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PREVENTIVE CAMPAIGN AGAINST GAS RELEASE AND FIRE IN THE CZECH REPUBLIC

Abstract: *Three serious accidents connected to gas releases happened in the territory of the Czech Republic during 2013. Six people died in them, dozens of people were injured and the damages amounted to more than 4 million euro. These accidents were the stimulus for the establishment of the preventive campaign. Its aim is to explain to people the risks in their homes, especially the threats of dangerous gas and fire, and to suggest protective measures. The preventive campaign is realized by the Czech Fire Officer Association, which is a constituent of the Federation of the European Union Fire Officer Association, and in collaboration with the Fire & Rescue Service of the Czech Republic. As part of the campaign, a website has been created as a comprehensive base of information for both laymen and experts. Other steps have been taken gradually. The objective of these steps is to boost awareness in the population of the Moravian and Silesian Region as well as other regions in the Czech Republic.*

Key words: preventive campaign, gas release, fire.

INTRODUCTION

Every day at least one emergency connected with dangerous gas release is resolved in the Czech Republic. There is no harm or human death in most of these emergencies, but they are still very dangerous and they can have a serious impact on the lives and health of people as well as on their property. Another important threat to the population is house fires.

Four emergencies that happened in the Czech Republic last year can be considered as examples of the impact of dangerous gas release on the life and health of people and property.

Gas explosion in Frenštát pod Radhoštěm

One resident of a block of flats intentionally set the gas on fire in Frenštát pod Radhoštěm on February 17th, 2013.



Figure 1. *The effects of the natural gas explosion in Frenštát pod Radhoštěm [1]*

This man had purposely damaged the gas pipeline, and when the explosive concentration had been reached, he lit it. The explosion damaged the house construction. To make it impossible for the residents to escape, the man had blocked the entrance door. As a result of this explosion, 3 adults and 3 children died. Another 20 people were injured and more than 50 people had to be evacuated. The damage exceeded 365,000 euro.

Gas explosion in Prague

Another serious accident connected with gas release occurred in Prague on April 29th, 2013. 43 people were injured, approximately 240 people were evacuated and the total damage exceeded 3.5 million euro.



Figure 2. *The damaged house after the gas release in Prague [2]*

Gas explosion in Havířov

On September 15th, 2013, there was an explosion of natural gas in Havířov. One flat in the block of flats was totally destroyed, nearly 30 people were evacuated and the damage was calculated to 365,000 euro.



Figure 3. The damaged block of flats after the gas explosion in Havířov [1]

Gas explosion in Ostrava - Martinov

The last of the chosen emergencies happened in Ostrava-Martinov on February 5th, 2014. In the detached house there had happened to be a gas release and later the explosion of this gas. This explosion claimed one human life and caused damage of nearly 30,000 euro.



Figure 4. The ruins of the detached house destroyed by a gas explosion [1]

METHODS

It is evident from the previous examples that gas release and house fires are serious problems. A lot of attention has to be paid to this issue. By the initiative of the Czech Fire Officer Association and some of the Fire & Rescue Services of the Czech Republic (the Fire & Rescue Services of the Moravian and Silesian Region and the Fire & Rescue Services of the Olomouc Region), the following steps have been taken:

- establishment of a work team and initiation of work on the preventive project,
- analysis of statistical data which are connected to the resolution of the problem,
- determination of the main and secondary aims of the project,
- determination of the resolution process and preparation of materials,
- realisation of the project, monitoring of the achieved results.

The preventive project was realised in accordance with the principles of general project management. The following stages are included in this management: initiation, planning, monitoring, controlling and conclusion. The project was started in the beginning of the year 2013. Now the project is in the stage of monitoring and controlling. The conclusion of the most important project works is expected in the end of 2014.

Project work team

The work team is formed of 13 members of the Fire & Rescue Service of the Czech Republic and its structure is presented in Figure 5.



Figure 5. Structure of the preventive project's work team

Statistic data of gas releases and fire threats in homes

Although the number of deaths during emergencies connected with gas releases in homes can be numbered in individuals each year and the number of injured and rescued mostly in dozens, the number of the evacuated is already in the hundreds and thousands. Details are evident in appendix 1 and figure 6.

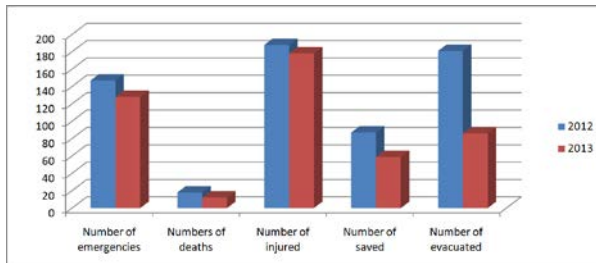


Figure 6. Number of emergencies, dead, injured, rescued and evacuated persons during dangerous gas releases in homes in the Czech Republic [3]

Attention has been paid to the impacts of house fires, too. Although the number of house fires accounts for „only“ 18% of the total number of fires during the period from 2008 to 2013, their effects are alarming. The number of deaths in fires of residential buildings is 41%, compared to deaths in fires for other reasons. The number of people injured during house fires amounts to nearly 52% of all people injured in fires in the Czech Republic. For details see Appendix 1, Figure 7 and Figure 8.

