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IMPROVING FIRE SAFETY IN SCHOOLS

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Summary: *In order to build a resilient society, it is necessary to implement the integrated disaster risk reduction in each community. Appropriate knowledge and skills are necessary to implement disaster management individually. This paper focuses on the reduction of fire risks in school. Also outlined is the use of the risk assessment cycle to be used during the process of preparedness. This provides a way of selecting measures to control and manage fire risks as a product of the likelihood and impact of the risk identified. It provides the basis for understanding the needs for risk reduction. It then outlines how to minimize the growth and spread of the fire thus allowing pupils and staff to leave safely.*

Key worlds : *preparedness, fire risks, reduction, schools .*

UNAPREĐENJE BEZBEDNOSTI POŽARA U ŠKOLAMA

Rezime: *U cilju izgradnje fleksibilnosti društva, potrebno je sprovesti integrisano smanjenje rizika od katastrofe u svakoj zajednici. Odgovarajuća znanja i veštine su neophodne za sprovođenje individualnog upravljanja u vanrednim situacijama. Ovaj rad se fokusira na smanjenju rizika od požara u školi. Takođe, istaknuta je upotreba ciklusa procene rizika koji će se koristiti tokom procesa pripravnosti. To obezbeđuje način odabiranja mera za kontrolu i upravljanje rizicima od požara, kao proizvod verovatnoće i uticaja identifikovanih rizika što daje osnovu za razumevanje potrebe od smanjenje rizika. Na taj način omogućujemo đacima i školskom osoblju da smanji rast i širenje požara i bezbedno napusti školu.*

Ključne reči: *priprema, opasnost požara, smanjenje, škola*

1. INTRODUCTION

There is a need to place emphasis on the topic of fire/disasters because we have personnel, social and organizational responsibilities in ensuring that our schools, organizations and country are safe from such danger. Fire risk mitigation refers to all actions taken to reduce the negative effects of future events on the built environment and human community. However, even if personal fire experiences and public information programs enhanced this awareness as compared to that of pre disaster times, it has not yet led people to take

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necessary actions to cover the reduction of long term risks. As a result, in high seismicity regions in case of a catastrophic event that isolates the community could cause great losses due to the lack of public preparedness and self-sufficiency. Therefore for schools and communities, implementation of action plans for the reduction of fire risks have paramount importance in savings of human lives and major losses.

Fire safety and disaster risk reduction are included in disaster education. On the other hand, Macedonian disaster education is different from this approach. Their approach to disaster education is holistic approach. It includes all type of hazards, thus it should be called not disaster education but risk education or safety education.

2. COMPREHENSIVE SCHOOL SAFETY

While planning for disaster safety of a school, the various phases of disaster management can be considered as: non-disaster time, before disaster, during disaster and after disaster. All activities for reducing the effects of disaster should be taken up when there is no disaster. Also, awareness raising, skills training and mock drills will be done at this stage. Activities before disaster will include checking all equipment and tools and keep them ready for quick response, and decisions to be taken such as declaring closure of school when a cyclone warning has been issued. When a disaster happens, the activities such as responding to the disaster by evacuation of students from the buildings will be taken. After a disaster, the safety and care of students and sending them to their homes will be the activities.

According with Protection and rescue law article 76, measures and activities for protection of the lives and property of the population from fires include elimination of causes of fire, fire detection, containment and extinguishing, establishing of causes and providing first aid as part of the activities for eliminating the consequences of the fire. State administration authorities, local self-government units, trade companies, public enterprises, institutions and services are obligated to possess appropriate fire protection devices and installations, fire fighting equipment, fire extinguishers and assets in accordance with the prescribed standards. Fire can start anywhere. Accidental fires can start when faulty over-heating equipment is in contact with combustible material. Explicit risk assessment uses the formula: $Risk = \Sigma frequency \times consequence$ Where the summation sign applies to all hazards or scenarios.

