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Investigating the Causes of Fires - Intentionally Started Fires

This expert article focusses on issues relating to **fire protection** (hereinafter referred to as “FP”), and in particular **investigating the causes of fires** (hereinafter referred to as “ICF”), in connection with the investigation of intentionally started fires. This falls within the scope of the **state fire inspection** (hereinafter referred to as the “SFI”) and is performed through **fire investigators** (hereinafter referred to as “FI”), who are members¹ of the *Fire and Rescue Service of the Czech Republic* (hereinafter referred to as “FRS CR”).² The Security Forces (hereinafter referred to as the “SF”) are, therefore, the relevant body of the state administration in the field of FP.³ “**Arson**” is a **criminal offense**⁴ (hereinafter referred to as “CO”), which may be classified differently by law enforcement authorities.⁵ In particular, taking into account the criminal liability of offenders, especially according to the classification of the CO and the upper limit of incarceration⁶ (misdemeanors and felonies), culpability⁷ (intent, negligence, especially aggravating circumstance, error in fact, error in law) and other circumstances of the CO⁸ (preparation, attempt).

It is an extensive theme, which has many possibilities for its further development; however, the **primary objective is to focus on the motivation of the perpetrators of selected criminal activity** using knowledge from scientific studies, especially the theory or methodology of **criminology** or **psychology** and their link to ICF. The **motivating factors and goals of the activity** of a single offender with a distinct motive or an organized group of offenders, usually **starting multiple fires**, are often

¹ Zákon č. 361/2003 Sb., *o služebním poměru příslušníků bezpečnostních sborů* v posledním znění.

² HZS ČR je zřízen zákonem č. 320/215 Sb. *o Hasičském záchranném sboru ČR* v posledním znění. Je jednou ze základních složek IZS dle zákona č. 239/2000 Sb., *o integrovaném záchranném systému* v posledním znění.

³ § 26 odst. (2) písm. b) a § 31 odst. (1) písm. f) zákona č. 133/1985 Sb., *o požární ochraně* v posledním znění.

⁴ Část první, Obecná část, Hlava II Trestní odpovědnost, Díl 1 Základy trestní odpovědnosti, § 13 zákona č. 40/2009 Sb., *trestní zákoník* v posledním znění.

⁵ § 12 odst. (1) zákona č. 141/1961 Sb., *o trestním řízení soudním* v posledním znění.

⁶ Část první, Obecná část, Hlava II Trestní odpovědnost, Díl 1 Základy trestní odpovědnosti zákona č. 40/2009 Sb., *trestní zákoník* v posledním znění.

⁷ Část první, Obecná část, Hlava II Trestní odpovědnost, Díl 2 Zavinění zákona č. 40/2009 Sb., *trestní zákoník* v posledním znění.

⁸ Část první, Obecná část, Hlava II Trestní odpovědnost, Díl 3 Příprava a pokus trestného činu zákona č. 40/2009 Sb., *trestní zákoník* v posledním znění.

different, in some cases **combined**, and often **bizarre**. By their **actions**, **these persons directly endanger human lives and property mostly on a large scale**.¹

The author of the paper has long worked at the FRS CR in the areas of repression, and later in the operational management of fire brigade units, including work with a volunteer fire brigade unit (hereinafter referred to as a “VFB unit”). The intention for the elaboration of the theme is to provide a summary of information drawn mainly from selected professional literature and from case files of fires,² including specific examples of proven intentionally started fires. Furthermore, the author draws from their own knowledge and practical experience gained in the performance of fire interventions. Due to the limited content of the paper, it is not possible to describe in more detail the complex processes arising during fires or extensive theories of fires and explosions; however, these issues are mentioned in the text. The physical-chemical characteristics of a wide range of substances, including flammable liquids, and the technical properties of building materials and structures in terms of fire protection are completely excluded. In practice, these concepts or themes more or less affect not only the **ways fires are started and develop**, but also the **consequences and damage caused**. The author assumes that the cited technical terms are logical to the reader, or are generally known. For these reasons, in some cases only a reference is made to the professional literature, which deals in more detail with individual areas.

It is an indisputable fact that the selected information contained in this article is closely intertwined in various individual phases from the suspicion of intentional fault through the detection of perpetrators, to the preparation of documents for law enforcement authorities, who then assess whether the documents submitted are sufficient and relevant.³ Furthermore, the content in some cases refers to the relevant provisions of applicable laws, especially those related to intentionally started fires. The attached tables contain summary data on ICF, which were drawn from the **statistical monitoring of fires and emergencies**⁴ (hereinafter referred to as the “MFE program”) through the relevant department of the *Ministry of the Interior - General Directorate of the Fire and Rescue Service of the Czech Republic* (hereinafter referred to as the “Mol-GD FRS CR”), which is part of the Ministry of the Interior (hereinafter referred to as the “Mol”). For the period between 2016 and 2020, they present the total number of fires and the amount of direct damage, the number of fires calculated based on cause and how they started with a focus on intentional ignition or selected categories with signs of negligence, and the number of fires calculated based on selected ignition sources as the initiators of fires.

¹ *Zjišťování příčin vzniku požárů. Díl I.* Praha: MV-ředitelství Hasičského záchranného sboru ČR ve vydavatelství FACOM, Jílové u Prahy, 2000, s. 15-16. ISBN 80-902852-1-X.

² Case files of fires were loaned from the archives of the Department of Prevention of the Fire and Rescue Services in the Pardubice Region. Due to measures in connection with the GDPR and the protection of personal data, as well as the content of non-public information from the investigation, no specific data are provided, including the registration numbers of the individual files.

³ PEKAR, Vasil Silvestr a kol. *Zjišťování příčin požárů v rámci státního požárního dozoru.* Edice SPBI Spektrum 78. Ostrava: SPBI, 2011, s. 3-4. ISBN 978-80-7385-107-1.

⁴ § 26 odst. (2) písm. k) zákona č. 133/1985 Sb., o požární ochraně v posledním znění.

The **principle of exchange**, established by forensic scientist Edmond Locard, also applies in the area of investigation. *“The contact between the two points will be exchanged because each contact leaves a mark”*.¹ The principle is applied to places where offenders suspected of committing a CO come into contact with the environment. In general, perpetrators **bring something of themselves to the crime scene**² and, conversely, leave something of themselves, such as fingerprints, footprints, hair, fibers from their clothes or blood. These are **certain human failures** that, among other things, are enough for investigators to find, investigate and understand. Footprints enrich the information base for learning about a CO. Their research brings a number of findings for forensic theory and practice.³ This, in a way, describes some of the tasks of the FI in the performance of individual activities and actions, in close cooperation with members of the *Police of the Czech Republic* (hereinafter referred to as the “PCR”) both at the level of the district departments of the relevant territorial branches and, in certain cases, also criminal investigators. The police authority determines the procedure for possible prosecution in criminal proceedings or the imposition of sanctions in proceedings dealing with misdemeanors, or the discontinuation of the case.

Legislation

The Act on PO contains **provisions on the activities of ICF**, as an integral part of the performance of the SFI. It also sets out, among other things, **the obligations of legal persons, enterprising natural persons, and natural persons**.⁴ The introductory provision of this Act stipulates that **everyone is obliged to act in such a way as not be the cause of fire, as not to jeopardize the lives and health of persons, as not to endanger animals and property**. Everyone is also obliged to **provide adequate personal assistance in fighting fires**, which consists, among other things, in extinguishing them, if possible, or **taking such measures necessary** to prevent the spread. The obligation also includes the **immediate reporting of fires** at a designated place or ensuring their reporting.⁵

Persons who intentionally start fires violate all of the above legal provisions. However, offenders can also be persons who are actively involved in their extinguishing. In some cases, they can report these acts directly to the emergency lines of the basic components of the integrated rescue system (hereinafter referred to as “IRS units”), including the indication of the usual identification of callers, or using the form of anonymous reporting. Another legal regulation containing details on the

¹ HÜTTER, Marek et al. *Učební texty pro kurzy požární prevence*. Praha: Ministerstvo vnitra-generální ředitelství Hasičského záchranného sboru České republiky, 2015, s. 296. ISBN 978-80-86466-52-1.

² NĚMEC, Miroslav a kol. *Teorie a metodologie kriminalistiky pro magisterské studium – I. díl. Aktuální problémy kriminalistické teorie*. Praha: ABOOK s. r. o., 2018, s. 203-224. ISBN 978-80-906974-1-6.

³ PORADA, Viktor a kol. *Kriminalistika. Technické, forenzní a kybernetické aspekty*. Plzeň: Vydavatelství a nakladatelství Aleš Čeněk, s.r.o., 2016, s. 103. ISBN 978-80-7380-589-0.

⁴ § 5 a § 17 zákona č. 133/1985 Sb., o požární ochraně v posledním znění.

⁵ § 18 zákona č. 133/1985 Sb., o požární ochraně v posledním znění.

implementation of the SFI is the Decree on Fire Prevention.¹ This stipulates the **obligations of entities to enable SFI bodies to perform acts while ICF**, including the provision of products or samples for the performance of **fire technical expertise**² (hereinafter referred to as “FTE”), and regulates the cooperation of ICF with **law enforcement agencies, state administration bodies, or professional state supervision bodies**.

It also sets out guidelines for proposals for preventive measures, fire analysis, including the procedure for determining damages, causes of fires, and sources of ignition, or documentation of the performance of the SFI.³ The internal management regulation of the Director General of the Fire and Rescue Service of the Czech Republic regulates the procedure for **ICF and details for the performance of the FI service**, and, for example, defines rules and other related actions and activities.⁴

System of organization

From the point of view of FP, ICF is a **complex activity including experience, knowledge, science, and modern technologies**. The collection of all data together with their analysis must be performed **objectively and truthfully**. The essence is a **systematic approach and attention to detail**, through which it is possible to discover new factual data. These may necessitate a reassessment of previous conclusions. A proper ICF methodology is based on established **principles and actions** taken during the **inspection of the scene of the fire** (hereinafter referred to as the “fire”) or when **determining and checking scenarios** of the causes of their occurrence. The information obtained is essential for FI in all stages of ICF. Some of them may be used directly as evidence or later as additional sources, including an **investigation of the specific circumstances** of the case, the conditions and factors that caused or brought together the **source of ignition, fuel, and oxidant**. The activities of ICF are also a basic working tool for data collection in the SSU program, where FI enters information about fires and their causes. The data are important due to their ability to provide summary statistical information on fire protection, or they can be used in preventive educational activities or fire prevention in the future.⁵

Investigations of caused and reported fires are performed by **basic, other, or designated FI**, taking into account their main or predominant scope of activities,⁶

¹ Vyhláška MV č. 246/2001 Sb., *o stanovení podmínek požární bezpečnosti a výkonu státního požárního dozoru* v posledním znění.

