

Environmental Crime Training Needs Analysis of Slovene Police Forces

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The article provides an overview of efforts in the prevention and prosecution of environmental crime in Slovenia in the last decade, covering activities in the following areas: 1) determining training needs for Slovene police organizations, 2) determining the current knowledge, attitudes and practices of environmental crime investigators, 3) training modules within the framework of an environmental protection education program for the Slovene police organizations and 4) performance evaluation of the Slovene investigating and prosecuting system of environmental crime. The overall picture of environmental crime shows a figure of 1,838 reported crimes in the period 2004–2014, with a total number of 808 investigated environmental crime issues. It is important to note that there has been a significant increase in the number and types of environmental crime in the last decade. The research also presents the challenges related to specific types of environmental crime.

Keywords: environmental crime, training needs analysis, performance evaluation, environmental knowledge, environmental offences

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1 Introduction

Environmental crime investigation involves, not only highly developed detective skills, but also a high level of environmental awareness to determine the environmental crime that has taken place. Raised awareness and appropriate environmental education with specific training are the key to improvements in preventative measures and efficiency of methods in environmental crime investigations.

In order to meet these objectives, it is necessary for law enforcement officers to have a working knowledge in various fields, from natural and social sciences to specialised knowledge (Murray & Tedrow, 1992) in fields such as chemistry, physics, biology and new technologies. Well organised coordination with other entities is also critical for success. For example, by recognising a chemical's characteristics, how it moves through water, air, soil and being familiar with local geography, the investigator stands a better chance of tracing the contamination to its source (Burns, Lynch, & Stretesky,

2008). White (2009: 278), for instance, concludes that our interest and knowledge in this field may well be growing, but the more we know, the less secure we seem to be in the knowledge we have about environmental crime. Different types of crime prevention methods are needed to address specific environmental crimes (a multidisciplinary approach) where a combination of natural and social science can be used (Eman & Meško, 2014: 114–120).

Knowledge and awareness of environmental problems and dangers that may threaten us are the key to better preventive measures and the development of effective methods for detection and investigation of environmental crime. Such crimes must be dealt with in collaboration with all the responsible entities for prevention. The purpose of police training is to enable the police to carry out high-quality prevention and law enforcement. Due to the fact that this research is focused on the development and implementation of environmental protection training modules for Slovene police officers, we must first define environmental crime. Environmental crime can generally be defined as including crimes that result directly from the destruction and degradation of the earth's resources, and those resulting from a breach of rules which seek to regulate environmental disasters (White, 2009). The question is not just the problem of pollution causing harm to humans, flora and fauna, but also the problem of starting to view this behaviour as a criminal act. It was only after the Second World War Act, that inflicted environmental damage (or some economic interest) involving the immediate death

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of humans as a punishable offence, that environmental laws came into effect (Spapens, White, & Kluin 2014). The purpose of this research is therefore to analyse the training needs of the Slovene police organisations and to assess current knowledge, which aims to influence the development of more effective training in order to achieve better environmental crime investigation and crime prevention.

2 Past Police Environmental Crime Programs and Trainings

Prevention and investigation of environmental crime and understanding environmental law require additional and specific knowledge of environmental sciences for all involved. Jones and Honorato (2016: 39-56) emphasised the great importance of training implementation for police capacity building, for inspectors, prosecutors and judges in inspecting for compliance, investigating violations and enforcing environmental law. The first step to prevention and efficient investigation of environmental crime is based on systematic environmental education, training and awareness program for police officers and criminal investigators, which is the central theme of this research.

The content of training programs must be based on the definition of environmental crime and must provide basic information concerning environmental problems and environmental law. Evident from comparative studies, environmental crimes and those related, which criminologists previously dealt with, are highly complex (Fields, Arrigo, & Webb, 2005).

Issues such as climate changes are not just global problems, but multilevel problems which have harmful impacts on local, regional, national, international and transnational spheres (Bulkeley & Newell, 2010; Farral, Jackson, & Gray, 2009; White 2012). Environmental crime is now the world's fourth largest crime and represents a growing threat to global security and natural resources, according to the United Nation and Interpol report (Neslen, 2016).

When discussing the education and training of police officers in the field of environmental crime, the review of the literature reveals how this research field had its beginnings in the United States. The United States Pollution Act, 1990 increased the number of environmental crime investigators and led to the creation of the NETI (National Environmental Training Institute), which was tasked with training inspectors, civil and criminal investigators, and technical experts. American police training for environmental crime is very well described by Clifford (1998). In California, the

California Air Resources Board (CARB) provides state-to-state training. Four Canadian provinces have formed Regional Environmental Enforcement Associations. In 2003, the Australian Environmental Law Enforcement and Regulation for Australia and New Zealand (ALERT) was created. In 2005, the Asian Environmental Network (AECEN) was formed with 17 member countries across the continent.

The Interpol Environmental Crime Programme was created in 2009 as a single unit aimed at combating all forms of environmental crime. In October 2013, it was restructured into the Environmental Security Sub-Directorate (ENS) to assist member countries in enforcing national and international environmental laws and treaties to ensure conservation of the world's environment. Similar to Interpol (2014), Europol (2013) also defines environmental crime as a series of different acts unintentionally or deliberately harming the environment. The United Nations Environmental Programme (UNEP, 2016) and NATO (2014) environmental protection activities should also be mentioned, as NATO (2014) have appropriate environmental protection training. While such training is primarily a national responsibility, it is NATO's ambition to provide common environmental protection and energy efficiency education. It is necessary to embed environmental protection awareness into the daily routine of military personnel and increase their personal responsibility within the field. To advance this objective, NATO (2014) has designated staff officers for the implementation of environmental protection at strategic, operational and tactical levels. UNEP (2016) has excellent cooperation with Interpol (2008), Europol (2013) and national police units in the field of responding to environmental crime issues.

The European Commission (2016) developed EU Environmental Law Training Package. They can be used in European, national or local training context and adapted to specific needs and target groups. They offer an example of a regional approach to setting a baseline for individual country enforcement programs.

Significant progress in this area occurred when the European Commission adopted a proposal for a directive aiming to ensure the protection of the environment through criminal law. Organised formal and non-formal education/training of police, criminal investigators, prosecutors and investigation judges should be expanded to include the components of EU Directive of Environmental Crime (Directive 2008/99/EC on the protection of the environment through criminal law, 2008) on the protection of the environment through criminal law. The Justice and Home Affairs Council

formally adopted the Directive⁴ on the 24th of October, 2008 and was delivered by the Member States by December 2010.

