HANDBOOK ON EMERGENCY PROCEDURES

DISASTER RESILIENCE

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HANDBOOK ON EMERGENCY PROCEDURES

Chapter 1: Introduction

Willem Hekman (The Netherlands)

ICMS in short

Created in 1974, ICMS (International Committee for Museum Security) is an international committee under ICOM representing museum security professionals.

ICMS has the following aims:
- To support the aims and objectives of ICOM, in particular with reference to museum security
- To formulate and carry out a program of activities related to museum security
- To provide a forum for communication, cooperation and information exchange between museums, professional museum workers and others concerned with museum security
- To provide advice to ICOM on museum security and be a source of professional expertise to assist in the implementation of ICOM's program
- To represent the interests of museum security within ICOM
- To cooperate with the National Committees and Affiliated Organisations in matters related to the Committee's specific mandate and to the broader interests of ICOM

Change

The world is changing and, with it, our way of thinking, whether we like it or not. 'Catastrophic terrorism' is just one of the issues, along with increased crime rates and environmental problems, that make us feel unsafe and aware of the potential dangers which surround us.

The way we used to protect our cultural heritage, with a primary focus on protection, is no longer sufficient. There are more risks that endanger our heritage than ever before. We are forced to increase security measures in a much more sophisticated way than we would like. Therefore, it is necessary for professionals in the field of art and art security to communicate with each other and to learn from the issues at hand. The aim is to ensure that the security organisation is an intrinsic and integrated part of the entire organisation of your museum. However, it is not a security issue alone. It is a key issue for the whole museum: it involves staff, visitors, collections, the registration of the collection items, financial data, etc.

Handbook

Within the ICMS specialists in several fields have written chapters about a specific subject starting with an introduction with one or more examples, followed by threats and checklists how to prevent an emergency and how to deal with an emergency.

This edition of the Handbook contains 11 chapters, but it is a living document and every reader and/or user is most welcome to send additions, comments or amendments to the ICMS. Although the writers and editor have attempted to make a professional Handbook, they nor the ICMS can be held responsible for any mistakes.

This Handbook is published on the ICMS website to be used by everyone concerned with the security and safety of museums; it can be useful for large museums as well as small museums. The first edition of the Handbook has been translated since 2010 in English, French, Spanish, Chinese, Russian and Turkish. These translations are available for free to everyone on the ICMS website.

Although nobody wants an emergency in his museum, disasters do happen: so be prepared.

HANDBOOK ON EMERGENCY PROCEDURES

Chapter 2: Risk analysis

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Dick Drent (The Netherlands)

Introduction

The world is changing, and with it our way of thinking, whether we like or not. Issues such as 'catastrophic terrorism', increased crime rates and environmental problems make us feel unsafe and aware of the potential dangers which surround us. These issues affect our way of living and our way of thinking. In this context, we may also reflect on world-wide changes in the field of museum security that have taken place since the attack on the World Trade Center in New York in 2001.

The way we used to protect our cultural heritage, with a primary focus on protection, is no longer sufficient. There are more risks that endanger our heritage than ever before. We are forced to increase security measures in a much more sophisticated way than we would like – and here the friction lies. In this era of new dangers it is one thing to discuss with colleagues from the security field the necessary measures taken on Organisational, Constructional and Electronic security levels (also known as the OCE levels), but it is quite another thing explaining what is required to a Board of Trustees, to a museum's Director, its curators and conservators, the heads of exhibitions, or other substantive decision-makers in the field of cultural heritage.

Therefore, it is necessary for professionals in the field of art and art security to communicate with each other and to learn from the issues at hand. It is not about right or wrong, good or bad, nice or ugly. It is all about cooperating with relevant departments in a museum and between museums in order to make exhibitions as successful and secure as possible.

A few years ago one of the former chairpersons of ICMS, Mr. Bryan Dovey, said:
'It is fortunate that disasters do not occur every day in museums and galleries. The very rarity of them can lead to a situation where we hope for the best and are reluctant to prepare for the worst! Forethought and planning can prevent an emergency becoming a disaster and minimise the injury and damage to people and collections.'

Safety and security are reached with the correct measures in the field of guarding (to watch over an object or person) and protecting (to diminish the danger, violence, threat or damage).These measures are mutually connected and strengthen each other.