² § 52 vyhlášky MV č. 246/2001 Sb., *o stanovení podmínek požární bezpečnosti a výkonu státního požárního dozoru* v posledním znění.

³ HÜTTER, Marek et al. *Učební texty pro kurzy požární prevence*. Praha: Ministerstvo vnitra-generální ředitelství Hasičského záchranného sboru České republiky, 2015, s. 297-298. ISBN 978-80-86466-52-1.

⁴ SIAŘ č. 46/2013, *kterým se stanoví postup Hasičského záchranného sboru ČR při zjišťování příčin vzniku požárů*.

⁵ HÜTTER, Marek et al. *Učební texty pro kurzy požární prevence*. Praha: Ministerstvo vnitra-generální ředitelství Hasičského záchranného sboru České republiky, 2015, s. 295-321. ISBN 978-80-86466-52-1.

⁶ Čl. 2 odst. (3) SIAŘ č. 46/2013, *kterým se stanoví postup Hasičského záchranného sboru ČR při zjišťování příčin vzniku požárů*.

in the framework of individual *Regional Fire and Rescue Services* (hereinafter referred to as “regional FRS”) or FI from Mol-GD FRS CR with nationwide competence, i.e., *Departments for Determining the Causes of Fires*. The departments at the Mol-GD FRS CR are responsible for determining the procedure and, in serious cases, they participate in the investigation and preparation of analyses of the causes of fires. They also issue legally non-binding opinions, and in terms of the SFI they ensure and coordinate the creation of methodological manuals¹. Through the organizational units of the Ministry of the Interior, the Fire and Rescue Service of the Czech Republic provides research and development in the field of fire protection and the implementation of FTE.²

One of the outcomes of the activities of ICF is the elaboration of **professional statement** on fires,³ which are the most important output of the work of a FI. These expert opinions include the determined information, such as the **proven cause or the procedure for determining and verifying each scenario**. Fire documentation, with the exception of untreated fires and fires caused by a traffic accident, consists of a **case file on the fire**,⁴ which includes the professional statement. The case file also contains **photo documentation, a layout plan of the fire station, a report on the intervention** from the FP unit, **protocols from interrogations, a report on the search of the crime scene, expert opinions, a record of criminal proceedings, a report on the method of closure**, and other documents.

In addition to the regular activities of the FI service, highly investigative activities are also performed by **professional investigators** or **technical fire experts**, in the framework of the organizational units of the Ministry of the Interior and the Fire and Rescue Service of the Czech Republic. One of these units is the *Technical Institute of Fire Protection* (hereinafter referred to as the “TIFP”), where the *Department of Technical Fire Expertise* performs professional activities in the form of FTE on the basis of its own investigations, taking samples or evidence. Another source of FTE are the results of laboratory investigations performed using accredited or non-accredited analyses, model tests, information from the obtained documentation, and also from the application of scientific and technical knowledge and the study of new technologies.⁵ The department is part of the *Accredited Analytical Laboratory No. 1011.2*, where **accredited analyses** are performed. The laboratory has a methodology for laboratory analysis of samples to objectify the hypotheses of a fire, in addition to a methodology

¹ Čl. 1 odst. (1) písm. b) č. 2. SIAŘ č.55/2020, *kterým mění pokyn generálního ředitele HZS ČR č. 17/2017, kterým se vydává organizační řád MV-generálního ředitelství HZS ČR v posledním znění.*

² Čl. 1 odst. (1) písm. a) č. 6. a č. 9. SIAŘ č.55/2020, *kterým mění pokyn generálního ředitele HZS ČR č. 17/2017, kterým se vydává organizační řád MV-generálního ředitelství HZS ČR v posledním znění.*

³ Čl. 12 SIAŘ č.46/2013, *kterým se stanoví postup Hasičského záchranného sboru ČR při zjišťování příčin vzniku požárů.*

⁴ Čl. 11 SIAŘ č.46/2013, *kterým se stanoví postup Hasičského záchranného sboru ČR při zjišťování příčin vzniku požárů.*

⁵ *Technický ústav požární ochrany* [online]. [B.m.]: Požárně technické expertizy, 2020. [cit. 16. 11. 2020]. Dostupné z: <https://www.hzscr.cz/clanek/pozarne-technicke-expertizy-oddeleni-pozarne-technicky-expertiz.aspx>

for targeted collection of representative samples in order to objectify the causal relationship with the occurrence of a fire.¹

In connection with **cases of arson**, it is possible to use a method of chemical analysis - **gas chromatography** - which, based on the analysis of samples, proves the **presence of flammable liquids in the form of combustion accelerators** and toxicants, such as gasoline or organic solvents.²

Another entity that can be used for the needs of ICF is the **emergency response expert group**³ the *Lázně Bohdaneč Population Protection Institute* (hereinafter referred to as the "PPI"). The ICF workplace in the laboratory performs **expert activities** in the area of physical and technical examination of collected samples. If necessary, it performs a reconstruction of a fire by model tests. The PPI expert group takes photo documentation, images from a thermal imager, or uses a spatial laser scanning system to create a 3D digitization of the fire.⁴ The activities of TIFP and PPI result in **professional statements** that may be included in a fire case file. These workplaces use knowledge from professional sciences, outputs from verified laboratory methods, or special equipment operating on a technical, physical, or chemical basis, which **improve the accuracy and, above all, the quality of ICF activities**. Due to the limited scope of the paper, it is not possible to specify other methods in more detail, including their significance for ICF.⁵

Cooperation with the Police of the Czech Republic and other subjects

In the event of suspicion that a CO has been committed, injury or death of persons, large-scale economic damage or in other justified cases, the investigation is performed in cooperation with the **PCR investigators** from the *Criminal Police and Investigation Service*. Investigation of the causes of fires is one of the **most difficult criminal disciplines** for the police. This activity encounters **considerable difficulties in obtaining evidence that would indicate both the cause and the fault of persons**. Fire is a complex phenomenon for experienced PCR investigators.⁶ At the

¹ *Technický ústav požární ochrany* [online]. [B.m.]: Akreditovaná zkušební laboratoř, 2020. [cit. 16. 11. 2020]. Dostupné z: <https://www.hzscr.cz/clanek/akreditovana-zkusebni-laborator-c-1011-2.aspx>

² PEKAR, Vasil Silvestr a kol. *Zjišťování příčin požárů v rámci státního požárního dozoru*. Edice SPBI Spektrum 78. Ostrava: SPBI, 2011, s. 47-48. ISBN 978-80-7385-107-1.

³ Čl. 2 odst. (2) písm. e) SIAŘ č.46/2013, *kterým se stanoví postup Hasičského záchranného sboru ČR při zjišťování příčin vzniku požárů*.

⁴ *Institut ochrany obyvatelstva Lázně Bohdaneč* [online]. [B.m.]: Výjezdová expertizní skupina, 2020. [cit. 16. 11. 2020]. Dostupné z: <https://www.hzscr.cz/clanek/vyjezdova-expertizni-skupina.aspx>

⁵ For example, the *Spheron* documentation system (a spherical camera for complete crime scene documentation in electronic form), *Fourier transform infrared spectroscopy* and *Raman spectroscopy* (determination of the material nature of solids involved in combustion), *X-ray fluorescence* (spectroscopic method of analytical chemistry used in forensic chemistry) or computer modeling of fires and explosions Zdroj: PEKAR, Vasil Silvestr a kol. *Zjišťování příčin požárů v rámci státního požárního dozoru*. Edice SPBI Spektrum 78. Ostrava: SPBI, 2011, s. 37-56. ISBN 978-80-7385-107-1.

⁶ HÜTTER, Marek et al. *Učební texty pro kurzy požární prevence*. Praha: Ministerstvo vnitra-generální ředitelství Hasičského záchranného sboru České republiky, 2015, s. 295. ISBN 978-80-86466-52-1.

scene of a fire they perform generally known activities in securing forensic evidence and forensic identification, searching and work at the crime scene, and other things, including the subsequent use of forensic techniques, for example in laboratories.¹

If necessary, in addition to the FI, **experts from the field of FP² or experts using knowledge from other fields**, such as construction, electrical engineering, insurance or psychology, may also be invited to join investigation teams. The output of their work are **expert opinions³ or professional statements**, containing conclusions about the possible causes of fires. The obligations and decision-making are the responsibility of PCR investigators, who do not have to follow these conclusions. Investigation teams cooperate with the above-mentioned bodies active in criminal proceedings, as well as **state administration bodies and state professional supervision bodies.**⁴ Between the PCR and the FRS CR, it is possible to utilize, in the framework of mutual cooperation with the SF, expert investigations performed by specialized workplaces of the *Criminalistics Institute of the Police of the Czech Republic* based in Prague.

The process of combustion and conditions for the occurrence of fires

The **process of combustion, its manifestations, and the course of fires, including the dynamics of development**, are influenced by many physical or physical-chemical factors. Under ideal conditions of combustion of substances, **a flame with different thermal values is created**, an **exchange of gases** then takes place with the formation of thermal decomposition products or combustion products or flue gases, which include soot, ash, or smoke. As soon as the flammable substance begins to release the gaseous component with the **required concentration** (fuel), sufficient **thermal energy** from the **ignition source** (hereinafter referred to as the "ignition source") **and sufficient access to air** (oxidant) are ensured, a **flammable assembly** is formed which ignites and burns.