2.1 Past Police Environmental Crime Programs and Trainings in Slovenia

The first milestone in Slovenia is represented by the fundamental work by Pečar (1981: 33–45), who stated, among other things, the reasons for the interest in ecological crime: sudden attention paid to the natural environment in the last decade, the “power” of certain pollutants, the mass of unconscious victims and public indifference, insufficient control mechanisms, un-adapted ability of punitive sanctions. Preceding this, Pečar (1988: 286) characterised the pollution of nature and the environment as the devaluation of the environment, called »ecocide« – intentional destruction of the living environment. The International Criminal Court (ICC) was set up in 2002 to try cases alleging crimes against peace: genocide, war, crimes of aggression and crimes against humanity. There are compelling arguments for the fifth crime against peace – *the crime of ecocide*⁵.

After 2008, the new Penal Code (Kazenski zakonik [KZ-1], 2008, 2012) was introduced. This expanded the scope of criminal protection of the environment, which was determined by the EU Directive 2008/99/EC on the protection of the environment through criminal law. Shortly after that, Slovenia adopted the Resolution on the National Program on Prevention and Suppression of Crime for the period 2012–

2016 (2012). This resolution specifically highlights the alarming component of global security, caused by the human long-term negligent and deliberately indifferent interference with the environment and natural resources.

A significant shift in environmental education came from the preparation of the program for investigating offences against the environment and natural resources, with a view to train investigators for treatment and management of criminal investigations against the environment and natural resources (Ministrstvo za notranje zadeve, Policija [Ministry of Interior, Police Ministry of the Interior], 2009). Environmental crime has become one of the most important tasks of the police. With planned prevention activities and regular duties, they also pay attention to raising environmental awareness internally and among the public at large.

The increasing number of environmental regulations has been evident recently, particularly in the growing number of articles and paragraphs in Chapter 32 of the Penal Code of the Republic of Slovenia (KZ-1, 2008, 2012). The academic research into environmental crime and associated issues is also on the rise. The case studies, conducted studies, research results, completed analyses and scientific discussions can help competent authorities and other interest groups to confront environmental crime as a constantly growing threat. Awareness of the impact of green crime on national security and its possible consequences make the preparation of the security system in critical situations easier. Preventative measures to stop possible environmental threats are less pretentious, complicated, expensive and not at all threatening, as is emphasised in the survey by Slovene experts' opinions, (presented below) (Eman, 2015).

Problem-solving and sanctioning for violations of environmental protection are based on a combination of administrative, civil and criminal law (Meško, Bančič, Eman, & Fields, 2011: 49). Environmental crime can occur in all known types of criminal activities addressed by the Slovenian legal system; the fundamental function of modern criminal law should provide integral protection against the most serious forms of deviant behaviour in society (Dežman, 2004). Environmental crime has become the most dangerous form of deviant behaviour and from a global perspective, has become an increasingly serious threat to the lives and livelihoods of all people as well as all other living species on the planet.

The recent detection and investigation of environmental crime in the world and Slovenia reveal ever expanding news about green crime. This is reflected in the growing number of research, media and various guidelines for the investigation and violations against the environment (Dobovšek, Praček, & Petrovič, 2011).

⁴ Directive 2008/99/EC on the protection of the environment through criminal law (2008) was adopted on 19 November 2008. The environmental law needs to be implemented in an efficient manner. That is the reason why the Commission proposed a directive which requires the Member States to provide for criminal sanctions for the most serious environmental offences because only this type of measures seems adequate and dissuasive enough to achieve proper implementation of environmental law.

⁵ Polly Higgins, barrister, international lawyer and award-winning author of *Eradicating Ecocide*, proposed to the United Nations in April 2010 a law of Ecocide to be classed as the 5th Crime Against Peace. Ecocide is defined as the mass “damage, destruction to or loss of ecosystems of a given territory, whether by human agency or by other causes, to such an extent that peaceful enjoyment by the inhabitants of that territory has been severely diminished”. Polly has been a vocal spokesperson on Earth Law for a number of years and is recognised as an expert in her field. Her first book, *Eradicating Ecocide: Laws and Governance to Prevent the Destruction of our Planet* is published by Shephard-Walwyn, Winner of the Peoples Book Prize 2011 for non-fiction and book number 2, *Earth is our Business*, changing the rules of the game has been described as ‘ground-breaking’. No other author has addressed the heart of the problem and proposed how to change it into a solution by using law. Polly has now mounted a global campaign to have Ecocide recognised as the 5th Crime Against Peace.

The overview of the situation in the environmental field in Slovenia shows us a number of papers and scientific articles. Umek and Eman (2011) have pointed out that environmental protection is one of the most important areas of study in criminal justice – an emerging scientific discipline that deals with the problem of ensuring security in all areas of life. Rakar and Tičar (2011) have determined that the legal system often has limitations; that is, legal provisions relating only to certain elements of the environment, such as air, water, soil, etc. and control over such emissions and pollution of individual natural resources, as well as responsibility for exceeding permissible emissions and for cleaning and rehabilitation. Mitar (2011) connected the environmental issues (use and pollution of the environment) with the problems of modern society (problems of overpopulation, quality of life, culture, art and the organisation of society) and emphasised the need for a variety of theoretical and empirical research. Areh and Umek (2011) also note that contact or exposure to toxic substances has been connected with various psychological problems. Fear, anxiety, depression, feelings of helplessness, uncertainty, personal or cognitive inefficiency, avoiding movement in nature, intolerance, aggressiveness and distrust of official institutions are among the most frequent. There are also some other problems, such as chronic stress and the consequent weakening of the immune system, which are provoked by prolonged exposure to polluted environments.

Dobovšek and colleagues (2011) confirmed the fact that any pollution represents a stress project for the uniformed police and points to the lack of knowledge, which leads to ineffective investigation and thus harm to people and the environment. Police carry out a number of different tasks in the field of environmental crime. As they are often the first to spot contamination they must collect data in the measurements of air pollution around a specific facility, participate in house searches when hazardous substances are being investigated and perform a variety of other tasks related to ecological crime. All this confirms the need for additional environmental training of police officers.

