

THE METHODS OF PUBLIC DEFENCE WARNING AND INFORMATION AND ITS TECHNICAL AND PERSONAL EXECUTION**A LAKOSSÁGVÉDELMI RIASZTÁS-TÁJÉKOZTATÁS ÉS MÓDOZATAI, VALAMINT TECHNIKAI ÉS SZEMÉLYI KIVITELEZÉSE**

In today's period of peace beside the running lifestyle few attribute importance to the fact that our everyday life and security of our material essentials also depend on the existence of the warning system of the civil population and the knowledge of the possible used signs. The author of the essay provides an overview about civil warning systems that can still be found today, but are considered as memories of the old times and gives a summary of the state of the art technical solutions and methods which may be worthy successors in this key area of public defence. Furthermore we will get an overview on a public warning and notification system which is essential in case of emergency or in case of a disaster. In addition we will have an insight into the operation of the public administration which is responsible for the public defence warning system in the scope of the established regulations and the applicable legal provisions.

A mai békeidőszakban, a rohanó életvitel mellett kevesen tulajdonítanak jelentőséget annak, hogy a mindennapi életünk és anyagi javaink biztonsága a lakosságriasztó rendszerek meglététől, az azok esetleges használata során alkalmazott jelzések ismeretétől is függ. A szerző a dolgozatban áttekintést ad a napjainkban is megtalálható, de régmúlt idők emlékét őrző lakosságriasztó eszközökről, valamint azokról a korszerű technikai megoldásokról és módszerekről, amelyek méltó utódként foglalhatnak helyet a lakosságvédelem e kulcsfontosságú területén. Mindezek mellett áttekintést kapunk egy veszélyhelyzet, illetve katasztrófaesetén megvalósuló – lakosságra vonatkozó – figyelmeztető és figyelemfelhívó rendszer fontosságáról. A fentiekén túl betekintést nyerhetünk a tanulmány tárgyát képező polgári védelmi riasztás hatáskörével felruházott közigazgatási intézmények működésébe a kialakított szabályzatok és a vonatkozó jogszabályi előírások tükrében.

INTRODUCTION

In the event of an emergency, warning of the population in time is one of the basics of survival. This is a socially expected legitimate demand, which is why it has become more and more the responsibility of the community's leadership. The more, well organized was a warning chain, the more it served the interests of the community. The new threats and challenges appearing these days declared and demanded numerous forms and methods of defence. Besides, instructing and inviting the public for defence is still an important factor together with informing them about the situation and the actions which were taken by the authorities and the right type of behaviour. Multitude of tools provided for this purpose are out of use at the moment, but still in standby mode which also reflects the all-time preferential status of preparations for defence and the lasting constant public preparedness. In this article I will give an overview of the warning and information equipment's appearance, history and usage. I will examine the changes in the field of civil defence until nowadays with the tasks of the responsible authorities of public warning and information and theirs scope of

authority. Furthermore I will present the range of the state of the art equipment and methods which are in use for public warning.

EVOLUTION OF PUBLIC DEFENCE WARNING AND INFORMATION SYSTEM

After the Hungarian conquest, until the end of 19th century bell tolls was the generally accepted warning system that could mean the presence of foreign forces (military warning), and floods, or even the breakout of epidemics (disaster management warning).

Although the real differentiation only appeared after the end of the First World War, at the end of the 20's and the beginning of the 30's. This was the time, when most of the European countries formed the first permanent air raid bodies, due to the development of air warfare. The set-up of the air raid bodies took place in different ways. The establishment of civil organizations based on the masses of citizens was almost parallel to the creation of centrally controlled government authorities. After the lost First World War and the internal conflicts, the establishment of air raid organizations and the declaration of its framework in Hungary was defined a few years later compared to the leading European countries. [1]

On the basis of the above, with the Act No. XII. 1935., the official air raid defence law was born. The Decree No. 15/1936. of the Minister of Defence, which was called "Air Raid Defence Order" was passed to implement the above. [2] The law stated foremost that all Hungarian citizens from the age 14 to 60 are under the commitment of the air raid defence. The risk and defence classification of towns, villages and the most important agricultural and industrial plants became the authority of the Minister of Defence. The Air Raid Defence was defined by two distinct trends. On one hand, the centrally organized civil defence by the countries' authorities in accordance with the criteria of public administration, while on the other hand, organizations formed on a voluntary basis, out of the civil population. [3]