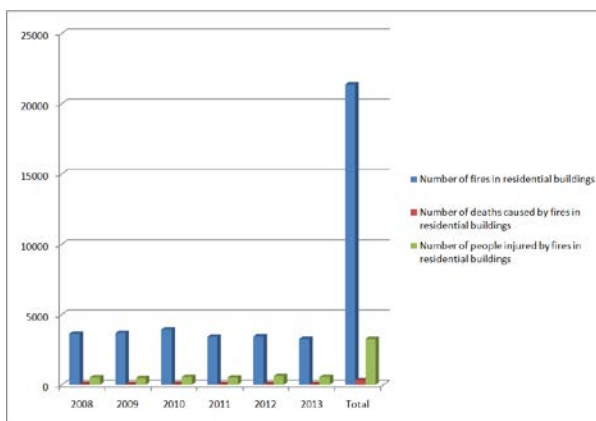


Figure 7. Number of fires in residential buildings and deaths and injuries caused by them in the Czech Republic [4]

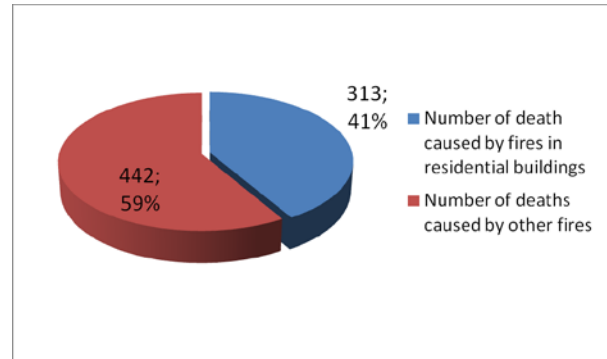


Figure 8. Ratio of people killed in house fires to other fires [4]

It can be seen that the effects of gas releases and fires are a cause for alarm.

Main and secondary aims of the project

The main aim of the project was to inform the public about threats in homes and the possibilities of protecting against them. This aim has been accomplished by creating an information portal for both the general public and experts in the field of civil protection. The secondary aims included accompanying measures by which the precautionary information has been spread to the public, authorities of state administration and local administration as well as to businesses.

Resolution process and preparation of materials

Basic information had been given in the internet portal (see figure 9) of the Czech Fire Officer Association (www.cahd.cz).

The internet portal covers 4 elementary fields:

- hazardous gas,
- prevention information,
- detectors,
- preventive materials.

The internet portal of the preventive campaign gives its users two options for how to access information about the campaign: in the menu on the left side of the portal or directly by clicking on the banner on the right side of the portal. This banner is marked with a detector symbol and title “Kampaň k detekci plynů a požárů”. [5]

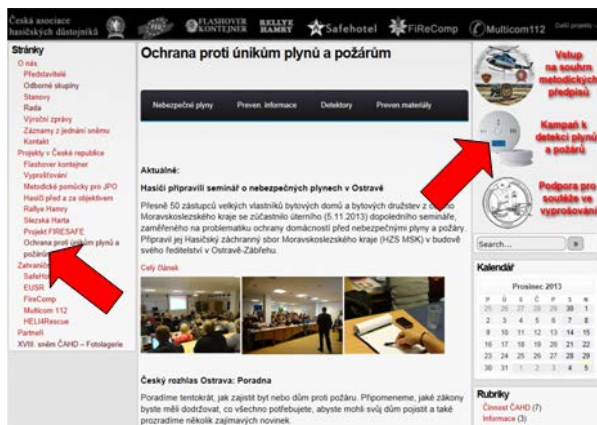


Figure 9. Internet portal for the preventive campaign [6]

The field of *hazardous gas* describes the characteristics of dangerous gases commonly used in homes. Four dangerous gases were chosen by the work team. These gases include natural gas, propane-butane, carbon monoxide and burning fumes.

The *preventive information* contains statistic data related to the problems described above, preventive information about gas and electric appliances, checks and inspections and other means of ensuring safety. There is a part dedicated to chimneys as well.

In the field of *detectors* are presented types of gas detectors and fire detectors, plus their basic characteristics. There are also examples of these devices given. Instructions for the correct installation of gas and fire detectors can also be found here.

Preventive materials represent a set of helpful guides that are useful for owners, keepers and residents of flats, municipalities and experts in the field of fire protection. These materials provide information for reducing risks in homes and the importance of detection devices.



Figure 10. Pictures of some preventive materials [6]

REALIZATION OF THE PROJECT, MONITORING OF THE ACHIEVED RESULTS

The internet portal of the Czech Fire Officer Association is the tool by which the preventive information can efficiently be spread further. In some regions of the Czech Republic the following activities were performed in order to deliver the preventive information to the public. They included the following activities in particular:

- delivering preventive information to all districts, municipalities and selected residential fund keepers (e.g. housing associations),
- information for the public advertised in public transport (leaflets in trams and buses),
- holding seminars for housing association keepers,
- presentations of the project on television and radio broadcasting and in the press,
- using social networks for the project presentation.