3 Development and Implementation of Environmental Protection Training Modules for the Slovene Police Officers

Environmental concern is considered important not only for indirect influences on the development of legislation and pollution control but also for increasing of active participation. White (2009: 269) stresses the need for more empirical knowledge about environmental crime.

It is within reason that the protection of the environment has become an important element of national security.

Developed countries have adopted laws, introduced ecological taxes, and armed the police and other institutions with different mandates and guidelines to cope with the problems of pollution, resources depletion and destruction of biological diversity (Brack, 2002: 1). Interpol (2008) notes that the institutions confronted with the ecological crime have neither the experience nor enough knowledge or relevant legislation to deal with this rising issue (Dobovšek et al., 2011).

The starting point in the need for the systematic environmental training of the Slovenian police resulted from the current environmental problems in connection with the environmental crime. The link between training and the needs of the police as an institution for an effective investigation of the environmental crime can ensure that environmental training focuses on a format that is tangible and concrete. Environmental crimes are divided according to the Articles from Chapter 32 of the Penal Code (KZ-1, 2008, 2012) of the Republic of Slovenia. The link between prevention and investigation of environmental crime as the main institution objective is also a good starting point for the evaluation of training (Bee & Bee, 1995: 4).

Environmental crime is becoming one of the most important tasks of the police. In this context, preventive activity plays an important role within planned and regular police duties, paying particular attention to awareness, both internally and externally among the public.

Unfortunately, we find the current situation in the field of environmental education and training on environmental crime in the police force inadequate. Training is conducted only for a group of criminologists, investigators, crime technicians and managers, as is demonstrated below in Table 1. There is a lack of systematic education on the local level and for officers at individual police stations. We also note that the knowledge of police officers who completed the formal education is insufficient. Environmental problems and the risk areas where potential opportunities for environmental crime can occur are only briefly presented in the frame of formal education for officers (subject criminology). Recognition and awareness of green crime, as an important phenomenon, is in some surroundings very low. We must move beyond the common belief that the knowledge of environmental crime is a speciality and not under the jurisdiction of the police, but other institutions, particularly inspection services.

For the development and implementation of environmental protection training modules for Slovene police officers, we first had to establish the level of knowledge of the environmental crime. We decided upon a survey consisting of 5 phases.

Table 1: Chronological inventory of training

Year	Number of courses	Training types – content	Trainers/lecturers, education, study
2004	1	classic pollution, sampling	internal/ higher - education/ law, science
2005	2	classic pollution, sampling	internal/ higher - education/ law, science
2006	1	classic pollution, sampling	internal/ higher - education/ law, science
2007	1	classic pollution, sampling	internal/ higher - education/ law, science
2008	1	classic pollution sampling	internal/ higher - education/ law, science
2009	3	1x classic pollution, water contamination 1x waste 1 x illegal waste shipment	
2010	5	1x classic pollution, water -pollution 1x waste 3 x illegal waste shipment	
2011	7	1x waste 6 x illegal waste shipment	
2012	4	1x waste 3 x illegal waste shipment	
2013	8	1x classic pollution, soil 3x waste 4 x illegal waste shipment	

From the table of chronological inventory of training, it is evident that:

a) The number of training courses has been growing over the years.

b) The training content is becoming increasingly diverse:

- Classic pollution, sampling 1 to 2 times (2004 to 2009)
- Classic pollution of water, sampling 2 times (2009, 2010)
- Waste, 7 times (2009 to 2013)
- Illegal shipments of waste, 17 times (2009 to 2013)

Although the number of training courses has increased, there is no systemic arrangement in the field of education for police officers and management personnel who need specified, tailored training for target groups. The existing scientific literature is mainly intended for police investigators (criminal police). There is a lack of manuals and guidelines for police officers dealing with environmental crime in the police stations at the local level.

In guided interviews conducted with experts of environmental crime, with the aim to highlight the training needs for better investigation and detection of environmental crime, we found out that:

- the basic motive is a detected problem on the ground;
- the investigations are implemented according to a pyramidal hierarchy;
- the basic content areas of training courses are classical water and groundwater pollution, classical soil pollution, waste, illegal waste shipments and protected areas;
- external key impulses for efficient work in preventing environmental crime have not been found by the police, but their awareness dictates to them that an ecological crime should be a priority. In their practice, however, economic crime has the priority and thus triggers more resources and more training;
- environmental awareness within society is higher than that of the police; and
- legislation linked to environmental offences is increasingly tighter and more extensive, which consequently leads to more learning and interpreting its contents.

Considering all the above results of interviews, we continued with the survey that was held in accordance with the set objectives and was aimed to deal with the following issues (see Figure 1):

— Environmental training needs assessment for the Slovene police organisation according to the Training Needs Analysis (TNA) (Ghuflī, 2014) is often considered the most important step among the stages of the training cycle;

— Determination of the current knowledge, attitudes, and practices of environmental crime investigators. Explicit knowledge principles (general police orders and standard operating procedures and it is documented and verified for police officers) and tacit knowledge includes the ability, experience, and skills of police officers (Dean, Fahsing, Glomseth, & Gottschalk, 2008);

— Training modules within the overall framework of an environmental protection education program for the Slovene police organisation;

— Pilot testing the training modules; and

— The evaluation plan for the proposed environmental protection training modules.

The survey entitled: *Training for the Detection of Environmental Crime* identified the socio-demographic attributes of the respondents and especially concentrated on water contamination and the level of basic knowledge in this field. Furthermore, the research aimed at discovering if the competences of the police officers, environmental inspectors and other subjects are defined enough to enable effective work. The research was carried out among the police officers in the Central Slovenia Region who deal with environmental crime more frequently.