Hence the concept, duties and management structure of air raid defence was properly defined. The National Air Defence Command was established, which was led by the Air Defence Commander, through whom the Minister of Defence indirectly controlled the air defence duties. The heads of the nation of that time imagined to mobilize and inform wide range of the society within the framework and with the cooperation of the Air Raid League which was established in the winter of 1937. The League was a grass-roots social organization, which was built up corresponding to the country's administrative barriers, based on the division of the counties. Its duties included the comprehensive preparation of the population and the social support of authority duties. Based on the recommendation of the Air Raid League "signalling tools" (manual siren, sinkongató – rail clanger) had to be installed in the courtyard of the tenements, which were rapidly growing in number. With the development of the technology, the bars, which were hanged onto carpet dusters (called sinkongató) disappeared from the courtyard of tenements. These iron bars, which were once essential accessories of the warning chain and the defence system, are now only memories of a bygone age. When a playful child sounded the carpet duster, the caretaker of the tenement shortly appeared. The caretaker was responsible for the operation of the alarm system, which warned the inhabitants if any unexpected event occurred. [4] On the main squares or at large intersections in the countryside, sirens (electrical sirens) and loud speakers (public) can still be found, which are essential elements of the warning chain.



Figure 1 : Loudspeaker and siren

Source: <http://biztonsagpiac.hu/wp-content/uploads/2012/09/szirena.jpg> (2013. 07.09)

The most important stage in the life of the air raid defence was that when the organization has been declared as an armed corps and the rankings of their servicemen were accepted by the Ministry of Defence. In May 1951 the first military corps of the Air Raid Defence Battalion was formed. The National Defence Council in its decision dated 12 February 1959 ordered every head of state, social and economic organizations to duly execute all duties related to passive air defence. The organization structure of the air raid defence also strictly conformed to the country's public administration and management of the national economy. The 1962 Cuban missile crisis sped up the Hungarian army's innovation and development. Air raid defence received a higher amount from the central budget. The main reason for that was that from the 1st November 1962, the National Defence Committee of the Government allocated the entire scope of duties and the whole organization from Ministry of Inner Affairs to the Ministry of Defence. The quick decision was justified by the need to concentrate all the challenges of defence against nuclear weapons in one hand in order to coordinate organizations responsible for this field and to ensure effective enforcement of the national defence requirements. Under the supervision of the Secretary of State of the Defence Ministry there were qualitative changes in several crucial areas. The supply of the bodies with special technologies and equipment became faster and further scheduled expansion of the Air Raid Defence was developed. The changes and the propositions were declared formally in 1964 in Presidential Council Regulation No. 1., which ordered that thereafter the name "Civil Defence" should be used instead of "Air Raid Defence", which fully expresses the purpose and nature of the new activities. The comprehensive definition of civil defence is dated from this point.

In the decade of 1963-72, the Hungarian civil defence not only made up for the fallback, but has successfully reached the protection level of the leading member states of the former Warsaw Pact. At that time this level nearly reached the level of protection of the NATO member States. The regulation of the duties of the civil defence and the protection against disasters are the competence of the all-time Government.

The all-time Secretary of State of Internal Affairs is responsible for managing the civil defence and the implementation of its tasks. In the event of a disaster the Secretary of State shall notify the organizations responsible for disaster management in writing. [5]

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The disaster management organization of the Ministry of Internal Affairs nowadays is divided into a national competence body, the Directorate General of National Disaster Management and regional organizations. Their members are professionals, officers and public servants.