Security concepts are divided in Organisational, Constructional and Electronic measures. The measures have to be balanced to each other. They have to meet the necessities of the risks for which they are installed.

Information-led security

Traditional risk management is based on risks analyses from incidents that were based on the formula **Risk = Occurrence probability x Effect**

Threat management forces us to think about possible threats and analyse them in relation to a certain place, with a certain culture in a certain time. This will create scenarios with possible risks you may not find with traditional risk analysis.

Supporting threat management is the use of intelligence, both on an electronic and on an

Security concept

Constructional measures

Organisational measures

Electronic and detection measures
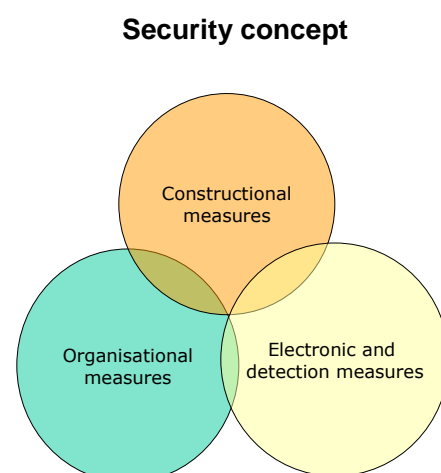
organisational level. Intelligence can be derived from (semi-)open sources, such as internet, museum networks and cooperative networks consisting of public and private organisations.

Analysis of all the risks

All measures should be based on a thorough analysis of all threats and risks for the cultural institution which cover not only the 'regular' risks such as theft, vandalism and fire, but also the risks caused by the 'world outside the museum', i.e. floods, chemical spills, war and terrorism.

The following steps have to be made:
- threat analysis based on identified threats
- risks inventory and assessment
- identification of the protection goals
- constructional and electronic measures to reduce the risks
- organisational measures to reduce risks or mitigate damage in case of a disaster
- preparing and implementing emergency plans
- training museum staff and security personnel

Overall guidelines

There is no standard format to follow for improving your security organisation, as the needs of each institution are distinct. But there is a logical guide to getting started.

In order to achieve a regular, a customised, or even tailor-made form of security that will be an ideal addition to your organisation, the following is recommended:
- check for threats and analyse risks at hand for your institution
- audit your museum as objectively and thoroughly as possible so that you gain insight into how these threats and risks are related and interrelated
- threats and risks need to be presented to the decision makers (the Board or Director); make them aware that it is their problem to solve – you are there to help if they will let you
- make clear what the loss in value would be when a disaster strikes
- write out potential scenarios as to where and how these threats can occur in your museum
- prepare how to deal with the press in case of an emergency
- create measures at the Organisational, Constructional or Electronic levels that will function specifically to prevent or control these threats
- present the necessary budget for your recommended measures to the Board. Make sure that you have decided whether your security measurements should be Regular (along standard lines), Customised (with some elements altered for the specific museum situation) or Tailor-made (for unusual situations and museums that require a re-invention of the Regular measures)
- keep a register of incidents and near-incidents
- repeat the evaluation of threats and risks every year. New circumstances, situations, evaluations, and the real-life testing of existing measures can change your view on security. Do not rest on your laurels, but test and re-test, anticipate potential problems and find ways to beat your own security measures (for instance, by using red teaming)
- make sure your emergency plan is up-to-date: check telephone numbers of emergency services, staff, external conservators, etc.
- start cooperating with colleague museums on security issues; learn from each other
- train not only the guards, but also the responsible people in your organisation. Security management training for exhibition managers will give you a profit you would never believe. Information sharing is crucial for you are not the only one with these issues

- work on an audit system with colleague museums, and let your museum be audited by a colleague. No one will be better at finding loopholes in your security than a security director of a nearby museum. You can help each other to improve your respective museums, and make each other's jobs easier. This a safe and inexpensive way to test your security measures
- do not be too shy or too proud to ask for help and advice from colleagues
- if you work in a large museum: establish a Research & Development section within your museum, specifically for security and facility management
- make sure the position of the Security Manager is well placed within your organisation, preferably directly under the Director or Business-director
- involve in your preventive measures the protection of the collections and of the registration of all the objects, and organise the aftercare for the objects after an emergency

In summation
- make sure your security organisation is an intrinsic and integrated part of the total organisation of your museum. It is not a security issue alone. It is a key issue for the entire museum: it involves staff, visitors, collections, the registration of the collection items, financial data, etc.
- there should be a balance between the Organisational, Constructional and Electronic measures
- there is never a state of perfection, you can always improve
- improve your organisation by using the circle of plan, do, act, check
- organise training and drills, red teaming (operational and strategic)
- be prepared!