The collected data was then processed using SPSS (Statistical Package for Social Science). Among the most important questions were: knowledge of the dimensions of environmental crime, as a new paradigm in the field of general crime; level of difficulty of investigations in the field of environmental crime; knowledge of natural science for more effective work; can the suspects of committing environmental

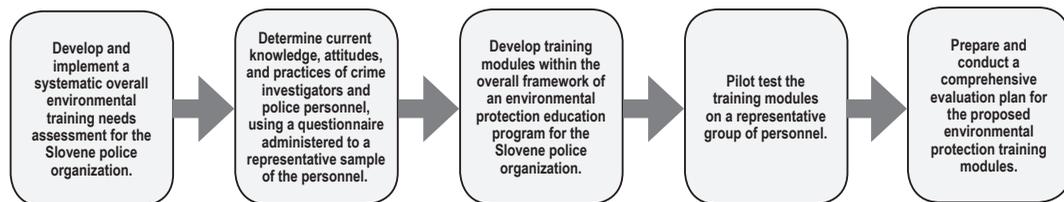


Figure 1: Survey objectives

Following the objectives, the experimental part was carried out in phases. For each phase, a variety of methods and tools were used: questionnaires, testing of various target groups, analysis and synthesis of answers, formative evaluation, module preparation, pilot testing of the module, summative evaluation with the review of the environmental crime archive and the analysis of training and criminal legislation. The survey was conducted among 312 police officers at 11 police stations (hereinafter PS) of the Ljubljana Central Region. It was based on the fact that there had been no other extensive research on education and training of the police about the environmental crime.

The questionnaire was aimed at identifying the needs for environmental training and was a diagnostic test of environmental knowledge. The questionnaire was comprised of questions about education and about environmental crime training in Slovenia (planning and contents of training, key events that influenced the training, the importance of environmental crime in relation to other economic and general crime and evaluation of knowledge in this field).

crime be punished on the basis of unclearly defined investigation procedures.

In the third phase, which included the preparation of modules for the environmental training of the police, we determined the need for environmental knowledge. We used the method of “tailored program design” in case of water pollution. An overview of basic data on environmental systems: threats to environmental systems posed by existing emissions; potential threats related to the gradual decay of abandoned industrial systems, covert and abandoned dumping sites of hazardous waste and substances; threats to the environment on account of military conflicts as well as operations and remnants of military technology.

An estimation of the number of police officers, customs, inspection services and other personnel on state, national and local (municipal) levels, requiring the preparation of uniform training programmes in the fields of criminal justice, administration, police investigation and security with regard to the prevention of an investigation into environmental problems, has proven inadequate.

The topics of training using the manual are follows: the importance and characteristics of water, the importance of water in Slovenia, the meaning of water for life, the comprehensive meaning of water, use of water, water pollution, the water cycle, properties of water, classification of bodies and types of water, ground water, spring water, precipitation water (rain, snow and glacial water, fog, dew, frost, hail), waste water, water for special purposes (e.g. chemical analysis), substances contained in water, microorganisms, substances introduced by man, hazards to human health and environment, and effects of chemical substances on the body. Crime scene work, preparatory measures, initial measures at the crime scene, personal danger, protection appearance of substances, and the main chemical substances. Concluding work has been focused on summative evaluation which included quantitative and qualitative-quantitative situation analysis in Slovenia over the 10 years' period (from 2004 to 2014).

4 Results

Three hundred and twelve randomly selected police officers were interviewed at Ljubljana PSs: Ljubljana – Center PS, Ljubljana – Vič PS, Ljubljana – Bežigrad PS, Kočevje PS, Domžale PS, Ljubljana – Moste PS and Ljubljana – Šiška PS. Interpretations were based on the results obtained through the observation of police officers on their familiarity with all aspects of environmental crime, as a new paradigm in the field of general crime. The research aimed to determine whether they considered investigations on environmental crime as more demanding than those in other areas. And there was also interested in whether the police officers had sufficient knowledge to investigate and discover the particularities of environmental crime.

The determination as to whether the police had the scientific knowledge necessary for the detection and investigation of environmental crime, was of particular importance. There was also interest in establishing the existence of cooperation among the police and other relevant institutions, where such cooperation is essential for the integrity of the investigation and detection of environmental crime. Keeping in mind that suspects in environmental crime are difficult to identify, the research determined whether the authority of police officers, and other participants in investigations, was well defined. It was established whether police officers were sufficiently conscious of the problem, and if they were adequately familiar with the facts that could contribute to the moderation of climate changes. For verification, a parametric T-test of one sample was used. With the accompaniment of this test, it was determined whether the sample average or *mean* was significantly higher or lower (one-way test) than the specified value 3. After the analysis of the questionnaires in the attached ta-

ble, the result of the interviewees was in accordance with the demographic data. Figure 2 and Table 2 show the percentage of police officers in relation to the total number of interviewees at each police station included in the survey.

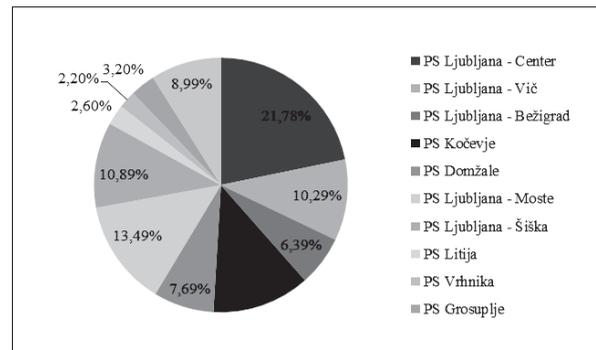


Figure 2: Police stations included in the survey

Table 2: Number of respondents from police stations included in the survey

Police stations	N	%
PS Ljubljana - Center	68	21.8
PS Ljubljana - Vič	32	10.3
PS Ljubljana - Bežigrad	20	6.4
PS Kočevje	39	12.5
PS Domžale	24	7.7
PS Ljubljana - Moste	42	13.5
PS Ljubljana - Šiška	34	10.9
PS Litija	8	2.6
PS Vrhnika	7	2.2
PS Grosuplje	10	3.2
PS Ribnica	28	9.0
Total	312	100.0

Table 3: Distribution of participants according to gender

	N	%	Valid percent
Male	264	84.6	85.4
Female	45	14.4	14.6
Missing	3	1.0	
Total	312	100.0	100.0

Table 4: Distribution of participants according to education level

School / Level	N	%	Valid percent
Vocational Secondary	11	3.5	3.6
General Secondary or Technical Secondary	256	82.1	82.8
Higher Vocational College	12	3.8	3.9
High/University degree or higher	30	9.6	9.7
Missing	3	1.0	
Total	312	100.0	100.0

4.1 Analysis of Questionnaire Results: Training for Detection of Environmental Crime

We analysed the environmental knowledge of police officers within the context of the 14 questions to establish the

overall pattern (312 respondents). For the analysis of questionnaire results, parametric T- tests – were used on one sample for the verification of our research questions.