County directorates are regional bodies, under which the civil defence offices operate as local bodies. The local preoperational activities are the competence of the mayor. In the event of an alarm, the hierarchy and coordination of the various bodies and the overlapping of responsibilities and competencies could also cause delays or other problems. Not perfectly clear communication can also be the source of similar problems. For instance at the time of the 2013 spring flood, on several locations it was not allowed for the locals to support the rescue operation because of the lack of their previous registration, therefore the rescue participants had to work harder and more. Those, who wanted to help the rescue operation however uncomprehendingly watched the situation. [6]

Devices included in the warning system in Hungary are the following:

- Centralised alarm devices:
 - Hungarian Television - MTV1
 - Hungarian Radio - Kossuth Radio
- Local alarm devices and emergency alarm tools:
 - Electronic siren
 - Hand held siren
 - Megaphone system
 - Steam whistle
 - Tolling (the bells)
 - "Rail clanging" (for reference see Figure 3.)
 - Bell
 - Horn [7]

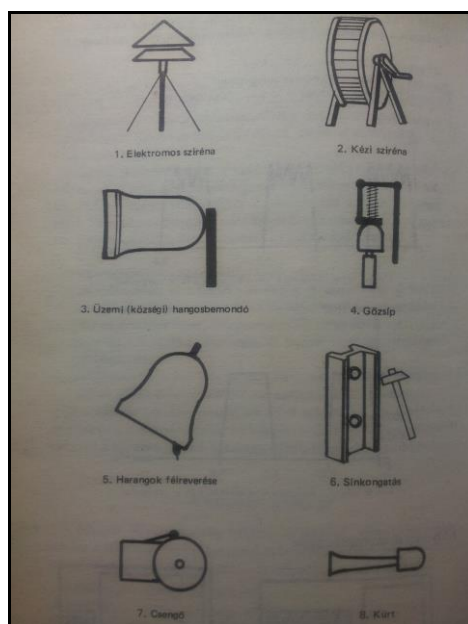


Figure 3 Local alarm devices - Dominic East-Hitesh Iad-great-Rieszal-Dr. Somos:- Defense knowledge, Zentai (a textbook publisher, Budapest, 1988, p. 314).

In addition to the devices and tools listed above, the modern technical achievements can be used to protect the population, such as the short message service (SMS) and online social networking sites (Facebook, Twitter, LinkedIn, Vkontakte etc.). With the spread of smartphones, corresponding to the needs of modern society, a direct, unmistakable message can directly be sent to the population about an unexpected event. However, due to the difficult and complicated verification process, it is more suitable for scaremongering and misinformation, which might aggravate the existing situation in an unexpected way. [8]

Today, the condition of the existing siren system reaches the adequate level, however, the operability and reliability is only partially verified. Due to the local government's management and the constraints, most of the elements of the community warning systems are more than 30 years old.



Figure 4: Szentes City's main siren which was sounded after 23 years (Performance 5 kW)

Source: http://www.delmagyar.hu/ma_felbog_szentes_foszirenaja/cikk/214/2130069/2.jpg (2013. 07.10)

A special problem is the damage caused by metal and cable thieves. The situation is similar to the railway's level crossing barriers; stealing one piece of the equipment could cause the whole system to crash. In this case, replacements are often late, because the defect is revealed only at the mandatory annual system maintenance. Currently, criminals damaging public protection systems do not get charged by the responsible courts for their threat to society, but for the financial aspect of the crime. As a result, the sentences do not have sufficient deterrent effect (only fines, in most cases), therefore the public protection systems will continue to be exposed to activities of criminals. In most cases, not the warning system itself is being purloined, because of the difficulty of conversion into money, but the connected metal power cables. Of course, the improvement of technology brings the modernization of the alarm systems and the development of the technical background as well, corresponding to this, the need to establish the new legal background has emerged, which is in line with the EU's harmonization efforts.

In the recent years it has created problems that the municipal authorities could not or did not want to spend for the maintenance of the State owned sirens, but the 2011 measures made it clear that the mayor is responsible to ensure the functionality of the warning devices and that county and district security committees are to prepare for the defence-related tasks including to ensure the existence of warning and information tools.