Ignition sources may take the form of **spontaneous ignition by an external source of radiant heat**, by an **external source in the form of an open flame**, or **spontaneous combustion without the effect of an external source** or as a result of a chemical reaction.⁵ It may be assumed that when a CO is committed, **external ignition sources** are used, which represent the simplest choice for offenders. A typical initiator of fire is an open flame, for example from **matches**, gas or petrol **igniters**, gas, alcohol, or kerosene **burners**, or a **mechanical source of sparks**. Ignition sources can be used in combination with the above-mentioned combustion accelerators that the offenders bring to the crime scene with them. One of the basic causes of fires is

¹ NĚMEC, Miroslav a kol. *Teorie a metodologie kriminalistiky pro magisterské studium – I. díl. Aktuální problémy kriminalistické teorie*. Praha: ABOOK s. r. o., 2018. ISBN 978-80-906974-1-6.

² Zákon č. 254/2019 Sb., o znalcích, znaleckých kancelářích a znaleckých ústavech v posledním znění.

³ Čl. 15 písm. a) SIAŘ č.46/2013, kterým se stanoví postup Hasičského záchranného sboru ČR při zjišťování příčin vzniku požárů.

⁴ § 50 odst. (3) a (4) vyhlášky MV č. 246/2001 Sb., o stanovení podmínek požární bezpečnosti a výkonu státního požárního dozoru v posledním znění.

⁵ KVARČÁK, Miloš. *Základy požární ochrany*. Edice SPBI Spektrum 44. Ostrava: Sdružení požárního a bezpečnostního inženýrství, 2005, s. 21-70. ISBN 80-86634-76-0.

the **smoking of tobacco products**, or the discarding of **glowing ends of cigarettes** (hereinafter referred to as “cigarette ends”).

The **destructive process of combustion** is divided into mutually influencing and gradual stages. The first is the **initiation** stage (outbreak, ignition, self-heating), then the **propagation** stage (flame or flameless burning) and the **termination** stage (burnout, inhibition, retardation). Fires gradually go through **four phases** on the timeline. At the beginning of combustion, fires occur as a result of **initiation from an ignition source, and its burning**. The second phase is defined by the **free development of fires**, when a sufficient amount of heat is released and flame combustion spreads. The parameters of fires increase very rapidly. The third phase is defined by **fully developed fires**, when the temperature increases, acting e.g., in buildings on structures affecting their resistance. The last phase is **burnout**.¹

The **amount of air** determines the conditions for the development of fires. For example, in the case of internal fires in buildings, different ventilation options significantly affect the combustion process. Combustion can be perfect, and everything burns completely, or on the contrary there is flameless combustion or incandescence, which is accompanied by a dense development of flammable and explosive combustion products and thermal decomposition products. Due to the lack of one of the basic combustion conditions, the intensity of combustion gradually decreases, including the amount of heat released. However, due to the development of other circumstances, for example when glass falls from windowpanes, a sufficiently large opening can be created for the supply of fresh air.

In cases where the smoke temperature is above the ignition temperature, non-linear fires, called **backdraft, smoke explosion, flashover, or rollover**, may occur. These phenomena are very intense and dangerous, as there are sharp and fundamental changes during combustion.² Offenders may have different intentions and goals, such as causing damage only from combustion products. However, if the above phenomena occur due to the dynamics of fires, significant changes take place, such as the overall ignition of the premises. If an offender intends to completely destroy objects or buildings, then it is better to **start fires in several places, ensuring ideal burning conditions, including high temperatures**. Most fires occur locally in one place, with the exception of intentionally started fires.

Due to the development of computer technology, it is important to mention the **possibility of using mathematical models of fires**. These models **simulate internal fires in buildings**, although they are affected by a number of already mentioned physical and physical-chemical factors. Software tools are used for this purpose, for example for **mathematical modeling of fires** in the field of building safety, but also **mathematical models of fires for reconstruction and investigation**. In this case, the input parameters can be defined relatively precisely, as information from witness statements, intervention reports or PTEs is often available. Their practical use is mainly based on the **knowledge and understanding of the course of fires**,

¹ ŠENOVSÝ, Michail a kol. *Základy požárního inženýrství*. Edice SPBI Spektrum 38. Ostrava: Sdružení požárního a bezpečnostního inženýrství, 2004, s. 3, 163-168. ISBN 80-86634-50-7.

² KVARČÁK, Miloš. *Základy požární ochrany*. Edice SPBI Spektrum 44. Ostrava: Sdružení požárního a bezpečnostního inženýrství, 2005, s. 71-87. ISBN 80-86634-76-0.

the relationship between the amount of heat released from burning fuel and other variables.

It is also possible to create scenarios based on various changes in conditions, which makes it possible to determine how they have affected the dynamics of fires and the development of damage, for example according to the intake of air. Simulations allow us to understand several instances that help FI to identify other contexts, such as the relationship between the development of fires and personal injury or death, or the effectiveness of safety equipment.¹ Modeling is performed within the research projects of the FRS CR, for example modeling of thermal degradation and combustion of wood-based board materials, the validated results of which will also be used within ICF.²

In the framework of **objective findings**, it is **important** for FI to perform high quality and consistent **collection of facts**, as well as to **search the scenes of fires**, which includes **determining the location of the fire, finding the foci, focal symptoms**, especially characteristic evidence in the form of focal cones or various deformations and changes. **Information from witnesses** is important, such as conditions and events that took place at the scene before the fire, including the activities of persons, or the **determination of the time**. **The purpose of determining and verifying scenarios is to determine realistic assumptions about the cause and circumstances of the creation of a fire.**³

Intent as the cause of fire

In many cases, it is very difficult to demonstrate intentional fires or explosions. Often, they **destroy the evidence**. A high degree of latency is identified here, although their number is still rising. The irrefutable fact is that **by their manifestation, fires cannot be completely concealed**. However, a certain **time lag is typical between the perpetrator of the act and the fire itself.**⁴

Arson can be classified primarily as a **public menace CO.**⁵ Violation or endangerment of interests protected by law in the case of such COs can be committed **intentionally** from the point of view of criminal liability, either **directly**, when the offender sought to violate or endanger interests protected by law, or **indirectly**, when the offender was aware that their conduct may cause such a violation or endangering, and in such a case they have understood it.⁶

¹ KUČERA, Petr a Zdeňka PEZDOVÁ. *Základy matematického modelování požáru*. Edice SPBI Spektrum 73. Ostrava: Sdružení požárního a bezpečnostního inženýrství, 2010, s. 14-20. ISBN 978-80-7385-095-1.

² *Technický ústav požární ochrany* [online]. [B.m.]:Výzkumné projekty, 2020. [cit. 6. 12. 2020]. Dostupné z: <https://www.hzscr.cz/clanek/vyzkumne-projekty.aspx>

³ *Zjišťování příčin vzniku požárů*. Díl I. Praha: MV-ředitelství Hasičského záchranného sboru ČR ve vydavatelství FACOM, Jílové u Prahy, 2000, s. 43-75. ISBN 80-902852-1-X.

⁴ PORADA, Viktor a kol. *Kriminalistika. Technické, forenzní a kybernetické aspekty*. Plzeň: Vydavatelství a nakladatelství Aleš Čeněk, s.r.o., 2016, s. 947. ISBN 978-80-7380-589-0.

⁵ Část druhá, Zvláštní část, Hlava VII Trestné činy obecně nebezpečné, Díl 1 Trestné činy obecně ohrožující, § 272 zákona č. 40/2009 Sb., *trestní zákoník* v posledním znění.

⁶ Část první, Obecná část, Hlava II Trestní odpovědnost, Díl 2 Zavinení, § 15 zákona č. 40/2009 Sb., *trestní zákoník* v posledním znění.

Furthermore, a general threat can be committed through **negligence**, whether the offender is **aware** of the fact **or not**. A CO is committed out of negligence if an offender was aware that they may violate or endanger an interest protected by law, but without adequate grounds they believed that they would not cause such a violation or endangering. A CO is also committed out of negligence if the offender was unaware that their conduct may cause such violation or endangering although they could and should have been aware of it considering the circumstances and the personal relations. In cases with serious consequences, it may be a CO **against life and health**,¹ which can be committed both **intentionally** and **negligently**. On the other hand, crimes classified as **insurance fraud**² or **damage to another's property**³ can only be committed **intentionally** and with **direct intent**, as the offender wants to destroy or damage a thing of another and cause damage to other people's property. They want to benefit from insurance fraud by providing false information, in this case about the occurrence of a fire.⁴

The **basic groups** of possible causes of fires are technical or technological defects, negligence, spontaneous combustion under given conditions, the action of natural forces on a flammable assembly and **intentional ignition or induction of a state for the occurrence of a fire**.⁵ A more detailed classification of groups, in addition to those already mentioned, includes fires caused by children under the age of 15, chimney systems or other heaters, the consequences of explosions, handling of flammable substances, or other extraordinary causes, and **uninvestigated fires** not covered by FI.⁶

*Investigation of the causes of fire has its specific features in each of these groups and requires a special approach by investigators. The omission of sometimes even small details can lead to incorrect conclusions and the unfortunate inclusion of these cases in the largest group, i.e., in the group of unexplained and unresolved causes of fires.*⁷

Among the most **typical circumstances indicating arson** is the **finding of two or more foci of fires**, especially those for which the fire could not be transmitted by sparks or easily ignited substances. Furthermore, the **finding of flammable substances supporting the development and spread of fires with the provision of sufficient access to air**, for example by opening windows, and removing objects etc. Places **where fire would not normally spread**, such as the floor below a closet,

¹ Část druhá, Zvláštní část, Hlava I Trestné činy proti životu a zdraví, Díl 1 a Díl 2 zákona č. 40/2009 Sb., *trestní zákoník* v posledním znění.

² Část druhá, Zvláštní část, Hlava V Trestné činy proti majetku, § 210 zákona č. 40/2009 Sb., *trestní zákoník* v posledním znění.

³ Část druhá, Zvláštní část, Hlava V Trestné činy proti majetku, § 228 zákona č. 40/2009 Sb., *trestní zákoník* v posledním znění.

⁴ ŠÁMAL, Pavel a kol. *Trestní zákoník I. Komentář*. Praha: C. H. Beck, 2009, s. 157-190. ISBN 978-80-7400-109-3.