Table 5: Answers to research questions

		SD	Asymmetry	Kurtosis	Test value 3 M
R1	The metal industry represents the biggest pollutant in Slovenian industry.	0,776	-0,106	-0,017	3,01
R2	The influence of exhaust gases on the environment is negligible.	0,953	0,810	0,132	2,08
R3	Today's cosmetics do not contain any substances with harmful effects on human's health.	0,954	0,423	-0,135	2,41
R4	Sanctions rarely occur in the case of environmental offences.	0,872	-0,649	0,188	3,87
R5	If I throw away a banana peel outdoors, I do not pollute the environment.	1,101	-0,103	-0,787	3,16
R6	Driving a car 20 km over the speed limit is a worse offence than fertilisation with manure in spring.	1,039	0,209	-0,363	2,65
R7	It is difficult to penalise the suspects of the environmental offences because of undefined procedures in the investigation.	0,888	-0,146	-0,356	3,47
R8	In Slovenia, the police are not engaged in the investigation of criminal offences in water pollution.	1,041	0,164	-0,665	2,86
R9	Sanctions for environmental violations are too mild and low.	0,856	-0,541	0,234	3,90
R10	Police officers do not have enough knowledge of science (physics, chemistry, geography) to be able to investigate environmental crime in the field of water pollution.	1,037	-0,595	-0,102	3,68
R11	Police investigations relating to environmental crime are much easier than those in other areas of crime.	0,914	0,448	0,229	2,47
R12	I always collect waste separately.	1,006	-0,181	-0,258	3,28
R13	The only environmentally harmful consequence of intensive farming is pollution with ammonia.	0,908	0,222	0,016	2,53
R14	In the field of environmental protection, we should have stricter rules.	0,825	-0,571	0,284	3,99

From the research questions we can conclude R1 – The respondents estimate that the metal industry represents the biggest pollutant in Slovenian industry, with an average rating 3. The test data of „*The metal industry represents the biggest pollutant in Slovenian industry.*” are normally distributed. From this result, we can conclude that police officers consider the metal industry to not be the only pollutant of the environment in Slovenia.

R2 – The respondents estimate that the impact of exhaust gases on the environment is negligible with an average rating 3 or more. The results show that there are statistically significant differences between mean values ($p < 0.05$), that the sample mean value ($M = 2.08$) is significantly lower than the value 3. This means that the respondents believe that the impact of exhaust gases on the environment is negligible. The respondents are aware of the impact of exhaust gases on the environment and also on climate changes.

R3 – Respondents estimate that today’s cosmetics do not contain any substances that would adversely affect human health with an average rating 3. The results show that there are statistically significant differences between mean values ($p < 0.05$), that the sample mean value ($M = 2.42$) is significantly lower than the certain value 3. The respondents are aware of harmful substances in cosmetics which may have negative impact on human health.

R4 – Respondents assessed the statement “*Sanctions rarely occur in the case of environmental offences*” with an average rating of 3 or more. The mean value ($M = 3.86$, $SD = 0.872$) is higher than the certain value 3. The police officers agree that environmental offences are very rarely followed by penalties, which gave us a starting point for further qualitative research on the number of offences under investigation in a 10-year period from 2003 to 2013.

R5 – Respondents believe that a banana peel thrown outdoors does not pollute the environment with an average rating of 3 or more. The results show that there are statistically significant differences between mean values ($p < 0.05$), the sample mean value ($M = 3.17$) is significantly higher than the certain value 3. the respondents know a banana peel is an organic waste which deteriorates in nature, however, they do not know the fact that it can contain a lot of pesticides that are harmful to the environment and fall within the specific organic waste.

R6 – Respondents assessed “*Driving a car 20 km over the speed limit is a greater offence than fertilising with manure in the spring*” with an average rating of 3 or more. The results show that there are statistically significant differences between

mean values ($p < 0.05$), and the sample mean value ($M = 2.66$) is significantly lower than the certain value 3. The police are not aware that driving a car is more harmful because of the exhaust gases than fertilisation with manure in the spring when the vegetation is in lush, and it is less likely for the manure to penetrate into groundwater or pollute water resources. Fertilisation with manure is prohibited when the temperatures are low, and vegetation is dormant

R7 – Respondents assessed “*The suspected environmental offences are difficult to penalise because of undefined procedures when investigating*” with an average rating 3 or more. The data in the test are normally distributed (-0.146 asymmetry coefficient and kurtosis coefficient -0.356). The results show that there are statistically significant differences between mean values ($p < 0.05$), the sample is statistically significantly greater than the certain value 3. It is difficult to penalise the suspects of environmental crime because of undefined procedures in the investigation

R8 – Respondents estimate that the police in Slovenia are not engaged in the investigation of criminal offences of water pollution with an average rating of 3 or more. The data in the test is lower than the certain value 3.

R9 – The respondents estimate that penalties for environmental offences are too low with an average rating of 3 or more. The results show that there are statistically significant differences between mean values ($p < 0.05$), higher than the certain value 3, therefore it is difficult to penalise the suspects of environmental crime because of undefined procedures in the investigation

R10 – The mean value is higher than the certain value 3. The respondents estimate that police officers do not have enough knowledge of science (physics, chemistry, geography and ecology) to be able to investigate environmental crime in the field of water with an average rating of 3 or more. The results show that they do not have sufficient knowledge of science (physics, chemistry, geography and ecology) to be able to investigate environmental crime in the field of water.

R11 – Respondents estimate that police investigations in connection with environmental crime are much easier than those in other areas with an average rating of 3 or more. The data in the test is lower than the value 3. The police officers are, on average, sufficiently aware that the police investigations in relation to the environment are very challenging and demanding, much more than investigations in other fields of crime.

R12 – Respondents assessed the statement “*I always collect waste separately*” with ratings of 3 or more. The data in

the test “*I always collect waste separately*” are normally distributed (-0.181 asymmetry coefficient and kurtosis coefficient -0.258). The results show that the sample mean value ($M = 3.28$) is significantly higher than the value 3. The officers are conscious about handling with waste.

R13 – Respondents believe that “*The only environmentally harmful consequence of intensive farming is pollution with ammonia.*” is lower than the certain value 3. The results show that there are statistically significant differences between mean values ($p < 0.05$) ($M = 2.52$) is significantly lower than the value 3. The police officers are aware of the fact that pollution with ammonia is not the only harmful consequence of intensive agriculture.