The main objective of the school safety activities is Risk Reduction. This will include mitigation and preparedness activities and preparing a disaster management plan for the school to respond the event effectively. A community-based disaster management approach is followed, involving the following steps:

- * Raising awareness of disaster related issues among the targeted stakeholders (students, teachers, school management, guardians and others) through various methods of lectures, discussions, posters, drama (street play) and demonstration;
- * Identifying and listing hazards and vulnerabilities outside the school;
- * Identifying structural and non-structural vulnerabilities inside the school;
- * Identifying and listing ways of reducing vulnerabilities;
- * Identifying the roles and responsibilities of various stakeholders;
- * Training teachers on how to prepare a school evacuation plan, building emergency response capacity, focusing on skills such as search and rescue, fire safety, and

first aid (training provided to student groups); and Preparing Disaster Management Plan for the school;

- * Listing the contact information of all responder and resource agencies for emergency management;
- * Conducting emergency evacuation mock drill, to practice and demonstrate the evacuation, rescue, fire safety, and first aid skills acquired by the students;
- * Promoting sustainability of risk education through various ways such as Safety Clubs, newsletters, etc;

Defining a fire with places of special fire hazard- high risk areas

Computers and other equipment can impose heavy demands on the electrical system. Wiring, plugs and sockets that are overloaded or in poor condition are a fire hazard. The risk of overloading sockets can be a particular problem in winter if supplementary electric heaters are used. Electrical equipment should be switched off when not in use unless it is designed to be permanently connected. A blown fuse should only be replaced after the cause of its failure has been discovered. It should always be replaced with a fuse of the correct rating and never with a fuse of a higher rating or a makeshift fuse from a length of wire. Procedures should be in place for the regular testing and inspection of electrical circuits and portable equipment.² Before using any electrical equipment, it is important to visually inspect it for damage. This inspection should include checking: the cables leading to the equipment for fraying and other damage, the plugs and sockets for cracks, missing parts, the correct use of a current protection device, and the casing of the equipment for damage and exposed wiring. Flammable material should not be kept in electrical switch rooms or boiler houses and care should be taken to ensure that any materials stored in switch rooms do not obstruct access to the switchgear. All combustibles should be kept well clear of electrical equipment and switchgear. There are other specific areas that, whilst not falling into the category of special hazard, nevertheless would benefit from particular measures to enhance property protection. These areas include ICT rooms: Corridors and circulation spaces; and Temporary and re locatable accommodation.

Fire risk assessment

Any fire risk assessment should reflect the day to-day use of the school as well as its design. Risk assessment, either implicitly or explicitly, is a key part of building safety engineering. The final design of the building will present a way of dealing with the risks in a particular school, which have to be addressed during the life of that building. The risk assessment should not only examine the chances of an incident occurring but also the potential consequences of that incident, ie, the likelihood and impact assessed together. It is important to match the right risk assessment method to the decision to be made. Implicit risk assessment examples include the comparison of calculation results with threshold criteria, eg, 'smoke layer well above people's heads' or 'area of fire spread restricted to less than X m²'; often these are linked with 'worst case' scenarios. The idea is that 'worst' and lesser scenarios have minimal consequence (once remedial or protective measures have been taken), with other more severe scenarios being assumed to have minimal probability. However, which scenario will be 'worst case'? Conservative assumptions for one aspect of the fire 'system' might not be conservative at all for other aspects. A sensitivity analysis

² *Maintaining portable and transportable electrical equipment. Health and Safety Guidance HS(G)107*

should be performed to estimate the consequences of uncertainties in the scenario, variable values, etc.

We have identified a need to develop preventative measures to reduce the risk of fire to school. Fires put lives at risk and have financial implications to our community. The occurrence can be reduced and its effects controlled if you identify potential threats and take action to reduce the risks. You can carry out risk assessment on your school or place of work.

We strongly encourage you to consider risk assessment program, and to integrate risk reduction strategies with your risk management plan. This fire prevention strategy toolkit is designed to help all those involved in fire prevention and community safety to work as effectively as possible. This toolkit brings together information on fire prevention and reducing the risks of arson. It includes tools for identifying problems, developing responses and implementing treatments to ensure the community is a safer place.

Disaster Risk Reduction refers to the conceptual framework of elements considered with the possibilities to minimize vulnerabilities and disaster risks throughout a society, to avoid (prevention) or to limit (mitigation and preparedness) the adverse impacts of hazards, within the broad context of sustainable development.³

Fire Prevention.