⁵ PEKAR, Vasil Silvestr a kol. *Zjišťování příčin požárů v rámci státního požárního dozoru*. Edice SPBI Spektrum 78. Ostrava: SPBI, 2011, s. 67. ISBN 978-80-7385-107-1.

⁶ *Zjišťování příčin vzniku požárů. Díl I*. Praha: MV-ředitelství Hasičského záchranného sboru ČR ve vydavatelství FACOM, Jílové u Prahy, 2000, s. 15. ISBN 80-902852-1-X.

⁷ PEKAR, Vasil Silvestr a kol. *Zjišťování příčin požárů v rámci státního požárního dozoru*. Edice SPBI Spektrum 78. Ostrava: SPBI, 2011, s. 67. ISBN 978-80-7385-107-1.

raise suspicion. **Findings of lighters**, their parts, or remains. Typical of intentionally started fires is their **occurrence in inaccessible or unnatural places**, or in places normally closed with keys, or their occurrence at a time when the place is abandoned. A possible suspicious factor is also the influence of the weather on the spread of fires.¹

In addition to proven intentionally started fires, it is necessary to draw attention to the fact when there is a group of fires classified in the SSU system as **no longer investigated**. Investigators record them as **fires with basic records**² with the flag “*cause and activity at origin no longer investigated*”.³ In these cases, there will be **no damage to property and no spread of fires, death or injury of persons or a direct threat to them**. As mentioned above, one of the main causes of fires is considered to be **cigarette ends, which in many cases are thrown out of negligence**. In these cases, these are **misdemeanors in the field of PO**,⁴ where FIs have the opportunity to impose a financial penalty.⁵ In the case of proceedings concerning misdemeanors, the procedure is in accordance with the Act on Liability for Misdemeanors and Proceedings concerning them.⁶

If the consequences of the conduct are classified more seriously as a **CO committed through negligence** with regard to the degree of social harm, the procedure is in accordance with the Criminal Code.⁷ This **may be abused in a certain way** by some perpetrators of intentionally started fires, especially those **who think rationally about their actions in advance and consider the subsequent procedure in ICF**. In fact, a minimum number of such fires may be caused by cigarette ends, which is mentioned, among other things, by the following technical information drawn from the literature for the needs of ICF.⁸

Actions of offenders from the point of view of motivation to commit arson

Why do dangerous and intentional COs, which form the subject of the chosen issue, occur in society? What **motivates a person** to light a fire or to start a fire? **Motivation forms the core of the subjective side of individual actions, including criminal ones.** “*It refers to an internal mental process that evokes a certain behavior, keeps it going, and focuses it on a specific goal.*”⁹ **The answer to an offender’s**

¹ HILLER, Josef a František TROJAN. *Zjišťování příčin požárů*. Praha: MV ČSR - škola požární ochrany, 1969, s. 35-37.

² Čl. 2 odst. (1) písm. h) SIAŘ č.46/2013, *kterým se stanoví postup Hasičského záchranného sboru ČR při zjišťování příčin vzniku požárů*.

³ Čl. 8 odst. (2) SIAŘ č.46/2013, *kterým se stanoví postup Hasičského záchranného sboru ČR při zjišťování příčin vzniku požárů*.

⁴ § 17 odst. (1) písm. a) zákona č. 133/1985 Sb., *o požární ochraně v posledním znění*.

⁵ § 78 odst. (1) písm. r) zákona č. 133/1985 Sb., *o požární ochraně v posledním znění*.

⁶ Zákon č. 250/2016 Sb., *o odpovědnosti za přestupky a řízení o nich v posledním znění*.

⁷ Část první, Obecná část, Hlava II Trestní odpovědnost, Díl 2 Zavinění, § 16 zákona č. 40/2009 Sb., *trestní zákoník v posledním znění*.

⁸ KISLINGER, Radek. *Požárně technické charakteristiky a technické informace pro potřeby ZPP*. Praha: Ministerstvo vnitra-generální ředitelství Hasičského záchranného sboru České republiky, 2015. ISBN 978-80-86466-72-9.

⁹ ČÍRTKOVÁ, Ludmila. *Forenzní psychologie*. 3 vyd. Plzeň: Aleš Čeněk, 2013, s. 80. ISBN 978-80-7380-461-9.

motivational questions can be extremely complex and extensive. Motivation does not always have to be strong and may be intertwined. Each personality perceives events around them based on an evaluation by their senses, and reacts to them in a different way. **Thinking as a psychological process significantly influences a person's actions**, whereby they weigh up the individual alternatives, for example whether to **carry out the intended action, delay it, or perform it spontaneously**.¹ The science of the behavior of an individual is based on a system of psychological disciplines, such as psychology or psychopathology.

There is a diverse range of personalities of offenders that can be signs of **mental disorders with reduced borderline intelligence**, where mental characteristics are usually lower than average. In these cases, the **simplicity, thoughtlessness, and straightforwardness of the action** are typical. Such individuals may be executors of other people's ideas, as they are easily influenced by their surroundings, for example in a group of children.² The level of intelligence of offenders is expressed using an intelligence quotient. People with a low degree of mental retardation in the interval of mild retardation commit the most criminal activities. **A weaker intellect results in a disruption of judgement and self-criticism**. In general, however, **average, or above-average intellect is also no guarantee of occasional integrity**. On the contrary, people can abuse their intellect to plan large-scale crimes, while being fully aware of the social impact.³

Furthermore, cases are known from criminalistic practice where the **influence of narcotic psychotropic substances**, especially alcohol or drugs is a significant stress factor influencing the behavior of offenders.⁴ If an offender is **deranged** or has **diminished responsibility**, because at the time of committing the CO they were unable to recognize what they were doing was illegal or control their actions, the law is able to avoid the "classic" type of punishment. This is achieved by imposing **protective measures**, including protective therapy, protective detention, forfeiture of a thing or other asset value and protective education.⁵ However, this does not apply to cases where the CO is caused by the offender, albeit negligently, under the influence of the above-mentioned addictive substances.⁶

Specific cases are **fires started by young people, who spend their free time playing with an open fire**, which is a typical behavior for environments with stored flammable material, such as in a warehouse or on a haystack or in a barn. The word combination of intentionally set fires has been deliberately omitted, as in these cases it is not clear whether juvenile offenders actually intentionally violate or endanger the

¹ ČÍRTKOVÁ, Ludmila. *Policejní psychologie*. Plzeň: Aleš Čeněk, 2006, s. 85-89. ISBN 80-86898-73-3.

² ČÍRTKOVÁ, Ludmila. *Forezní psychologie*. 3 vyd. Plzeň: Aleš Čeněk, 2013, s. 65. ISBN 978-80-7380-461-9.

³ HOLCR, Květoň et al. *Kriminologie*. Praha: Nakladatelství Leges, 2009, s. 65-75. ISBN 978-80-87212-23-3.

⁴ *Zjišťování příčin vzniku požárů*. Díl I. Praha: MV-ředitelství Hasičského záchranného sboru ČR ve vydavatelství FACOM, Jílové u Prahy, 2000, s. 17. ISBN 80-902852-1-X.

⁵ Část první, Obecná část, Hlava V Trestní sankce, Díl 3 Ochranná opatření, § 96 až § 100 zákona č. 40/2009 Sb., *trestní zákoník* v posledním znění.

⁶ Část první, Obecná část, Hlava V Trestní sankce, Díl 2 Tresty, § 47 zákona č. 40/2009 Sb., *trestní zákoník* v posledním znění.

interests protected by law. Therefore, it is probably not intentional activity with malicious intent. However, the conduct of children can be considered the **negligence of adults**, especially parents, if they have neglected or failed to fulfill their obligations established by law¹ regarding the supervision and upbringing of children. Motivation of children to initiate fires can consist, for example, in the **desire to know something new, or to know the effects of fire, to see the intervention of FP units, smoking, learning about the flammability of certain substances, or playing with fireworks.**

These cases are very dangerous, mainly due to the direct threat to the lives of offenders who are unable to respond in time and recognize the emerging danger, and to find an egress route.² **Age significantly affects both the motives and the manner of committing the CO**, including its investigation. The perpetration of juvenile delinquency is influenced, among other things, by maturity, and various social interactions of individuals with their environment, which influences their reaction to situations depending on the age group or generation. In general, the physical aspect of these people prevails over experience, which is often **a reckless and sudden decision made on impulse, under the influence of current circumstances.**³ A person's adulthood is determined by the Civil Code, but **mental maturation is a gradual, long-term, and very individual process.** Minors who have not yet acquired full legal capacity⁴, by reaching the age of 18,⁵ are eligible for legal proceedings of a nature commensurate with the intellectual and free maturity of minors of their age.⁶

Furthermore, the special procedural regulation of the Act on Judiciary in Suits of Youth, which regulates the age of children under the age of 15⁷, who are not criminally liable⁸ at the time the offense is committed, cannot be neglected. Juveniles from the age of 15 to 18⁹ are also not criminally liable for these acts in terms of their criminal responsibility, provided, however, that at the time of the offense they did not reach

¹ Zákon č. 89/2012 Sb., *občanský zákoník* v posledním znění.

² *Zjišťování příčin vzniku požárů. Díl I.* Praha: MV-ředitelství Hasičského záchranného sboru ČR ve vydavatelství FACOM, Jílové u Prahy, 2000, s. 20. ISBN 80-902852-1-X.

³ NĚMEC, Miroslav a kol. *Teorie a metodologie kriminalistiky pro magisterské studium – I. díl. Aktuální problémy kriminalistické teorie.* Praha: ABOOK s. r. o., 2018, s. 154. ISBN 978-80-906974-1-6.

⁴ § 15 odst. (2) zákona č. 89/2012 Sb., *občanský zákoník* v posledním znění.

⁵ § 30 odst. (1) zákona č. 89/2012 Sb., *občanský zákoník* v posledním znění.

⁶ § 31 zákona č. 89/2012 Sb., *občanský zákoník* v posledním znění.