R14 – The majority of respondents believe that there should be stricter rules in the field of environmental protection. The data in the test are normally distributed (-0.571 asymmetry coefficient and kurtosis coefficient 0.284). The mean value ($M = 3.95$, $SD = 0.825$) is higher than the certain value 3. The respondents agree that we should have stricter rules for environmental protection.

the need for a systematic basic and advanced training of the police and crime investigators to accumulate sufficient knowledge to allow a better understanding and detection of environmental violations.

Police officers in the survey demonstrate that they do not have sufficient knowledge of science to more effectively investigate environmental crime. The survey also confirms our research questions that they need additional training and additional materials to better meet the qualification standards in this field. Police officers agree that the environmental offences and environmental crime are rarely sanctioned because investigations in this field are very demanding. This was a good starting point for further qualitative and quantitative research investigating environmental crimes in a 10-year period from 2004 to 2014.

Table 6 below presents the division of environmental crime according to the Chapter 32 in the Penal Code (KZ-1, 2008, 2012)⁶ of the Republic of Slovenia:

Table 6: The number of detected environmental criminal offences in the period 2003–2014, classified according to averages:

Criminal offences	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Game poaching	78	68	66	66	60	59	79	86	63	64	105	75
Torture of animals	28	29	36	33	23	29	42	41	60	59	59	48
Burdening and destruction of environment and space	24	16	12	12	9	14	60	23	33	21	19	16
Unlawful occupation of real property	3	3	2	3	2	4	3	5	27	6	26	6
Unlawful acquisition or use of radioactive or other hazardous substances	1	6	10	14	9	29	5	2	2	0	0	0
Illegal handling with protected animals and plants	0	0	0	0	0	1	4	9	6	3	13	3
Destroying of forests	11	5	0	2	4	2	2	1	1	1	1	0
Contamination of drinking water	3	4	3	0	4	4	3	0	2	0	1	1
Tainting of foodstuffs or fodder	1	2	0	0	0	0	1	1	0	1	1	2
Fish poaching	1	1	1	0	0	0	2	1	0	0	1	0
Unconscionable veterinary aid	0	0	0	0	1	0	0	0	1	1	0	0
Marine and water pollution by ships	0	0	0	0	0	0	0	0	1	0	0	0
Total	150	134	130	130	112	142	201	169	196	156	226	151

The results of the survey indicate which topics should be covered by potential further training on the prevention of environmental offences and crime. The survey confirmed

⁶ The mentioned Environmental crimes are divided according to the Articles from Chapter 32 in the Penal Code ([KZ-1, 2008, 2012) of the Republic of Slovenia.

Among the detected offences, game poaching appears to be the most frequent crime ($x = 72.4$) and with 105 cases in 2013, it stands out from the average, while in other years there have been from 59 to 86 cases detected. Furthermore, since 2010, the number of cases of illegal hunting has increased. Among the twelve environmental offences the three of the most common stand out, and these are game poaching, torture of animals and burdening and destruction of environment. The trends we are observing show that these numbers are not decreasing, but unfortunately increasing, particularly in animal cruelty. Contamination of drinking water, which is eighth place ($x = 2.1$), is in decline and was more frequent before 2005 (4 cases) than after 2005. In the last third among the listed criminal offences in the table above are the rarest environmental offences. These are tainting of foodstuffs or fodder ($x = 0.8$) with a maximum of two cases (in 2004 and 2014), fish poaching ($x = 0.6$) with two cases in 2009, unconscionable veterinary aid ($x = 0.3$) with one case in each year (2007, 2011, 2012) and marine and water pollution by ships with only one case in 2011 ($x = 0.1$).

In summary, among the twelve environmental offences the three most common stand out and these are: game poaching, torture of animals, and burdening and destruction of environment. What applies to all of them is that their number is not decreasing but unfortunately increasing, especially animal cruelty. In addition to these 3 crimes, the number of less frequent offences is also increasing, namely, unlawful occupation of property and illegal handling of protected animals and plants. But there are also offences which are rare, such as the destroying of forests, contamination of drinking water and unlawful acquisition or use of radioactive or other hazardous substances, the numbers of which is decreasing.

The fact that the environmental offences which are increasing are the prevailing ones, is not encouraging and therefore our future is worrying. If there is no action to prevent environmental crime more effectively than current endeavours (legal, educational and others), the prognosis for environmental crime offences is as follows.

Table 7: Results of regression analysis (trend analysis) environmental offences, in the years 2004 to 2014

Constant	Coefficient of regression			Error
α	β	b	P	σ
-10944.848	0.587	5.528	0,045	0.045

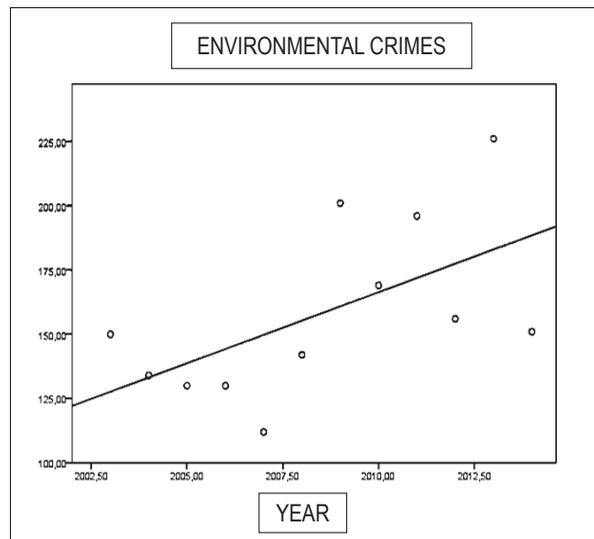


Figure 3: Diagram of dispersion of the regression line $y^{\wedge} = 5,528x+a$ for environmental crimes together

Figure 3 shows that the number of environmental offences has been rising over the years. A statistically significant regression coefficient ($b = 5.528, P = 0.045$) confirms this. Indicating that the number of such offences increases by 5.5 ~ 6 on average per year. On this basis, we can predict the most likely number of environmental offences in the future, for example, in 2020 there will be approximately 222.