RELATING LEGAL REGULATIONS AND SIGNALS

The current legal background is provided by Act No. 128 of 2011 on disaster management and certain amendments of relating acts, supplemented by Government Decree No. 234/2011 (XI.10.) on the implementation of Act No. 128 of 2011 on disaster management and certain amendments of relating acts. Decree of the Ministry of Defence No. 23/2005 (VI.16.) and Decrees of the Ministry of Inner Affairs Nos. 43/2011 (XI.30.), 49/2011 (XII.20.), 62/2011 (XII.29.) constitute an organic part of the legal background.

1. § The scope of the decree covers:

- a) the Directorate General of National Disaster Management of the Ministry of Inner Affairs (hereinafter: BM OKF),
- b) the directorates of county disaster management and the Directorate of Capital Disaster Management (hereinafter jointly: directorate),
- c) the agencies of disaster management (hereinafter: agency),
- d) the organisations of civil protection,
- e) the body established in order to fulfil general police tasks,
- f) the organisation of the penitentiary,
- g) the Bureau of Constitutional Protection,
- h) the National Security Service, and
- i) the Centre for Counter-terrorism. [9]

It is important to examine and divide into two parts the regulation system. It should be considered, on the one hand, from a legal point of view on a legal thematic basis, and on the other hand, from a (state)administrative point of view, on the basis of state functions. The distinction is indeed required by the principle of division of powers. According to this division, the warning of the civilian population is partly regulated by the Act on Disaster Management as part of the administrative law, within the law enforcement administration. The legislator establishes the legal framework. Parallel to this a system of inner security function of the state exists, within which the state endeavours to maintain and to have respected the domestic legal order. The activity of implementing bodies. Each municipality should be equipped with sirens or loudspeakers that can be used to alert or inform the civilian population. The sirens are most commonly used in the case of threat of air raids (not typical), and in the case of the occurrence of a disaster.

It is another question yet strictly related to this matter that due to the lack of systemic training, those youngsters who have already not fulfilled a military service can only partially interpret the sound signals evident for the elder generation. Between the two warnings there is a difference that can be well heard. In the case of air raid warnings, a siren sound of 30 seconds can be heard at altering pitches repeated three times with a 30 second pause in-between. This is repeated three times.

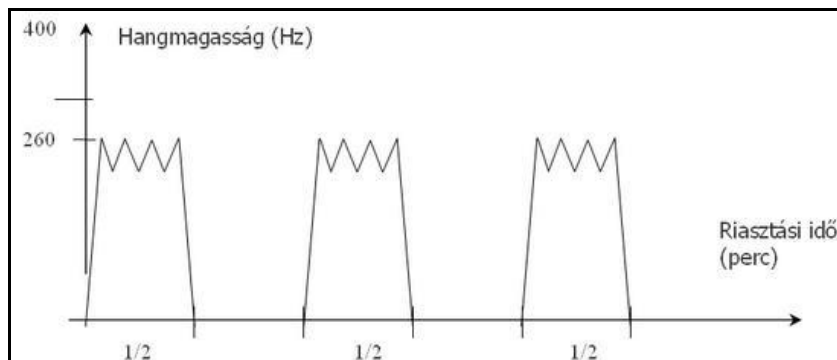


Figure 5: Siren sound

forrás: http://bacs.katasztrofavedelem.hu/cms_files/content_703.jpg (2013. 07. 11)

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In the case of disaster alerts, a continuous siren sound of 120 seconds can be heard at altering pitches.

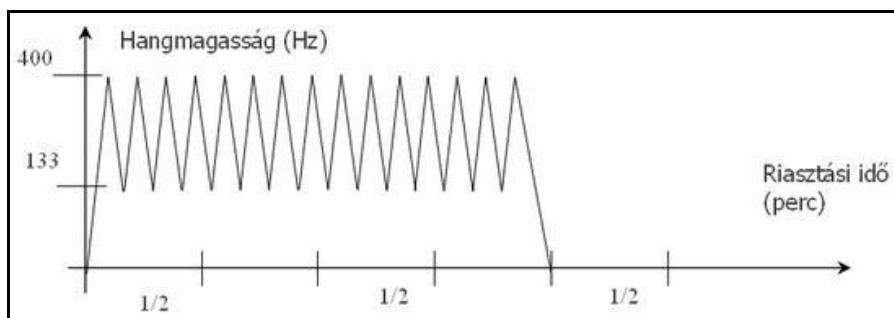


Figure 6: Siren sound

forrás: http://bacs.katasztrofavedelem.hu/cms_files/content_704.jpg (2013. 07. 11)

The warning is over: The end of the disaster and air raid warning is signified by a siren sound of 30 seconds at a uniform pitch repeated twice with a 30 second pause between the warnings.