⁷ Část první, Hlava I, Obecná ustanovení, § 2 odst. (1) písm. b) zákona č. 218/2003 Sb., *o odpovědnosti mládeže za protiprávní činy a o soudnictví ve věcech mládeže* v posledním znění.

⁸ Část první, Hlava III, Řízení ve věcech dětí mladších patnácti let, § 89 odst. (1) zákona č. 218/2003 Sb., *o odpovědnosti mládeže za protiprávní činy a o soudnictví ve věcech mládeže* v posledním znění.

⁹ Část první, Hlava I, Obecná ustanovení, § 2 odst. (1) písm. c) zákona č. 218/2003 Sb., *o odpovědnosti mládeže za protiprávní činy a o soudnictví ve věcech mládeže* v posledním znění.

intellectual and ethical development to be able to recognize their dangerousness for society or to control their conduct.¹ A crime committed by a juvenile is a wrongdoing.²

Based on investigated causes of fires and identified **motives in cases of arson**, by experienced FI in cooperation with PCR investigators, who in certain cases also cooperate with specialists or experts in relevant fields in investigating the health of offenders, it is possible to divide the motives of offenders into three basic groups. The first group is offenders with a **premeditated, mostly carefully prepared scenario and a clear target for the attack**. The second group is represented by motives, **as a consequence of various mental disorders or states, momentary stimuli, and impulses**, such as the solution of feelings, depression, or problems. As a rule, these may be people with a **reduced ability to control their conduct, and awareness of the dangers and consequences of their actions**. They start fires aimlessly and rather randomly. The third group consists of other motives that **do not have the features of the previous ones**.³

Premeditated motive, scenario, and objective

Revenge as a motivation can be the result of a conflict between people, where anything can be the cause, such as disagreement, infidelity, envy, or disputes over property.⁴ A typical example is a **quarrel between relatives**, which culminated in a deliberately started fire in a wooden cabin. The offender set the building on fire using a **flammable solvent poured into a can, which they placed under old, unused furniture leaning against a wooden wall**. The fire then spread to parts of the cabin and the roof. The offender addicted to drugs and alcohol was caught by two police service dogs used to pick up a scent and find flammable liquids, which significantly contributed to their detection.⁵

Serial and deliberately started fires were initiated by the **same offender in several parts of a family house**, which they lived in with another co-owner. These were preceded by a small fire in a workshop adjacent to the family house, which the offender reported to the emergency line of PCR. Three working versions were taken into account in the FI, i.e., negligence, smoking, or intentional ignition by an unknown person. A flammable liquid was detected, but its use was not confirmed. The PRC investigator initiated criminal proceedings against an unknown offender, as the version of an intentional fire was determined to be the most plausible. In the second case of the fire initiated inside the family house, the offender first turned on the **gas hobs on the stove** and then started **three fires using a gas lighter, which spread mainly to the attic**. In the third case, they used **engine oil as a combustion accelerator, which they poured out in one of the rooms**. The ignition source was a gas lighter.

¹ Část první, Hlava II, Mladiství, § 5 zákona č. 218/2003 Sb., o *odpovědnosti mládeže za protiprávní činy a o soudnictví ve věcech mládeže* v posledním znění.

² Část první, Hlava II, Mladiství, § 6 zákona č. 218/2003 Sb., o *odpovědnosti mládeže za protiprávní činy a o soudnictví ve věcech mládeže* v posledním znění.

³ *Zjišťování příčin vzniku požárů. Díl I.* Praha: MV-ředitelství Hasičského záchranného sboru ČR ve vydavatelství FACOM, Jílové u Prahy, 2000, s. 16-17. ISBN 80-902852-1-X.

⁴ *Zjišťování příčin vzniku požárů. Díl I.* Praha: MV-ředitelství Hasičského záchranného sboru ČR ve vydavatelství FACOM, Jílové u Prahy, 2000, s. 16. ISBN 80-902852-1-X.

⁵ KISLINGER, Radek. *Vybrané požáry 1.* Praha: Ministerstvo vnitra-generální ředitelství Hasičského záchranného sboru České republiky, 2016, s. 116. ISBN 978-80-87544-37-2.

They opened the windows and then left the house. They also reported this fire to the emergency line of the PCR, stating that a candle was burning in the building, and they suspected an unknown person broke into the building with the intention of setting it on fire. A fault in the electrical installation was ruled out, as the power supply to the building was switched off. The offender confessed to everything under interrogation, **during which they state that they had experience with fires, as they were a member of a VFS unit, so they knew how to make fire spread.** They added that they have **mental health issues and wanted to commit suicide** by hanging or jumping under a moving vehicle. They felt **depressed, which may have resulted in the attack on the building in question**, which they considered to be a **burden on their life**. A criminal prosecution of the person was initiated, with the exception of the offense of attempted damage to a foreign object and the offense of attempted damage to creditors, as they caused damage not only within the co-ownership share, but also to creditors registered in insolvency proceedings.¹

An **arson attack with racial motives**, when the target of the attack is a different ethnicity in the community, is extremely dangerous. In this context, it is impossible not to mention the well-known case of a premeditated attack by a neo-Nazi extremist group. A family house was set on fire by **throwing bottles with flammable liquid**. Not only did the entire building burn down, but three people were seriously injured, including a minor with permanent health consequences. The offenders operating in a criminal organization² were legally sentenced by the judicial authorities to imprisonment for the criminal offenses of attempted murder and damage to another person's property committed as an accomplice.³

The motivation of offenders may be to **cover up other criminal activities**, where the aim is to **destroy criminal evidence**,⁴ such as violent crime or burglary.⁵ Of interest are **ATM fires**, where **an explosive gas from a cylinder, which the offender brought to the crime scene, was used in an attempt to steal cash**. After the initiation of the gas explosion, the equipment was destroyed, and parts thrown around into the surroundings with a small fire. In the second case, an attempted theft was not successful, there was mechanical damage to the equipment, including a small fire in the plastic parts, and damage to the structure of the bank building.⁶

¹ Spis o požáru. *Věc: požár rodinného domu v obci XX, č. p. XX, ev. č. X Příčina vzniku: úmyslné zapálení*. Oddělení prevence HZS Pardubického kraje, Územní odbor XX, 2018.

² NĚMEC, Miroslav a kol. *Teorie a metodologie kriminalistiky pro magisterské studium – I. díl. Aktuální problémy kriminalistické teorie*. Praha: ABOOK s. r. o., 2018, s. 155-156. ISBN 978-80-906974-1-6.

³ Část první, Obecná část, Hlava II Trestní odpovědnost, Díl 4 Pachatel, spolupachatel a účastník trestného činu, § 22 až § 24 zákona č. 40/2009 Sb., *trestní zákoník* v posledním znění.

⁴ NĚMEC, Miroslav a kol. *Teorie a metodologie kriminalistiky pro magisterské studium – I. díl. Aktuální problémy kriminalistické teorie*. Praha: ABOOK s. r. o., 2018, s. 147-148. ISBN 978-80-906974-1-6.

⁵ *Zjišťování příčin vzniku požárů. Díl I*. Praha: MV-ředitelství Hasičského záchranného sboru ČR ve vydavatelství FACOM, Jílové u Prahy, 2000, s. 16. ISBN 80-902852-1-X.

⁶ KISLINGER, Radek. *Vybrané požáry 1*. Praha: Ministerstvo vnitra-generální ředitelství Hasičského záchranného sboru České republiky, 2016, s. 156 a 198. ISBN 978-80-87544-37-2.

An offender deliberately started a fire in a recreational cabin, **which they forcibly entered and then searched**. When trying to **cover their tracks**, they used a powder fire extinguisher, which they sprayed over parts of the cabin. Due the fire extinguisher device not having enough powder for all of the rooms, they used PET bottles with flammable alcohol, which they poured on the bedding in one of the rooms and started a fire. During the interrogation, they stated that they **started the fire intentionally and it was not an accident**, but they **masked the rest of the evidence of the theft**. The offender was detained by the PCR as a suspect. The technical expertise of the IOO excluded a technical defect in the electrical installation of the building.¹

The unidentified motive of an unknown offender was the cause of a deliberately started fire in one of the buildings in a recreational area. To make it **easier to set the building on fire**, the person placed **bedding in the hallway** in the form of pillows, quilts and sheets **connecting the furniture in the room, which** created **certain flammable bridges**. To facilitate the development of the fire, the arsonist used a flammable liquid. Kerosene was detected by chemical analysis. The fire spread to several pieces of bedding, then it **self-extinguished**. A violent entrance was discovered on the floor above the established fire, where the offender apparently escaped after starting the fire. Investigators took into consideration the offender's intention to **improve air conditions** to develop the fire. The recreational area was not in use, as the owner intended to sell it.²

In principle, **insurance fraud** involves conduct where the offender seeks **financial gain from insured property**. These cases often involve the failure of a company or a bankruptcy with the termination of business activities. People use this to resolve defects, which would be expensive to eliminate, and at the same time the damaged items are insured for an amount corresponding to the acquisition value of new items.³ A typical motive can be the deliberate lighting of even two fires in a family house. In the first case, the **offender started a fire in the attic of the house**, while a children's birthday party was taking place. It is possible that due to this, the cause was not determined. **The insurance company paid out the insurance indemnity**. Subsequently, a new insurance contract was concluded, after which another fire broke out. In this case, however, the arsonist was known to the owner for the promise of a financial reward. The second fire occurred during a family celebration, which was attended by both offenders; however, at a certain time they left together with the aim of starting another fire and causing material damage, including further insurance claims.⁴

¹ Fire case file. *Subject: Fire at a holiday cabin, village XX, Record No. X Cause: Intentional ignition*. Prevention Department, Fire and Rescue Service of the Pardubice Region, Territorial Department XX, 2020.

² Fire case file. *Subject: Fire at the central building of a recreational area, Village XX, Record No. X Cause: intentional ignition*. Prevention Department, Fire and Rescue Service of the Pardubice Region, Territorial Department XX, 2008

³ *Zjišťování příčin vzniku požárů. Díl I*. Praha: MV-ředitelství Hasičského záchranného sboru ČR ve vydavatelství FACOM, Jilové u Prahy, 2000, s. 16. ISBN 80-902852-1-X.

