudes contribute to achieving program goals.



Results from police officers' responses during dangerous goods transport control and handling of emergency confirm the training's quality and underscore the need for ongoing education. Three critical factors contribute to the success of traffic police training:

- 1) Regulatory Knowledge: The trainees demonstrated an adequate level of adopted knowledge of regulations in the field of dangerous goods transport. This was demonstrated through the results of the test and during the simulation of the control of participants in the transport of dangerous goods.
- 2) Direct Action: The application of the acquired knowledge and skills in the real conditions of the simulation of the controlling of participants in the transport of dangerous goods and actions in the assumed emergency is presented.
- 3) Synergy: The trainees, through the affective domain, achieved a positive attitude about the necessity of cooperation between entities involved in road traffic control in order to increase overall safety. This was especially noticed in the course of the simulation and solving of tactical tasks in the process of control and emergency.

These factors not only impact road safety but also safeguard lives, protect valuable cargo, and preserve the environment.

ORIGINALITY/VALUE OF THE PROCESSED ACTIVITY

The Traffic Police Directorate has significantly increased its capacity for controlling road traffic participants who transport dangerous goods. Recognizing the importance of this specialized training, the Traffic Police Directorate insists on including it in the annual training plan.

The originality and value of this endeavor lie in raising awareness across the transport system. By acquainting all stakeholders with police training processes, we emphasize the state's commitment to effective and functional development. Recognizing each participant's role in achieving maximum quality ensures that the entire system fulfills its purpose.

Furthermore, practical training prepares trainees to apply their knowledge immediately. While adequate equipment is crucial, true preparedness stems from awareness of real risk and comprehensive training for all security personnel and relevant actors involved in handling hazardous goods.

In order to improve the process of training future trainees, it is necessary to carry out an evaluation of the work positions of the previous trainees and implement the conclusions in the training curriculum. As one of the conclusions, one can doubt the real costs of the trainings, that is, look at the possibility of adequate motivation of the engaged trainers for the implementation of the training.

ABOUT THE AUTHORS

The work was created by the joint effort of several authors, namely:

- Police Colonel Dejan Đurđević, with 24 years of experience in various management positions – from the fire brigade to head of the National Emergency Management Training Center, Colonel Đurđević specializes in property and personal protection. His familiarity with disaster management processes and CBRN post-use procedures is extensive. As a trained teacher-trainer within the OSCE Mission in Serbia, he has contributed significantly to safety and readiness. Notably, he



translated the “Emergency Response Guidebook 2016” enhancing the Ministry members’ ability to respond effectively to chemical, biological, radiological, and nuclear threats.

- Police Colonel Slaviša Lakićević, Head of the Traffic Police Directorate and Safety Consultant for Hazardous Materials Transport; with many years of work experience in supervising road traffic participants who carry out the transport of dangerous goods.
- Police Colonel Sergej Uljanov, Chief Inspector for Business Process Improvement and Coordination in the Lines of Work II at the Traffic Police Directorate and Safety Consultant for Hazardous Materials Transport; Manager of specialized training for traffic police officers overseeing participants in road traffic engaged in hazardous materials transport and a lecturer at the aforementioned training with many years of work experience in this field.
- Police Lieutenant Colonel Ivica Stanković, Head of the Traffic Control and Regulation Department within the Traffic Police Directorate, Safety Consultant for Hazardous Materials Transport. His commitment to professional development includes leadership training at the International Law Enforcement Academy (ILEA) in Budapest. He also serves as a lecturer in the Specialist Training for Traffic Police and the Training for Supervision of Road Traffic Participants Transporting Dangerous Goods.

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Training Reports on Training police officers for controlling road traffic participants who transport dangerous goods - from 1st to 9th class