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Chapter 3: Vandalism

Hanna Pennock (The Netherlands)

Introduction

In the 1950s the famous Dutch poet Lucebert (1924-1994) wrote a poem of which one line is frequently quoted: 'Everything valuable is without defence'. If we look at the long history of art, we find many examples that support this statement. The motives are often political or religious.[1]

Also recently many acts of vandalism shocked the art world. In 2006 a 69-year-old man sprayed a chemical substance on the *Banquet of the Amsterdam Civic Guard in Celebration of the Peace of Münster* by Bartholomeus van der Helst, one of the top paintings of the Rijksmuseum in Amsterdam.[2]

Luckily only the varnish was damaged, thanks to immediate action of one of the guards. Previously this man had attacked some 165 works of art in Germany. He has been in psychiatric care for many years, but in the end he was sent away as untreatable.

Especially modern art is liable to become a victim of vandalism, because the price is high and 'a 4-year-old child could have painted it'. In 1986 a Dutchman attacked with a Stanley knife Barnett Newman's colour field painting *Who's afraid of Red, Yellow and Blue III* in the Stedelijk Museum in Amsterdam. Four years earlier, another version of this painting, *Who's afraid of Red, Yellow and Blue IV* in the National Galerie in Berlin, was hit by a student. The weapon he used was part of the barrier that was placed to keep distance from the painting. When the Amsterdam painting was restored, the Dutchman came back in 1997 to damage it again. As it was not exhibited at that moment, he took another painting from Barnett Newman, *Cathedra*, and cut it, again with a Stanley knife. He declared afterwards that he was angry because the restorer had damaged his 'work of art'.

These are most painful examples of vandalism. But then there are all these curious visitors who cannot limit themselves to looking only: 'Let me touch it', 'Let me knock on it', 'Let me kick against it'. We cannot refrain from touching objects – apparently we need a tactile contact to support the visual perception, as a means of verification.

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[1] See for example M. Egaña (ed.), *Du vandalisme. Art et destruction*, Bruxelles 2005, and D. Gamboni, *The Destruction of Art. Iconoclasm and Vandalism since the French Revolution*, New Haven / London 1997.

[2] Credit: Rijksmuseum Amsterdam (The Netherlands)

A quite different category is pure 'fun'– from my own observation I can mention two sticky examples: chewing gum under the rack in the Prisoner's Gate and on a medieval altar piece in a museum of religious art.

Sometimes vandalism can be widely accepted. An example is the Monument to the Republic on the Place de la République in Paris. It became the central place of commemoration and protest after the 2015 attack on the headquarters of the French satirical weekly *Charlie Hebdo*, and again, a year later, after several terrorist attacks in Paris. Especially signs for the freedom of speech were expressed.

Definition
Vandalism is a deliberate act to damage an art object.

General
It is true: art is without defence. But there are many ways to come to its rescue and protect it. The starting point is to make a risk analysis.
The questions a museum should ask, concern four categories of vandalism of which the first is the most serious:
1. vandalism based on political, ethnic or religious motives
2. vandalism based on anger or confusion
3. vandalism based on 'fun'
4. vandalism caused by ignorance

Keep in mind that the organisational part of prevention and action is of utmost importance. Make sure that the roles, tasks and responsibilities are well-defined, and train at least twice a year. This does not necessarily have to be a real training: discussing an imagined attack in a round table meeting with the staff involved, is very useful as well.