⁴ KISLINGER, Radek. *Vybrané požáry 1*. Praha: Ministerstvo vnitra-generální ředitelství Hasičského záchranného sboru České republiky, 2016, s. 36. ISBN 978-80-87544-37-2.

The motives of persons working in PO units, especially members of SDH units or employees of PO units, are mainly based on a **personal reminder of their extraordinary activities, dedication, or bravery, gaining the admiration of the company or other colleagues** from PO units in extinguishing fires. However, it may not be the rule that the offenders are some of the first to actively assist with extinguishing the fire. From the point of view of the psyche, these may be partially mentally disturbed persons.¹

In this context, it is maybe appropriate to state that the fires started by **offenders that are firefighters are not intended to cause any material damage**, as they start them mostly in a natural environment, typically dry grass, straw in a mown field or stubble fields, leaf litter in a forest, waste, abandoned buildings, etc. When determining scenarios, these individual cases are often classified as fires with basic records. However, if there is a series of fires, for example in the vicinity or in a similar environment, the cause of the fire is always further investigated by experienced FI based on an understanding of well-known and suspicious facts.

A typical example is a series of fires around a village. They occurred **regularly at similar times shortly after sunset and on weekends**. The subject of the fires were things and objects of low financial value, such as waste containers, haybales, edges of forests or grass, as well as objects with greater damage, such as a stack of straw or a hay shed. **Easily flammable things or objects were always used such as cord or flammable waste**. The investigation never confirmed the presence of flame retardants. Empty trips to reported fires but where not fires were found were also no exception. **The interventions of the SDH unit** in which this offender operated **increased dramatically** compared to the long-term average.

Another clue was found by an analysis of the participation of members of the SDH unit, which determined that there was **an increase in the activity of a limited number of people, including the most active** members of the unit. Another analysis of FI and PCR investigators consisted in **monitoring the behavior of individual persons in case of fires and checking their activities before the fires were reported**. Two suspects were determined after eliminating suspects, and comparing **sound recordings from the emergency lines of IRS units**.² Subsequently, one of them confessed, but only to two false alarms and four fires. Investigators were unable to prove other cases. The motive for the offender's actions was the above-mentioned **desire for alcohol-enhanced action**. After the case was referred to a judicial

¹ *Zjišťování příčin vzniku požárů. Díl I.* Praha: MV-ředitelství Hasičského záchranného sboru ČR ve vydavatelství FACOM, Jílové u Prahy, 2000, s. 16-17. ISBN 80-902852-1-X.

² Equipment for making audio recordings of all calls is actively used in workplaces for receiving emergency calls. These are archived for a long period of time due to the possibility of repeated playback, possible use in investigations, or as evidence for law enforcement agencies. A sound recording can be the basis for performing a data analysis - forensic audio-expertise, which deals with the identification of persons by their voice or the identification of the environment from sounds that appear in the recording. Expertise is provided by the workplaces of the *Criminalistic Institute of the Police of the Czech Republic*.

authority, the fires stopped. The offender was sentenced to an unconditional sentence with the obligation to attend outpatient anti-alcohol treatment.¹

Personality and behavioral disorders

Perpetrators of intentionally started fires may be affected by **personality and behavioral disorders**, which belong to the group of **mental disorders**. Some of them are a manifestation of the disruption of an individual's relationship with themselves and with society. The basis of this behavior is a desire to destroy and harm. Offenders may also be affected **other mental disorders**, such as people with **excessive aggression**.² Disorders include, for example, mental retardation, severe antisocial personality disorder, or other severe mental or sexual abnormality.³ As a result of the slightest stimulus, they become so excited that they may start a fire. In the case of **mental deviation**, it may primarily be **pyromania**, which consists in the morbid serial starting of fires, where the offender is satisfied with the sight of the flames during the development of the fire and subsequently during their extinguishing.

Sexual deviation, on the other hand, is the cause of pyrophilia in deviants, for whom the sight of fire causes sexual arousal. However, **professional examination** is a long-term matter, where the **aim is to determine and analyze the essence of their actions, the level of self-control and to determine the degree of responsibility for committing a CO**.⁴ Determining mental disorders is the subject of the work of experts and their **expert opinions**. The courts take these circumstances into account when determining liability, and imposing the type and extent of a sentence.⁵ They can also decide on the **incapacity** of people affected by a mental disorder, which is not temporary.⁶ If necessary, they can impose **protective treatment** that will remedy the offender and protect society better than punishment.

A **mentally ill offender**, for whom a mental disorder was not ruled out, deliberately started a fire in an apartment on the 7th floor of a high-rise building. The man poured **flammable bioethanol around the apartment, which then ignited from a burning candle placed on the table**. The offender's wife was badly burned, but refused to testify against her husband, saying it was an accident. The perpetrator also refused to testify, but promised to start **treatment at an alcohol rehabilitation clinic**.⁷

¹ KISLINGER, Radek. *Vybrané požáry 1*. Praha: Ministerstvo vnitra-generální ředitelství Hasičského záchranného sboru České republiky, 2016, s. 136. ISBN 978-80-87544-37-2.

² ČÍRTKOVÁ, Ludmila. *Policejní psychologie*. Plzeň: Aleš Čeněk, 2006, s. 69-80, 168-169. ISBN 80-86898-73-3.

³ Část první, Obecná část, Hlava VIII Výkladová ustanovení, § 123 zákona č. 40/2009 Sb., *trestní zákoník* v posledním znění.

⁴ *Zjišťování příčin vzniku požárů. Díl I*. Praha: MV-ředitelství Hasičského záchranného sboru ČR ve vydavatelství FACOM, Jílové u Prahy, 2000, s. 17. ISBN 80-902852-1-X.

⁵ Část první, Obecná část, Hlava V Trestní sankce, Díl 2 Tresty, § 40 odst. (1) zákona č. 40/2009 Sb., *trestní zákoník* v posledním znění.

⁶ § 57 odst. (1) zákona č. 89/2012 Sb., *občanský zákoník* v posledním znění.

⁷ KISLINGER, Radek. *Vybrané požáry 1*. Praha: Ministerstvo vnitra-generální ředitelství Hasičského záchranného sboru České republiky, 2016, s. 116-122. ISBN 978-80-87544-37-2.

Another example with certain signs of personality disorders involves two offenders who, intentionally **and under the influence of alcohol, started consecutive fires** in several plastic baskets, containers, and dustbins. Their activity, defined by the Criminal Code as a crime of damage to a foreign object, began on the way from the restaurant, when they started several fires with the help of a gas lighter. Under interrogation, none of them was able to state whether they damaged the baskets or not, because they had a black-out. In one case, the fire threatened to spread to a nearby house. It was next to a burning dustbin and the polystyrene insulation was damaged. Other container fires in the neighboring town followed. The offenders stated during the interrogation that they committed the acts under the influence of alcohol, but that they would never do so if they were sober. **Neither of them felt that they had a mental disorder of pyromania leading to arousal.** The motivation was to try to **set something alight on the way home from the restaurant, whether it would catch fire or not**, and then continue home. They also stated that **they liked to light fires in the winter.** In addition to the above-mentioned dustbins, they tried to set fire to trees, whereby the protective plastic covers were burned.¹

Other motives

In these cases, it may be a matter of the motivation of an offender to **cause panic**, to **watch the fire equipment** of the intervening units of the fire brigade or other IRS units, or to **resolve some form of personal failure**. This group also includes people with **suicidal intentions**², where the causes can be very diverse. They depend on a cumulation of various stresses, both congenital and acquired, as well as on uncontrolled stimuli. **The occurrence of mental disorders increases the tendency to do this**, but it is not a condition. It can also occur in completely normal personalities who, for various motivational reasons, decide to resolve their unfavorable to critical life situation in this way.³ Suicide can be caused by mental health problems using so-called harsh methods, such as hanging, firearms, or **self-immolation**.

An example of suicidal behavior is the violent accidental death of a person, where the immediate cause of death was determined by an expert opinion. The motive for the victim's act was probably **amorous reasons in combination with psychiatric illness, obsessive compulsive disorder manifested by compulsive thoughts and anxiety**. The man was professionally treated for the disease. During the last visit to the doctor, he reported a **worsening of his mental condition** due to a breakup with a girlfriend with whom he could not reconcile. The last day before his death he was silent, and in the morning after a night shift he seemed particularly depressed. He then loaded tin barrels and plastic canisters with an unspecified flammable liquid, and two **cylinders containing a propane-butane fuel gas mixture**, into his van and drove to his ex-girlfriend's house, in an area of dense family houses. In front of the house, he started a vehicle fire, **including releasing the cylinder valves**. According to witnesses, **a person got out of the burning vehicle with the apparent aim of the**

¹ Spis o požáru. Věc: *plastový koš, 4 ks popelnic, plastový kontejner. Příčina vzniku: úmyslné zapálení*. Oddělení prevence, HZS Pardubického kraje, Územní odbor XX, 2018.

² *Zjišťování příčin vzniku požárů. Díl I.* Praha: MV-ředitelství Hasičského záchranného sboru ČR ve vydavatelství FACOM, Jilové u Prahy, 2000, s. 17. ISBN 80-902852-1-X.

³ VÁGNEROVÁ, Marie. *Psychopatologie pro pomáhající profese*. 3 vyd. Praha: Portál, 2004, s. 491-496. ISBN 80-7178-802-3.

woman seeing her former partner in flames. The day before the act, the man sent a threatening mobile text message to his ex-partner: *"I'm sorry to write to you, but I can't live without you. Believe what I'm going through in XX alone without you, so I'm giving up, I have terrible thoughts in my head, help me please."*

Before the act itself, he sent another text message: *"Sorry I'm done, I can't live without you. I loved you more than myself, help us."* The violent fire was accompanied by **explosions of tires and several barrels of highly flammable substances**, the traces of which were later identified as **flammable substances of petroleum origin characteristic of gasoline** as part of the results of an expert examination in the field of criminology. Subsequently, the fire spread to an adjacent garage with firewood and further along a local road. No one else was injured. According to the FI, the likelihood of the cylinders exploding was minimized by their valves being released. Nevertheless, if there would have been an explosion, windows of properties in the close surroundings would have been broken. Due to the absence of parked vehicles in the vicinity and the low frequency of people, there was no threat of significant damage to property, or life or health. The conclusions of expert opinions from forensic medicine and toxicology showed, among other things, that the man was not under the influence of alcohol or drugs, except for medication at insignificant concentrations.¹

Similar events have occurred relatively frequently in recent times, such as **natural gas explosions in apartment buildings after the deliberate release of the main shut-off in combination with the spillage of combustion accelerators in buildings** with the subsequent initiation of fires. The consequences of such deliberately started fires are in most cases tragic with several casualties and injuries, including the **destruction of buildings after the explosion**. Offenders are usually killed because, among other things, the fires develop extremely quickly. Those present at the crime scene have almost no chance of escape.