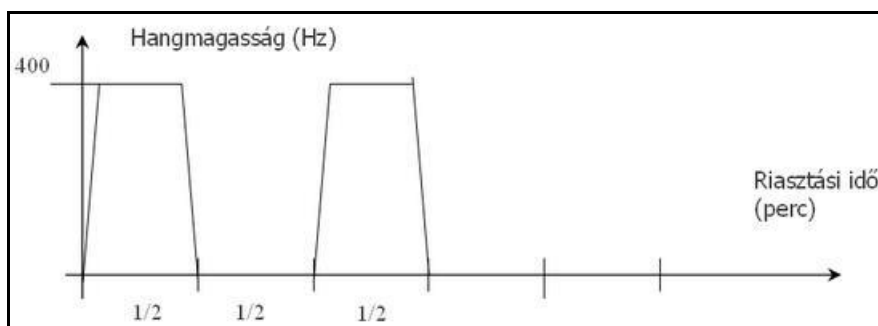


Figure 7: Siren sound

forrás: http://bacs.katasztrofavedelem.hu/cms_files/content_705.jpg (2013. 07. 11)

In addition at special localities individual systems can be established. Within the 30 km zone of the Nuclear Power Plant of Paks an Information and Warning System for Civilian Population (LTRR) has been built up which - in the case of malfunction of the power plant threatening the civilian population not only alerts but provides oral instructions, information and orders concerning the tasks to be carried out. In everyday life the competent self-governments can use the system in a so-called "town crier operation mode" in order to announce their messages. Thus the system is available in the case of any local threat for the purposes of quick and accurate information and alert. The testing of the operability of these tools is performed on the first Monday of each month, if it is a working day. The testing can be a "grouler" testing, i.e. a rising sound signal of 6 seconds, or a loud testing. "Full" testing is when the testing includes a 'disaster warning' signal and an 'alert is over' signal, and verbal communication. During testing verbal communication can be heard: "Attention, this is a test" before the signal, and "Testing is over" after the signal.

Besides the electronic sirens and warning-information systems the alerting of the civilian population can be performed by involving the public radio and television stations (M1 and Kossuth Radio). [7]

The technical tools referred to above can also be used (SMS, Internet). The negative side of these technical possibilities

is that the service providers are not state-owned. Thus the enforceability of the implementation can be a source of problems.

In the case of the "snow-chaos" during spring 2013 it has been revealed that there are service providers who - with reference to economic or other reasons - refused to transmit the warning to be sent to their subscribers.[10]

The basic methods of warning and informing the civilian population in emergency situations:

1. primarily by divulging a communication of public interest, in accordance with the provisions of the Act on Media Services and Mass Communication,
2. by means of the civilian population warning system for civilian population,
3. when the technical conditions are in place, by having recourse to electronic communication services,
4. as locally normal (loudspeaker, messenger-courier, posters),
5. by other locally available means appropriate for alerting and divulging information in emergency situation, such as hands free devices appropriate for live speech broadcasting of law enforcement bodies and private individuals, and manual hands free devices,
6. by simultaneous use of the means indicated in points 1 to 5, if appropriate and possible.

The communication of public interest shall be divulged with the content issued by the central organ of the official body for disaster management, transmitted by the by the central organ of the official body for disaster management via a closed-circuit communication channel. No derogation is allowed.