The present prognosis is surely worrying and raises fear for the future. Its realisation must not be tolerated, and we should take strong, socially responsible action to prevent this. In its place, legislation should be considered (Penal Code, chapter 32) as an essential formal legal basis for action. Analysis of this has revealed that over the years (since 1995) the level of regulation and sanctioning of certain environmental offences has been increasing. However, among these regulations, the torture of animals, and burdening and destruction of the environment, has also increased and remains the most common environmental offences (aside from game poaching). As for illegal hunting, which is very frequent and is still on the rise, legal definitions have not changed. Many changes (tightening restrictions, more detailed regulation) are detected in cases of unlawful occupation of real property or unlawful use of radioactive or other hazardous substances, i.e. those actions, which show a downward trend. The illegal handling of protected animals and plants is also on the rise, with the legal sanctions remaining undefined and mild.

In short, it appears that more or less restrictive legislation is not a reliable predictor of protecting the environment

and natural goods. There are examples of environmental offences, which are more frequent, despite harsh legislation, and those which are in decline, but the legal regulations have not changed or have changed in the direction of tightening.

It is apparent that the law in this domain is not sufficient. One of the other important protective factors is certainly the training of the police to better investigate and detect environmental crime, which, as shown in our analysis (see section Development of Training), is not yet sufficiently coordinated with the practice of environmental offences. Training courses have increased over the years, but they are not sufficiently aligned with the identified most common environmental crimes in our country, for example, illegal hunting, torture of animals, etc.

5 Discussions

In the final discussion, we want to emphasise why education and training of the police are an important link in protecting the environment and preventing further environmental damage.

The results of structured analysis of training needs, obtained through this research, have proven that it is necessary to provide further training for different categories and levels of the police. Analyses should also be continued in the future as a basis for drawing up general programs and training modules that can directly contribute to better, more effective, and efficient functioning of the prevention, investigation, and detection of environmental crime. Through this analysis, which was conducted among 312 randomly selected police officers interviewed at Ljubljana police stations, we have come to guidance for future work.

The survey results confirmed some hypotheses and illustrated ways to further training and education for preventing, investigating, and researching in the field of environmental crime in Slovenia. On the basis of these results we can draw conclusions as to what knowledge and what skills are necessary to upgrade, and how to improve their effectiveness. This survey has also shown us that the police are environmentally conscious and want to continue their education and training in this area. Above all, they lack the complete knowledge of the functionality of our ecosystems. Their formal education did not include systematic instalments of information regarding environmental crimes as part of their training programs.

Interestingly, however, younger officers with up to five years of service in the police have acquired knowledge about ecological crime through attending seminars. They see the in-

appropriate attitude of our society towards nature and the environment in the enormous accumulation of waste. They also believe that most decisions about the scope and limitations of police investigative activities concerning water pollution are made at the General Police Directorate. The collaboration of police officers and criminal investigators within the inspection services (Inspection of Environment and Spatial Planning), who are addressing environmental crime in the area of water, has been determined as relatively good. However, it is believed that imprecisely defined tasks directed solely at police officers, causes the most difficulties in addressing environmental crime in the field of water pollution. They face environmental crime in the water sector every month and they mostly use a Handbook on Police Procedures to cope with it at work.

Lack of knowledge can be seen in their ignorance of gases released into the atmosphere caused by human activities, and they also consider that the most important municipal wastewater contaminator is sewage water. They feel the same for communal waste and public drop-off depots, tourism and tourist facilities with the exception of individual furnaces, which they consider important pollutants of water. They consider air and water pollution due to discharges of hazardous substances insignificant. Soil contamination caused by improper storage of dangerous substances, migrations of new animal and plant species, road accidents are also insignificant, in their opinion. In the given question: "*How often do the following factors occur as water pollutants in Slovenia?*" They replied that illegally deposited materials and waste are the most common pollutants of water. This is true, but this is not the only reason or cause, which proves the need for additional training in this sphere of crime.

Police officers in the survey demonstrate an insufficient amount of knowledge in the sciences to adequately investigate environmental crime in the field of water pollution. The survey also pointed out that they need additional training and additional materials to better meet the qualification standards in the field. Police officers agree that environmental offences or environmental crime are rarely sanctioned due to investigations being very demanding.

In conclusion, we can say that the level of regulation and penalties for environmental offences in the Penal Code of the Republic of Slovenia in the period from 1995 to 2012 increased. Most crime offences remained unchanged, for example, contamination of drinking water, unlawful occupation of real property, destroying of forests, game poaching, fish poaching, unconscionable veterinary aid and illegal handling of protected animals and plants. The number of crimes for which the regulations have been tightened are the burdening and destruction of environment and space, unlawful acqui-

sition or use of radioactive or other hazardous substances, tainting of foodstuffs or fodder, and the torture of animals. Only one type of crime has been mitigated, and that is the illegal handling of protected animals and plants.

6 Conclusions

This article presents the efforts in the prevention of environmental crime in Slovenia within the last decade, with a brief overview of the most important activities in research and application for the management of environmental crime. In 2011, Slovenian researchers contributed a theoretical baseline in the special edition of the *Journal of Criminal Justice and Security* (Varstvoslovje⁷).

It is necessary to assess the effectiveness of the training by defining environmental training needs. On the one hand, this assessment measures the results of the effectiveness of the training. And on the other hand, the results influence the future success of prevention, investigation, and detection of environmental crime. The connection between actual environmental problems and the scope of professional training, in relation to the workplace, is necessary to be completely successful, as is the relationship between the police, investigator, prosecutor and examining judge. As the need for training should be defined in advance, with precise objectives and targeted to individual groups with the skills and knowledge the job requires, we decided on the study of determining these needs using the sample of 312 randomly selected police officers at 11 police units in the Ljubljana region.

The results have shown a lack of awareness, particularly in systemic arrangements in the field of education of police officers and managerial staff. Particular deficits are found in the knowledge of individual current topics, thematic sets and techniques for investigating environmental crime, which would require targeted individual sample groups. Given the fact that the existing technical literature is deliberate and only to some extent sufficient for the investigations of criminal police, appropriate manuals with environmental thematic sets are missing. Such sets include water pollution, air pollu-

tion and hazardous waste in addressing environmental crime. Therefore, the education of police investigators and higher-ranking positions is necessary.

The true insufficiencies are those surrounding the education of police officers from different police units. These subjects within the formal education on environmental crime are lacking in basic educational components for the police officer's profession. There is a lack of and need for systemic regulation in education of police officers in the field of environmental crime. Carter (1998: 192) pointed out that basic training requires all full-time state and local officers to complete a minimum of 40 hours of an in-service environmental crime course per year.