Other cases of otherwise motivated actions of offenders may be intentionally started fires, where information about their origin is given **online on the Internet**. There are various groups on social networks that focus on **monitoring the movement and work of IRS units in the field and providing information about the course of the intervention**. However, they have nothing to do with the official media sources of the IRS units. **The availability of up-to-date information, including "live" broadcasts, photographs, or camera footage of developments at the scene, may increase the viewership of posts on these networks**. Potential offenders monitor the event from a distance, but they can also monitor the progress of the intervention in real time. Examples are serial fires in a seasonal period, such as fires in **mature or cut fields or forests**, where the causes of fires are not objectively determined, resulting mainly from the presence of agricultural machinery or previous work performed at the scene of the fire. The relevant FI or PCR investigators should therefore anonymously use membership in these groups and, in the event of suspicion, analyze these cases. An example is the extensive fire of 53 hectares of mature grain crops, where the cause was not determined. However, internet users were informed about the event shortly after its occurrence, including transmissions from the site.

¹ Fire case file. *Subject: fire in a VW Transporter car and XX in front of house No. XX in XX, XX. Cause of origin: suicidal intent.* Prevention Department, Fire and Rescue Service of the Pardubice Region, Territorial Department XX, 2019

However, these suspicious fires may be related to the motives of persons working in fire brigades, as large-scale fires of this type in most cases involve a large number of firefighters and technicians from the area, including the relevant local SDH units.

Actions of offenders from the point of view of preparation

Starting a fire is preceded by the **preparation of specific conditions** for the **initiation of the fire**, which can be divided into three groups. It is typical for the first group that **no preparation is required**. These fires are started under normal conditions with the concentration of common flammable substances in both indoor and outdoor environments, such as hay, paper, or wood. **Ignition sources are used for their initiation, where a weaker heat impulse is sufficient**. The time interval between the starting and detection of these fires is usually short, as offenders do not have to be too far away from the crime scene. This may not be the case at night or in remote locations. Witness statements, determining the time frame of the movement of people, or a thorough search of the scene of the fire are important for FI.

The second group is defined by certain elements of preparation, where **highly flammable materials from the vicinity are concentrated at the crime scene**. The aim is to **achieve a greater thermal impulse to ignite highly flammable substances or materials, or to achieve a faster and more intense spread of the fire**. The use of flammable liquids with specific combustion effects, such as the color of the flame, the intensity of the combustion, or the color of the smoke, are typical. Offenders may be seen by witnesses in the vicinity. It is possible to find traces of flammable substances on their clothes or stained limbs. Injuries to arsonists may not be an exception, as highly flammable liquids can be dangerous due to their extremely rapid ignition and combustion. Discarded containers or initiators may be found at the scene.

Offenders from the next group bring to the crime scene both **special means and their simple mechanical variants** for creating sparks, or heat sources created by an exothermic reaction from mixing chemicals. **These may cause a delay in the time of ignition of the combustible materials in question**. This may include a lit candle placed away from a highly flammable substance, which initiates a fire with a certain time delay. These special means can be placed at the crime scene at a time when an offender is legally present in the area in question. The fire then occurs later with unusual accompanying symptoms, such as explosions, flashes, or explosive combustion. The place of initiation is chosen so that the fire spreads rapidly with substantial damage or the endangering of human lives.

The last group is characterized by the effort of the offender to **create such conditions that lead to fires starting due to technical defects, negligence, or carelessness**. Fires are typically started near electrical appliances or stoves. In many cases, the offenders are well aware of the local conditions, production equipment or technological processes, or certain shortcomings or conflicts between people. A sign of the action is high social danger, as the actions are prepared in advance with an

examination of the local conditions, often by organized groups, where others provide support to the offenders and their undisturbed activities.¹

Ignition source - glowing cigarette ends

Fires caused by this source of ignition can be considered to be **burning initiated by the smoking of tobacco products, in particular by the action of the glowing end of a cigarette, cigar, or pipe tobacco**. With the development of tobacco products, especially cigarettes, the **ability to ignite has been eliminated** by the production of self-extinguishing cigarettes referred to as "RIP" or "LIP". Since 2011, **all commercially produced cigarettes equipped with a flame retarder** must meet a fire safety standard, which ensures that **unsupported cigarette ends do not burn completely unattended, and their burning should stop**. However, the certainty of this claim is ruled out, as cigarettes burn until they hit this retarder. The correct function of the retarder is significantly affected by environmental influences, such as air flow, the possibility of heat accumulation of flammable substances, or the inclination of the cigarette.²

In order to determine and verify scenarios of the objective causes and circumstances of fires, it is appropriate to state certain facts about discarded and **uncoated cigarette ends**, which **essentially eliminate this cause when examined under optimal laboratory conditions**. Their temperature does **not reach such values that they could cause fires** on a large scale.³ Compared to other selected ignition sources,⁴ it is a **source that reaches incomparably lower temperatures**. The heat output of cigarette ends also does not reach high values.⁵ Research has shown that the parameters of cigarette ends cannot be unambiguously determined, as their burning is affected by several factors. The burnt ash covers the glowing part of the cigarette, as a result of which the exposed material is not fully exposed to the

¹ *Zjišťování příčin vzniku požárů. Díl I.* Praha: MV-ředitelství Hasičského záchranného sboru ČR ve vydavatelství FACOM, Jílové u Prahy, 2000, s. 17-19. ISBN 80-902852-1-X.

² KISLINGER, Radek. *Požárně technické charakteristiky a technické informace pro potřeby ZPP*. Praha: Ministerstvo vnitra-generální ředitelství Hasičského záchranného sboru České republiky, 2015, s. 80. ISBN 978-80-86466-72-9.

³ The temperature of a discarded glowing cigarette is in the range of 220 to 230°C, the temperature of discarded ash is in the range of 80 to 200°C, the temperature of hot carbon is in the range of 325 to 350°C. Zdroj: KISLINGER, Radek. *Požárně technické charakteristiky a technické informace pro potřeby ZPP*. Praha: Ministerstvo vnitra-generální ředitelství Hasičského záchranného sboru České republiky, 2015, s. 80. ISBN 978-80-86466-72-9.

⁴ The flame temperature of a burning match is in the range of 540 to 800°C, the flame temperature of a candle is in the range of 640 to °C, the flame temperature of a gas burner is in the range of 1100 to 1975°C. Zdroj: KISLINGER, Radek. *Požárně technické charakteristiky a technické informace pro potřeby ZPP*. Praha: Ministerstvo vnitra-generální ředitelství Hasičského záchranného sboru České republiky, 2015, s. 100, 124, 131, 143. ISBN 978-80-86466-72-9.

⁵ The heat output of a glowing cigarette is 4-6 W, burning matches 45-80 W, burning candles in the range of 50 to 80 W, crumpled newspapers 17 kW, wooden pallets stored up to a height of 3 meters 7 MW, the value of a gas burner differs according to the type of fuel and construction. Zdroj: KISLINGER, Radek. *Požárně technické charakteristiky a technické informace pro potřeby ZPP*. Praha: Ministerstvo vnitra-generální ředitelství Hasičského záchranného sboru České republiky, 2015, s. 118, 132 a 144. ISBN 978-80-86466-72-9.

heat output, but only a quarter value. This logically does not apply if the hot end is exposed as a result of the burnt part falling off. It can, therefore, be stated that even if the number of fires caused by smoking is not negligible, it is **necessary to create conditions to achieve a flame**. Cigarette ends **do not have sufficient energy potential** to ignite solid materials, such as mattresses, armchairs, or plastics, with a flame. In these cases, **annealing, sintering, or melting occurs**, which, depending on the conditions, may turn into a flame.

The greatest potential of cigarette ends to initiate combustion rests in the **group of cellulosic materials**, especially paper. However, when they are thrown in the dustbin, their contents are ignited in only 1% of cases. The time factor required to ignite hay or straw from cigarette ends is \approx 15 minutes, but at least <8 minutes. Paper has a similar time range. In the case of leaves or forest leaf litter, it is \approx 46 minutes, but at least <12 minutes.¹ The maximum value of cigarette end decay is in the range of 9 to 18 minutes.² From the above information, it follows that it is very unlikely for a forest fire to be caused by a discarded cigarette end, taking into account other circumstances, especially the climatic and meteorological situation, such as drought or wind. The FireRisk website can be a good source for assessing scenarios of a possible cause. The website is run by several institutions, including the *Academy of Sciences of the Czech Republic*. The aim of the website is, among other things, to provide forecasts of fire hazards, risk indication, and prevention of natural fires in the context of the current state of knowledge and conditions of climate change - fire climatology.³

Another interesting fact is that when a cigarette end is thrown into a **flammable liquid or a mixture of flammable vapors with air**, the literature again excludes their easy ignition. In laboratory investigations, burning was not initiated even after discarding a heavily coated cigarette, either directly in or next to the liquid. In this case, the initiation is influenced mainly by the speed of the air flow with the mixture of flammable vapors as the required temperature is increased. Therefore, the conclusion is that the **ignition of flammable liquids or mixtures of vapors with air by a glowing cigarette end is very unlikely**, but is not completely ruled out, which affects many other environmental factors and conditions. Mixtures of flammable vapors with air that cannot be lit by cigarette ends include, for example, acetone, benzene, or ethanol. On the contrary, it is possible to light gasoline vapors if an air flow velocity of $> 5 \text{ m} \cdot \text{s}^{-1}$ is ensured.⁴

¹ The results were obtained from 12-15 tests for each material. The conditions of these tests can be found in the publication *Zündquelle: Tabakglut* Nr. 1.4 Bl. 2 [Ignition source: Glowing tobacco], Unabhängige Brandschutzzeitschrift No. 07 (1991). Zdroj: KISLINGER, Radek. *Požárně technické charakteristiky a technické informace pro potřeby ZPP*. Praha: Ministerstvo vnitra-generální ředitelství Hasičského záchranného sboru České republiky, 2015, s. 120. ISBN 978-80-86466-72-9.