The textual communication shall include in particular:

1. the exact date and place of the occurred event
2. the probable impacts of the event
3. the extent of the caused impact
4. the probable period in time of the generated impact
5. the rules of conduct to be followed
6. the additional information possibilities

The person responsible for ordering the disaster warning:

1. in the case of a threat covering the country or more counties the minister responsible for protection against disasters via the central organ of the official body for disaster management, by subsequently informing the Government,
2. in the case of a threat covering a county or the capital the president of the county, capital protection committee via the regional body of the official body for disaster management, by subsequently informing the minister responsible for protection against disasters,
3. in the case of a threat covering a municipality the mayor via the local body of the official body for disaster management, by subsequently informing the president of the county, capital protection committee,
4. on the site of a business organization the leader of the business organization by simultaneously informing the mayor and the local body of the official body for disaster management.[11]

In Hungary the warning and informing the civilian population in emergency situations is largely determined by the system of air raid warning established, the legal background of which is provided by Government Decree No. 290/2011. (XII. 22.) on Home Defence and the Hungarian Defence Forces, and Chapter XIII of the Government Decree on the implementation of certain provisions of Act No. 93 of 2011 on the measures that can be introduced in special legal order. The Decree states that our country, as other states, shall operate an alert and information system for the event of a possible air raid in order to protect human life and essential property. This should be organized in such a way that the system be capable to alert people throughout the whole country and by cooperating with the integrated air defence

system of other states and NATO. On the basis of the amendment contained in Section 10 of Government Decree No. 267/2013. (VII. 11.) the warning of the civilian population can be ordered and ended by the person appointed by the general director of the BM OKF, whereof the air force commander of duty shall be informed".

Pursuant to Government Decree No. 290/2011. (XII. 22.) the Media Services Support and Asset Management Fund (hereinafter: MTVA) shall take charge of the divulgence of communications concerning air raid warnings (regarding their ordering or ending) via public service broadcasting channels, by interrupting the broadcast if appropriate.

Within the system of the National Disaster Management the air raid warning is signified by a siren sound with a pitch ranging from 280 Hz to 400 Hz of 30 seconds repeated three times, the ending of the air raid warning is signified by a siren sound of 30 seconds repeated two times with a pitch of 400 Hz. Additional tasks of the bodies and persons involved in the execution of the air raid warning are set out in Sections 72 to 80 of the Decree.

FACTORS AFFECTING THE SELECTION OF THE METHOD AND INSTRUMENT OF WARNING

Disasters can be categorized based on different aspects. The classification can be based on the nature, scale, amplitude, effect and method of prevention of the disaster. This also has an effect on the choice of the method and instrument of the warning.

By territorial coverage:

- International scale – nuclear disaster (Chernobyl) – international cooperation is necessary to avert, eliminate and subsequently prevent the disaster.
- National scale – spring "snow-chaos" – local forces are not sufficient to manage the problem; reinforcements have to be provided from other sources. National cooperation is needed.
- Regional scale – major forest fire – local forces can only isolate the problem, remediation and total resolution can only be achieved with support from other sources. Heavy impact on the country's economy – in the first two cases the foundations of the national economy is threatened.
- Local scale – fire on an industrial site – local forces are able to manage the situation, personnel and technological conditions are adequate, intervention is not required. Society and economy is not shaken.

By character:

- Absolute disaster – very severe natural disaster or war.
- Moderate disaster – serious natural disaster, cooperation required.
- Relative disaster – situation can be stabilized or managed by self-effort. [12]

According to the law, communities should be categorized, based on the defined risk levels. Based on to the rules laid down in the 2nd annex of the 21-24 paragraph of the Government Decree No. 234/2011. (XI. 10.) (hereinafter: Decree), Hungary's communities should be grouped in disaster management classes ranging from I-III. The classification should be made using risk assessment, taking into account the complex analysis of the factors endangering the community. Afterwards, the adequate defence level should be determined corresponding to the vulnerability, which is defined by the planning, organization, management and intervention activities needed to secure the material goods necessary for sustenance. A component of the defence level is warning. The planning of financial instruments in the government budget corresponding to the defence requirements of the communities is ensured by the secretary of state responsible for disaster management. The rules of classification and the adequate requirements for each defence level are defined in the 2nd annex of the Decree.