Possible threats
- religious and political issues in connection with your collection
- modern art can be a provocation
- an ex-employee who might take revenge
- arson
- neglect, insufficient maintenance of the collection and building may prompt an act of violence
- groups of visitors, especially young ones
- people touching the objects
- a rigid design(er) of the exhibition
- an ill-placed object

Checklist (preventive)
- be aware which objects might provoke an act of vandalism
- be alert on religious and political issues
- in buying a ticket the visitor agrees with the museum's conditions, so make your conditions clear
- observe individual visitors and groups to be aware of their behaviour
- educate your visitors: explain why they should not touch objects
- bags, walking poles, bottles with liquid, etcetera should be left in the cloakroom
- create physical or visual distance or a barrier between object and viewer (a rope, glass…)
- secure small objects
- put fragile, rare and small objects in a showcase, if necessary with safety glass

- check the condition of the objects daily
- keep the surroundings of the building and of the objects clean to avoid graffiti
- keep the surroundings of the building clear to avoid arson
- give teachers an instruction and make them responsible too
- accompany groups when necessary with two persons, one in the rear
- illuminate the area at night
- train your guards in recognising suspicious behaviour
- train your guards in responding appropriately to an act of vandalism (towards the perpetrator and to save the object)
- if possible, install CCTV and be sure of the follow-up
- if possible, install an alarm system on the objects or showcases and be sure of the follow-up
- make a list of responsible staff members such as head of collection, curators, conservators, with their phone numbers, and know where to find it
- make a list of phone numbers of external conservators and know where to find it
- keep an incident register and analyse the incidents
- when an object in the exposition might provoke an act of vandalism, have a stationary guard near the object during opening hours

Instructions (during the event)
- protect the object from further damage or danger if necessary
- warn the head of security, in accordance with the procedures
- warn the head of collections or the conservator, who has to decide what to do with the object
- if a substance is sprayed on the object, keep if possible the container to know what the substance is
- keep visitors at a distance
- if possible clear the room
- stay with the damaged object
- when a chemical substance is used: take precautions for your own safety
- do not touch the object as it could cause further damage
- do not wipe out any traces that can be of use for the police
- if the offender is still in the museum, avoid escalation; stay calm
- avoid any risk – people and the objects are more important than arresting the offender
- if you can arrest the offender, let two persons stay with him
- call the police and give notice of the attack
- take pictures of the damaged object and the situation
- make a detailed description of the incident for your files and use it in the next risk analysis
- if the press is involved, only the Director or the head of the Communication Department should be spokesperson, in accordance with the procedures

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Chapter 4: Theft

Pavel Jirásek (Czech Republic)

Photo: National Institute for Heritage Conservation
Conservation

Photo: National Institute for Heritage

Church in Velvary – in the 70's and 2000

Introduction

On December 24 2005 at 11:00 o'clock, the operator in the central control room registered a defect in the wire of the glass breakage detector on the second floor of the Klementinum, the main building of the National Library of the Czech Republic. In this historical building are kept the most significant books and documents dealing with the history of Czech lands, such as medieval manuscripts, codices, bibles, and chronicles.

In the building are also the offices of the director and top management of the library. The electronic alarm system of the library is rather complicated, because of the 17th century character of the building listed as national cultural site. Any impact to the original structure is rather complicated.

The building is located in the center of Prague near the Charles Bridge and the Old Town Square. It is a complex containing several facilities: the library itself, in the so-called Mirror Chapel, two churches and an observatory. They are all listed monuments in the heart of the Old Town.

Back to the case at hand: usually technical problems that are not crucial and occur during Christmas are solved after the holidays. As this was not the case, the service staff was clever enough to call the emergency technical service of the specialised company responsible for the electronic alarm system. A technician came immediately and discovered that the wire going from the connection box to the detector was cut. Because Christmas Eve was not the best time to replace the wire (it was partly installed under the preserved parquet floor), the technician decided on a temporary solution: he connected the glass break detector to the connection box with a separate wire so as to have the alarm system provisionally back to working order. At 2:00 o'clock in the morning of 25 December the aforementioned detector detected glass breakage. The alarm system sent the signal to the central control room and switched on the CCTV.

The library is connected to the State police monitoring the center of Prague. Unfortunately, the Police came too late to catch the intruders but they left all their equipment such as pneumatic hammers, etc. in the library and fled over the roofs like bad movie gangsters. This intrusion is still under investigation, but it appears that there is a connection between the criminals and a member of the library staff.

This example shows us both the advantages (continuous monitoring and detection of sabotage) and the weak points (not sufficient intervention time, weak personnel policy, neither cameras nor sensors on the roof) of security systems. It reminds us that theft is still one of the biggest threats for cultural heritage institutions and their collections and of the old

saying: Security is everybody's business.

Definition of theft: A criminal act in which property belonging to another is taken without that person's consent.