² KISLINGER, Radek. *Požárně technické charakteristiky a technické informace pro potřeby ZPP*. Praha: Ministerstvo vnitra-generální ředitelství Hasičského záchranného sboru České republiky, 2015, s. 80, 116-120. ISBN 978-80-86466-72-9.

³ FireRisk [online]. [B.m.]:Požární riziko, 2020. [cit. 6. 12. 2020]. Dostupné z: <https://www.firerisk.cz/>

⁴ KISLINGER, Radek. *Požárně technické charakteristiky a technické informace pro potřeby ZPP*. Praha: Ministerstvo vnitra-generální ředitelství Hasičského záchranného sboru České republiky, 2015, s. 121-122. ISBN 978-80-86466-72-9.

Concluding remarks

This professional paper contains a brief description capturing the essence of the technical discipline of ICF in the investigation of CO - **intentionally started fires**. Their danger lies primarily in the intentional fault of the offender combined with a direct threat to human lives or substantial property damage. It is a wide-ranging topic with an overlap into several other scientific disciplines. The causes of fires are investigated by members of the FRS CR, who are employed by the SF. **Their specific and narrowly focused activities take place within the framework of predetermined principles and actions, which are essentially unchanged in the long-term**, for example when searching for a fire or when determining and checking scenarios. The procedure is often similar, of course, according to the specific conditions of the fires being investigated. The activities of the FI are close to the general criminalistic principles and investigative procedures of the police authorities, with which members of the FRS CR cooperate very closely in practice.

In the author's subjective opinion, the ICF system is set up very well within the organizational units of the FRS CR, as it includes both a **basic level performed at individual territorial FRS of regions, including regional levels at directorates of regional FRS, and the central level at Mol-GD FRS CR**. The performance of **professional and expert activities under laboratory conditions** cannot be neglected. **Modern equipment** is currently in use at these workplaces, **including the use of the latest scientific methods and procedures**. Due to the fact that the SF is made up of individual organizational units of the state, which are separate accounting units whose revenues and expenditures are part of the budget chapter of the Mol, these budget organizations have certain restrictions in terms of spending funds from the state budget. For these reasons, the possibilities of acquiring further modern and specialized resources and equipment needed for the activities of FI are limited. Nevertheless, **the activities of ICFs are undoubtedly performed very well, by experienced members with many years of experience in the performance of the service**. The valid legal regulations provide sufficient support for these activities in the field of fire protection, including connections to other legislation.

Motivational questions of offenders are very diverse. Both people with **mental disorders and intelligent offenders can act in the chosen area with the clear objective of causing serious consequences or substantial damage**. Juvenile offenders are a separate chapter. According to the literature, as well as practical experience, the **detection of arsonists and the subsequent burden of proof is very difficult, requiring precise procedures in securing evidence**. The fact is that after the fire has been extinguished, in many cases the subjects or objects of the offender's attack are in various stages of damage or destruction, which makes it difficult for investigators to work. The above examples demonstrate a wide range of motivations of offenders, which can be combined with other COs.

The close relation between ICF and **theories of burning, development of fires and other similar issues** is interesting, because **knowledge of the course of burning influences the subsequent investigation**. Their importance cannot be ignored. **Offenders can significantly influence the course of fires, whereby delaying or hiding their actions**. Therefore, knowledge based on general theories and their interrelationships can exclude certain scenarios in individual phases of ICF,

or, conversely, confirm assumptions when intentionally started fires are suspected. The presented paper mentions the issue of fires in enclosed buildings, where it is possible for the offender to prepare conditions, which due to imperfect combustion will cause specific damage, or conversely, may cause the total ignition of the area.

The content of the article mentions the issue of fires, for which the scenario of **smoking** is determined and verified as a possible cause, in the form of a **glowing cigarette end thrown out of negligence**. However, the cause is less probable and in practice **very difficult to prove**, which is based on selected information taken from the literature, the source of which were laboratory tests. A certain fact is that the **starting of fires is affected by several circumstances in specific conditions**. Consequently, offenders can abuse the scenario of a discarded cigarette end, where in most cases the FI only considers this cause, for example in the case of intentional ignition of dry grass, when the fire spreads to a forest stand or a mature field.

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S U M M A R Y

The theme of this work is to briefly describe essential technical disciplines in the field of fire protection - particularly identifying the causes of fires. This is performed under the responsibility of the Fire Rescue Service of the Czech Republic through its members - investigators of fires and in cooperation with members of the Police of the Czech Republic. This is a specific activity, whose main goal is to objectively determine the causes of fires. One of the investigative scenarios is intentionally started fires initiated by offenders/arsonists with different motives and goals. The task of investigators is to detect this intentional criminal activity, using proven principles and actions or modern methods in a timely manner and prepare documents for law enforcement authorities. The danger of their actions lies mainly in intentional fault in combination with a direct threat to human lives or high property damage. This is a wide-ranging topic with an overlap into several other scientific disciplines, especially criminology, psychology, or technical, physical or chemical fields.

Keywords: Fire Rescue Service of the Czech Republic, crime scene, motive, fire protection, mental disorder, collate and provide evidence, arson report forms, deliberate arson, investigation the causes of fires, criminal offences, offender.

RESUMÉ

MATOUŠ, Miroslav: ZJIŠŤOVÁNÍ PŘÍČIN VZNIKU POŽÁRŮ - ÚMYSLNĚ ZALOŽENÉ POŽÁRY

Obsah odborného příspěvku tvoří stručná charakteristika a zachycení podstaty technické disciplíny z oboru požární ochrany - zjišťování příčin vzniku požárů. Úkol je prováděn v gesci Hasičského záchranného sboru České republiky a to prostřednictvím příslušníků bezpečnostního sboru – vyšetřovatelů požárů ve spolupráci s příslušníky Police České republiky. Jedná se o specifickou činnost, kdy jejím primárním cílem je objektivní zjištění příčin požárů. Jednou z vyšetřovacích verzí jsou úmyslně založené fires, které iniciují pachatelé s různými motivy a odlišnými cíli. Úkolem vyšetřovatelů, s využitím v praxi ověřených zásad a úkonů nebo moderních metod, je tuto úmyslnou trestnou činnost včas odhalit a připravit podklady pro orgány činné v trestním řízení. Nebezpečnost jejich jednání spočívá především v úmyslném zavinění v kombinaci přímého ohrožení lidských životů nebo vysokých majetkových škod. Jedná se o rozsáhlé téma s přesahem do několika dalších vědeckých oborů především kriminalistiky, psychologie nebo oborů na technickém, fyzikálním nebo chemickém základě.

Klíčová slova: Hasičský záchranný sbor České republiky, místo činu, motivace, pachatel, požární ochrana, duševní porucha, shromažďování důkazů, spis o zhářství, úmyslně založený požár, vyšetřování příčin vzniku požárů, trestný čin.

Table: Total sum of fires and direct damage in thousands of CZK.¹

	2020	2019	2018	2017	2016
Fires	17 346	18 813	20 720	16 757	16 253
Damage	2 582 299.90	2 216 302.20	2 870 476.40	3 653 115.10	3 378 246.00

Table: Fires according to the cause and activity at origin.²

a) unexplained, uninvestigated

	2020	2019	2018	2017	2016
Unexplained	1 000	1 094	1 196	1 025	1 301
Under investigation	86	176	177	173	211
Unresolved	48	98	120	71	77
Total	1 134	1 368	1 493	1 269	1 589

¹ ISV 5.0 Statistické sledování událostí. Praha: Ministerstvo vnitra-generální ředitelství Hasičského záchranného sboru České republiky, 2021.

² ISV 5.0 Statistické sledování událostí. Praha: Ministerstvo vnitra-generální ředitelství Hasičského záchranného sboru České republiky, 2021.

b) Intentional, children

	2020	2019	2018	2017	2016
Unproven fault	4 103	4 664	5 848	3 996	3 812
Intentional ignition offender determined	141	119	165	130	126
Suicidal intent morbidity, illness	10	21	17	25	19
Children to 15 years of age	126	145	169	160	143
Intentional ignition offender not determined	823	950	990	994	1 097
Total	5 203	5 899	7 189	5 305	5 197

c) Negligence - selected categories

	2020	2019	2018	2017	2016
Smoking	1 074	1 402	1 705	1 264	1 104
Starting fires in nature and on landfills, burning grass	1 934	1 968	1 728	1 266	947
Improper use of flammable liquids and gases	46	58	69	50	50
Use of open fire for illumination, creating heat, etc.	269	256	245	288	259
Unspecified negligence cannot be unambiguously determined	318	411	347	342	373
Total for the categories of negligence	5 582	5 945	6 077	4 917	4 432

Table: Fires based on selected ignition sources.¹

	2020	2019	2018	2017	2016
Spirit lamps, small burners	7	2	10	6	7
Cigarette end	222	267	351	198	256
Unexplained initiator	3 782	4 609	5 587	4 108	4 240
Candle	13	16	15	20	19
Fireworks	66	71	57	38	49
Match, lighter	1 469	1 658	2 012	1 672	1 752
Open flame - heating and bonding of insulation materials and coverings	0	1	0	2	1
Sources of sparks - mechanical, chimney, ash, heater, exhaust, etc.	50	54	58	64	43
All detected ignition sources , including electrical or spontaneous combustion	6 333	7 266	8 677	6 562	6 777

¹ ISV 5.0 *Statistické sledování událostí*. Praha: Ministerstvo vnitra-generální ředitelství Hasičského záchranného sboru České republiky, 2021.