The deadline for classification:

For the first time, mayors had to prepare a classification proposal according to the Decree until 30 July 2012. The classification proposal is then revised by the chairman of the county or capital defence committee with the contribution of

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the regional disaster management body and with the agreement of the chairman of the county general assembly or the Lord Mayor in the capital and with the assistance of the leader of the central disaster management body, it is introduced for approval to the secretary of state responsible for disaster management until 30 September 2012. As of 1 January 2013, the mayor of the community, with the assistance of the local body of the disaster management is to perform the risk assessment of the community by 30 September each year and offers a proposal for classification to the county or capital defence committee chairman. The chairman of the county or capital defence committee, with the contribution of the regional disaster management body reviews the proposal for classification and with the cooperation of the central disaster management body introduces it for approval to the secretary of state responsible for disaster management.

- I. defence class – communities:
 - a) directly threatened, within the 3 km radius of a nuclear reactors and 1 km radius of research reactors,
 - b) threatened by plants covered by the IV. chapter of the 2011. CXXVII. act (hereinafter: Kat.) concerning disaster management and the amendment to the related acts and are bound to prepare an external defence plan,
 - c) class I. defence level according to the risk assessment of threatening factors and placement in risk matrix under point b) of the 2nd annex of the Decree,
 - d) combined and interacting effect of the individual hazard factors justifying the increased defence of the community.
- II. defence class – communities:
 - a) indirectly threatened by nuclear reactors (within 3-30 km range),
 - b) threatened by plants covered by the IV. chapter of Kat. and are not required to prepare an external defence plan,
 - c) class II. defence level according to the risk assessment of threatening factors and placement in risk matrix under point b) of the 2nd annex of the Decree.
- III. defence class – communities:
 - a) threatened by hazardous materials originating from plants not covered by the IV. chapter of Kat.,
 - b) class III. defence level according to the risk assessment of threatening factors and placement in risk matrix under point b) of the 2nd annex of the Decree.
- IV. defence class – communities, which are outside the 30 km range from the frontiers and are not categorized to higher defence levels. [11]

According to the regulations, in case the Civil Defence sirens are sounded, the below rules are to be followed:

- Returning home on the shortest possible route, windows and doors to be locked. Pets, domestic animals to be locked in a covered place.
- People travelling with a vehicles should drive to the nearest inhabited community. Vehicle should be parked safely ensuring that it does not obstruct traffic and rescue activity and find shelter.
- People working or present in establishments should follow the instructions of the responsible management. Use of escape routes!
- Prepare for possible evacuation.
- Listen to MR1 radio or watch MTV1 channel for further information and instructions.
- Listen to the megaphone news bulletins of the disaster management (Civil Defence) and the police.

The success of the warning also depends on the ability of the population to interpret them. According to the Decree of the Ministry of Inner Affairs No. 62/2011 (XII.29.), the governors of the communities and the population should be prepared concerning:

- a) local risk factors

- b) disaster management classification of the community
- c) disaster management plan
- d) disaster management system
- e) rules of employment of local Civil Defence organizations
- f) competence of first-degree Civil Defence authority
- g) **informing and warning of the population** and
- h) knowledge of distant defence (e.g.: evacuation). [9]

The preparation of the population, including the usage of the warning devices, decoding its signals and the importance of cooperation is a critical part of civil defence.

FORECAST SYSTEMS

The currently operational forecast systems, which are to prevent threat and disaster situations are crucial part of the warning and information strategy, which aims to protect the life and material goods of the population. These structures are indirect, but indispensable factors of prevention in providing the connection between the population and the bodies authorized for warning. Currently, in Hungary, there are several forecast systems in operation, which differ in their functions and character out of which the most significant are the following:

MOLARI – MoPoWA SYSTEM

The basic function of this system is the immediate warning and information of the population affected – based on localization – in case of serious industrial accident of hazardous plants. Its main is prevention and together with this, to increase the sense of security of the population. The denomination comes from the Monitoring and Population Warning system. The establishment of the system was justified by our commitments to the European Union and the tasks related to the SEVESO II directive. The regulation dealing with defence against severe industrial accidents came into effect with 1 January 2002. Until 2013, the OKF established this system around 20 dangerous industrial sites (in 9 counties and in the capital). The three main components of the system are: monitoring and meteorological endpoints, communication and telecom systems and warning and information endpoints. [13]