The Fire Prevention Strategy is a program about prevention and awareness in identifying high risk locations and putting in place treatment options to reduce the risk of fire from occurring. There are four main strategies that can be implemented either as a stand alone or in combination with each other, depending upon the issue. Prevention Plan provides a broad outline and basis for the implementation of strategies, but should incorporate the fire assessment and safety checklists as these provide the detail to the strategy.

- Reducing vulnerability - this strategy involves community education for residents, business owners/ managers and educational facilities. It encourages the community to take some ownership of the problem.
- School visits combining local resources such as Police Force, and/or the Fire Brigades and/or Rural Fire Service

Protection and rescue plan and fire notices

All schools are required to have an emergency plan. This should include the actions to be taken by staff in the event of a fire, evacuation procedures and arrangements for calling the fire service. In order to familiarise both staff and pupils with the evacuation procedure it is recommended that a fire action notice should be conspicuously displayed in every occupied room informing occupants:

- how to raise the alarm if they discover a fire,
- action to be taken on hearing the alarm,
- escape routes to the assembly point,
- the location of the assembly point.

³ Sustainable development is defined as "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs". UN Department of Economic and Social Affairs, Division for Sustainable Development (available at www.un.org/esa/sustdev)

The last two points may usefully be illustrated on a plan of the school. The age and ability of pupils; use of the school by the community who will be less familiar with the buildings, and the needs of speakers of other languages, should be taken into account when preparing the notices. In workshops, laboratories, craft areas and kitchens it might be appropriate to display fire prevention notices as a reminder to check that, at the end of lessons, equipment is switched off, electric plugs removed from sockets and gas supplies isolated where appropriate. All fire doors, smoke control doors and designated fire exit routes which need marking as a result of a fire risk assessment, are required to be identified by means of signs complying with the Health and Safety (Safety, Signs and Signals) Regulations.⁴ The objectives of fire safety training are:

- to make everyone aware of the importance of fire safety,
- to ensure competence in the school evacuation procedures,
- to provide staff with a knowledge of basic fire fighting.

General training

Very few people have experienced a fire and the feeling of panic that it can cause. Training can overcome this to some extent. It should stress the importance of keeping fire doors shut at all times. Every pupil and member of staff should receive training in:

- * general fire prevention
- * action to be taken if they discover a fire
- * how to raise the alarm
- * action to be taken on hearing the alarm
- * location of escape routes and assembly points
- * evacuation and roll call procedures
- * Staff training
- * Members of staff should also be given training in:
 - o the operation of the fire alarm control panel
 - o the procedure for alerting the fire service
 - o the location of firefighting equipment
 - o the use of firefighting equipment
 - o the arrangements for the safe evacuation of disabled staff and pupils
 - o stopping machinery
 - o Liaising with the fire service on arrival.

In large schools it may not be necessary to train all staff in the use of firefighting equipment, but a sufficient number of trained staff should always be present when the school is occupied. All staff should know what hazards the fire extinguishers cover and the dangers of using the wrong type of extinguisher in areas of special risk, such as on fat fires in kitchens and on electrical or chemical fires. Staff should also be given training in directing, and if necessary, guiding members of the public to a place of safety and checking that they are all out of the building. This process is greatly assisted by an access control system, which requires members of the public to sign in and out of the premises. The fire service may provide training in the use of fire fighting apparatus, such as extinguishers. Some fire services may also provide practical courses on fire safety for fire safety managers

⁴ *Health and Safety (Safety Signs and Signal) Regulations 1996. SI 1996 No 341, HMSO and Guidance Regulation L64, HSE Books 1997*

and head teachers.

3. CONCLUSION

In order to create a fire resistant society, which minimizes the damages of a tremor or other disaster, everyone from individuals to all decision-making parties should prepare ahead. We provide detailed design will usually enable the school to satisfy the requirements. Formal requirements for life safety are covered by national legislation (Building Regulations) and supporting technical guidance with respect to fire. A degree of property protection is an implicit consequence of the measures necessary to protect life. However, protection measures that will satisfy insurers will generally be more onerous in some aspects. It is the intention of this article to address both the life safety needs and the property protection needs at the same time. This dual approach will allow designers to tailor their strategy to the location, use, and risks identified.

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