The results of structured analysis of training needs presented in this article have shown that it is necessary to provide further training for different categories and levels of the police. The analysis can also be a basis for drawing up the general programs and training modules in the future and can directly contribute to better, more effective and efficient functioning in the prevention, investigation, and detection of environmental crime. It should be noted that training is an ongoing process, which must be regularly evaluated parallel to the development of environmental crime, due to subsequent changes in economic development and consequently resulting environmental problems (Spapens et al., 2014).

Environmental training for the police and other professional experts, who are involved in prevention, investigation, and detection of environmental crime, is not enough on its own if there is no clearly defined environmental law and government policy to enforce this law. Through our research, the relationship between environmental violations and training of police officers was found. The content of the training was not sufficiently aligned with the incidence of environmental crime in Slovenia, therefore, in the future we recommend greater coordination.

We analysed Chapter 32 of the Penal Code of the Republic of Slovenia from 1995, 2004, 2008 and 2012, namely concerning the sensitivity of identification of crimes against the environment and natural resources (level of regulation) and penalties (level of sanction). However, it appears that changes in restrictive legislation are not a reliable predictor for the protection of the environment. There are examples of environmental offences which are more frequent despite harsh legislation and those which are in decline, while the legal regulations have not changed or have changed in the sense of tightening. The level of regulation and penalties for environmental offences, in the Penal Code of the Republic of Slovenia, within the period from 1995 to 2012 rose. The number of environmental offences has also been rising over the last few years, and police

⁷ The first issue of the *Journal of Criminal Justice and Security* in 2011 was thematic and dedicated to protecting the environment. Contributions in this issue arose in the context of basic research projects of environmental crime – criminological, victimology, crime-prevention, psychological and legal aspects (2009–2012). The project took place at the Faculty of Security Studies and focused on the analysis and research of various forms and aspects of crime against the environment. The primary objective of the project was to review the situation in Slovenia and the basis for further research (Umek & Eman, 2011).

officers agree that environmental offences and environmental crime are rarely sanctioned because investigations in this field are very demanding.

One of the important protective factors is undoubtedly police training to achieve better environmental crime investigation and detection, which as shown in the analyses, is yet to be sufficiently coordinated with the practice of environmental offences. Training courses have increased over a number of years, but are insufficiently aligned with the most common identified environmental crimes in Slovenia, for example, illegal hunting, the torture of animals, etc. It is also necessary to consider the requirements and financial backing of this training. The necessary funding will be a lucrative investment if there are positive results shown in the prevention, investigation, and detection of environmental crime.

If it is possible to assess the training results, the support and funding will not be difficult to find. However, if there is no successful way of measuring the results of the training, it will be considered a waste of both time and money. Therefore, it is necessary to evaluate the effectiveness of training by solving actual environmental problems on the local and international level. The aim of the environmental crime training is to encourage the police to become aware of environmental problems and to fight against infringements. The police forces in Slovenia have the resources to improve these results, particularly in the field of enforcing environmental policy. Success will be most fruitful if there is an exchange of methods and co-operations with other countries. The result of the training can be a political recommendation that will enable participants to commence work in their own and specialised environment and will lead to further improvements of the training system.

The evaluation tools for regular monitoring of education are necessary as the knowledge and issues, primarily in the field of environmental crime, vary. It is necessary that these tools be complemented with new environmental knowledge, and the knowledge of how many police officers attended training, how it was perceived, and what was learnt.

We also want to find out if the officers are using the skills and information they have learned and, and most importantly what institutional results, if any, were improved. Police environmental crime investigations are much more difficult and complicated in many aspects, than those conducted in other areas. Particular difficulties arise in the need for specialised knowledge in the field of chemistry, physics, biology, geology and technology, among others. There are further issues due to the complexity of the problems faced by investigators, from the necessity for increased personal protection and the complex nature of laws and regulations governing the field of administrative and criminal environmental law.

In order to achieve the above, it is necessary:

- to prepare training modules/training, supporting knowledge and understanding of the world's needs for nature conservation and environmental protection for better understanding environmental crime;
- to introduce a European dimension in the training modules for participants to learn and work on the basis of ecological standards of the EU;
- to enable participants to transfer the acquired knowledge in specific areas in the national strategy, and the internal legal system of protection of the environment;
- to prepare manuals used in practical work in specific areas of environmental protection: and
- to use quantitative analyses of environmental offences have proved the increase of such crime acts even though more training has been introduced in police institutions. Here appears an open dilemma, and the challenges to further explore the relationships between the training of police officers, investigating the incidence of environmental crime, with emphasis on the local level, and environmental offences.

In conclusion, we can say that environmental crime investigation is at a disadvantaged position in comparison to economic crime, considering all the available facilities and training. The training courses are increasing, but their contents is not always compatible with the actual situation. The survey confirmed the need for further systematic basic and advanced training of police officers and crime investigators in order to obtain sufficient knowledge for better understanding and detecting environmental violations. New forms of crime against the environment are emerging, depending on the market and topicality of environmental problems.

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Analiza potreb po usposabljanju slovenske policije na področju ekološke kriminalitete

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V prispevku predstavljamo pregled naporov preprečevanja in pregona ekološke kriminalitete v Sloveniji v zadnjem desetletju z naslednjih področij: 1) določitve potreb po usposabljanju za slovenske policijske organizacije, 2) opredelitve trenutnega znanja, odnosa in praks preiskovalcev ekološke kriminalitete, 3) modulov za usposabljanje v okviru izobraževalnega programa varstva okolja za slovenske policijske organizacije in 4) evaluacije uspešnosti slovenskega sistema preiskovanja in pregona ekološke kriminalitete. Splošna slika ekološke kriminalitete nam razkrije, da je bilo v obdobju 2004–2014 prijavljenih 1.838 kaznivih dejanj, od katerih je bilo preiskanih 808 kaznivih dejanj ekološke kriminalitete. Nadalje izpostavljamo, da je v zadnjem desetletju prišlo do znatnega povečanja števila in različnih vrst ekološke kriminalitete. V študiji smo opredelili tudi izzive, ki se povezujejo z različnimi tipi ekološke kriminalitete.

Ključne besede: ekološka kriminaliteta, analiza potreb po usposabljanju, evaluacija uspešnosti, znanje o okolju, kazniva dejanja zoper okolje

UDK: 343.3/.7:504