STORM WARNING SYSTEM

On the Lake Balaton, Lake Velence, Lake Tisza and Lake Fertő (Neusiedl), a storm forecast and storm warning system is operated from 1 April until 31 October each year. Its operation is regulated by the revised Decree of the Ministry of Inner Affairs No. 46/2001. (XII. 27.). Beside the above mentioned the code of conduct in case of storm warning is regulated by the Navigation Rules, which is the annex of the Decree of the Ministry of Economy and Transport No. 39/2003. (VI. 13.). The notification of the storm is provided by identical luminance and colour lamps installed on the shore, which flashes with different frequency depending on the intensity of the storm. Utilizing the most recent technologies, it is possible to prevent or avert the threatening effects of the storms. The BM OKF in cooperation with the National Association of Emergency Radio and Infocommunications (hereinafter: RSOE) has developed a system, which provides a constantly accessible information source about the current storm situation over a smartphone application (internet access is necessary). Furthermore, an insurance company provides a service to its clients in which they are sending a text message about the expected dangerous meteorological events, one or two hours in advance of the occurrence together with a loss prevention advice. [14]

NATIONAL RADIATION MONITORING WARNING AND CONTROL SYSTEM

According to the Government Decree No. 167/2010. (V. 11.) about the national nuclear incident-prevention system, a National Radiation Monitoring Warning and Control System (hereinafter: OSJER) is operated in Hungary. This system is a national environmental radiation monitoring network, which is built up of nearly 70 deployed automatic telemetric stations (external radiation dose monitoring stations) of the Radiological Telemetry Network, Network of Stationary Laboratories and Network of Mobile Radiological Laboratories. Its tasks include the monitoring of radiation on a national level, the establishment of necessary radiation protection measures to maintain the living and working conditions of the population, to protect material goods and to aid the nuclear incident prevention activities, furthermore the control of accuracy of the incoming notifications and warnings of the telemetric stations and the investigation of their cause. Additionally it provides the basis of the warning and notification of the National Nuclear Incident Prevention System based on its corresponding operational status and the information of the involved operational bodies. [15]

SUMMARY

The research concluded that the different population warning devices installed in the last century are still found in many places; however, we do not have clear and confirmed data confirming if their operability. In many cases, these devices are obsolete, became the victim of some kind of abuse, or simply, due to being unutilized, they became dysfunctional. In the new age, new kinds of threats are mostly caused by the industry, expansion of economy, evolution of technology and renewable energy sources. Overall, we can draw the conclusion that the methods of preparation and defence are likely to adapt to the changes, however, we may only be certain about their operability in a real-life situation. Furthermore, the averting and elimination of the harmful effects of a potential disaster or emergency situation could prove prevention to be the most effective method. For this purpose, the most efficient method is the appropriate and timely warning and information of the population. In case of disaster or emergency situation, the most important factor is to communicate the warning to every citizen within the shortest time and in a clear message. For this reason, it is always necessary to choose the most appropriate method and instrument. For the effective operation of a well-established population warning structure, it is indispensable that the people involved are aware of the meaning of the signals and the subsequent measures and behaviour patterns to follow. It can be concluded that by regular practice – within artificially induced emergency situations – the highest and most effective level of preventive reaction can be achieved. The modern system of the civil defence aims to exploit our time's technological achievements, the mobile phone, and internet, focusing on safety and defence. In order to deliver the information provided by the presented forecast systems, the innovative solutions and possibilities of telecommunications are to be used. We can already find examples for this in many places, however, for common utilization, it is necessary to inform the target audience and to promote their usage with free publications. The effective use of civil defence warning and information systems can only be accomplished by the replacement (with new devices) and renewal of obsolete equipment along with organized drilling in induced test-situations, together with the continuous information of the public and the transfer of necessary knowledge.

Keywords: warning, passive air defence, civil defence, signalling system, siren

Kulcsszavak: riasztás, légtalalom, védelem, jelzőrendszer, sziréna

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