The most widespread social network in the Czech Republic has been used for the publicity of our preventive campaign. The social network concerned is Facebook. All prevention-related materials and current events are published on Facebook in the field of civil protection and fire protection, too. The actual internet portal of the campaign is also posted there.



Figure 11. View of the Facebook profile of the Czech Fire Officer Association [7]

In February 2014, public awareness was reviewed by a survey held as part of the preventive project. Monitoring awareness was used as an evaluative method applied in subsequent stages of the project.

CONCLUSION

On the basis of recent tragic events which happened because of dangerous gas releases and with regard to some statistic data, a preventive campaign has been run in the Czech Republic. The aims of this campaign are to inform the public about problems connected with dangerous gas releases and house fires and to provide information about the possible ways of protecting against such threats.

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Appendix no. 1

SELECTED STATISTIC DATA CONNECTED TO GAS RELEASE AND HOUSE FIRES IN THE CZECH REPUBLIC

A summary of data showing the number of dead, injured, rescued and evacuated persons during events connected to dangerous gas releases in the Czech Republic is presented in Table 1.

Table 1. A summary of data showing the number of dead, injured, rescued and evacuated persons during events connected to dangerous gas releases in the Czech Republic [3]

Year	Number of solving events	Number of death persons	Number of injured persons	Number of saved persons	Number of evacuated persons
2008	412	12	24	6	485
2009	401	1	19	29	271
2010	405	3	45	19	779
2011	441	2	73	31	223
2012	147	18	188	87	181
2013	128	12	178	59	86

A summary of data showing the numbers of people killed and injured in house fires in the Czech Republic and their percentage rate is presented in Table 2.

Table 2. A review of the number of people killed and injured in house fires in the Czech Republic and their percentage rate [4]

Year	Number of fires	Number of death persons	Number of death persons intended for living	Number of fire of the buildings intended for living	Number of death persons in the fires of the buildings intended for living	Number of injured persons in the fires of the buildings intended for living
2008	20946	142	1109	3628	53	525
2009	20177	117	980	3681	52	476
2010	17937	131	1060	3935	53	560
2011	21125	129	1152	3410	50	518
2012	20492	125	1286	3434	54	618
2013	17105	111	1189	3256	51	558
Total	117782	755	6776	21344	313	3255

BIOGRAPHY

Jiří Pokorný graduated from the Technical University of Ostrava in 1992. He completed a postgraduate course in the programme of Fire Protection and Industrial Safety in 2002. From the year 2005 to 2010 he was the Moravian and Silesian Region Fire and Rescue Service Prevention Department Director and



in 2011 he was appointed to the position of Assistant Director for Prevention and Civil Emergency Preparedness, operating under the Fire and Rescue Service of the Moravian and Silesian Region. In 2013 he graduated from CEVRO Institute in Prague by completing a Public Administration Master course.

Pokorný, PhD, cooperates in the pedagogical, research and publication field with the Faculty of Safety Engineering at the Technical University of Ostrava. He is the author of 4 monographs and more than 80 contributions to national and international periodicals and conferences. He is the investigator or co-investigator of 3 research projects.

Pokorný, PhD, is a member of the work group Fire Safety of Tunnels, established by Ministry of the Interior of the Czech Republic. He is also a member of the Czech Highway Association, highway tunnels section, the normalization committee TNK 27 Fire Safety of Buildings and the editorial council of Journal 112, a professional journal for fire protection, integrated rescue system and civil protection.

PREVENTIVNA KAMPANJA PROTIV ISPUŠTANJA GASA I POŽARA U REPUBLICI ČEŠKOJ

Jiří Pokorný, Danuše Kratochvílová

Rezime: Na teritoriji Republike Česke tokom 2013 godine dogodile su se tri ozbiljne nesreće povezane sa ispuštanjem gasa. U nesrećama je stradalo šestoro ljudi a na desetine je bilo povređeno, dok je materijalna šteta iznosila više od 4 miliona evra. Ovakve nesreće su podsticaj za početak preventivne kampanje. Cilj kampanje je se ljudima ukaže na rizike u njihovim domaćinstvima, a posebno na opasnosti od gasa i požara, kao i da se predlože mere zaštite. Preventivnu kampanju realizuje Češko udruženje vatrogasaca koje je sastavni deo Federacije Evropskog udruženja vatrogasac, u saradnji sa službom Vatrogasno spasilačkom službom Republike Česke. U okviru kampanje, napravljen je web sajt koji je sveobuhvatna baza informacija za stručnjake iz ove oblasti ali i za ostalo. Ostali koraci se odvijaju postepeno. Cilj ovih koraka je da povećaju svest populacije koja živi u moravske i silezijske regije i ostalih regiona u Republici Češkoj.

Ključne reči: preventivna kampanja, ispuštanje gasa, požar.