Theft is considered to be one of the most important threats cultural institutions have to take into account. The following factors may contribute to the threat of theft:

I.   **Constructional factors**
  – bad structural state of museum/ institution buildings
  – easily accessible windows and other entrances
  – use of easily breakable external doors and windows
  – absence of night lighting
  – weak bars, the absence thereof or other mechanical barriers
  – use of easily breakable fences or the absence thereof on the outside perimeter

II.   **Electronic factors**
  – inadequate security of objects on display
  – little opportunity of executing perimeter control (trees, other buildings)
  – absence of an electronic alarm system
  – absence of an access control system
  – absence of CCTV
  – poor quality of the security system of an institution in general
  – insufficient communication system with intervention forces

III. **Organisational factors**
  – visible indications where depositories are located
  – poorly qualified security personnel
  – low salaries in museum
  – poor quality of collection documentation
  – poor quality of measures dealing with collection protection
  – lower level of internal communication
  – lower level of external communication with intervention forces
  – longer intervention time than needed
  – absence of internal rules for visitors and employees
  – absence of regular security drills
  – absence of inspection plan and inspection activities
  – no updated institution emergency plan

IV.   **External factors**
  – location (especially churches): no parking restrictions on the buildings perimeter
  – lower number and activities of church oriented communities (churches)
  – decreasing number of priests (churches)
  – monetary value of cultural assets, especially works of art
  – existing illegal art market
  – open borders
  – speed of means of transportation
  – different legislative measures dealing with protection of cultural objects in different countries
  – nonacceptance of international treaties in both developing and developed countries
  – religious aspects
  – political and social situation

Simple rules for improvement

The process of improving the resistance of a cultural institution against theft consists of

- risk identification: analysis of the security situation of the museum
- risk assessment: analysis of the probability and consequences of identified threats
- risk evaluation: determination of risk level and its acceptability
- risk reduction: protection plan and implementation of this plan

Protection plan

- organisational measures:
    - interdisciplinary task
    - definition of the role of each museum employee in written form
- burglary alarm system planning documentation:
    - interdisciplinary task
    - cost-benefit analysis - maintenance budget (be realistic in its assessment to museum resources)

Implementation of the protection plan

- interdisciplinary task
- needs of cooperation with suppliers:
    - mission of the museum: protection and presentation of cultural heritage
    - mission of production companies: profit

Implementation tools for the protection plan

I. Constructional measures
- constructional barriers
- internal and external lighting

II. Electronic measures
- surge voltage protection
- intruder detection system

III. Organisational measures
- organisation of security personnel
- organisational measures concerning the behaviour of the staff members and visitors
- organisational measures incorporated in the scenario of the exhibition
- protection of sensitive information (data protection)
- access control system
- closed circuit television
- internal communication and reporting of emergencies
- transmission of alarm data from the monitoring center to relevant intervention forces
- textual and visual documentation of cultural objects, their registration and entry in the inventory

Checklist organisational measures

A. Long term
- provide risk analysis continually
- inspect the constructional state of the buildings
- keep the emergency plan up-to-date
- maintain cooperation arrangement with the police at the relevant level (local, municipal, county, state)
- maintain an insurance agreement (if available – according to the policy of the institution)

- create specific emergency instructions for all the staff, but differently in accordance with the occupation of an employee
- provide a continual SWOT analysis of your institution for emergency preparedness. SWOT is a method to analyse the Strengths, Weaknesses, Opportunities and Threats of an organisation

B. Day-to-day or periodically
- observe suspect visitors (taking pictures of windows, doors, alarm system components, etc)
- inspect all the alarm and transmission systems daily and thoroughly at regular intervals
- check all transport vehicles going into and out of the institution
- baggage checks at personnel entrances before and after duty
- before employing personnel, conduct a background investigation including a criminal history check
- do background checks of contractors
- have contractors accompanied by security personnel
- train all staff for emergency situations, such as theft
- secure all objects on display, using individual or collective means for the object's security
- use properly equipped showcases (burglary-proof)
- execute perimeter checks of the building
- provide an access control system for the employees to depositories, special important (security) areas and showcases etc.

C. After the theft
- close the affected area
- monitor and record all visitors and staff by using CCTV (if available)
- report the theft to the director of the institution
- report the theft to the local police immediately
- safeguard all theft documentation (video records, central unit data memory)
- provide the police with all relevant documentation, incl. photographs of stolen objects and written information according to national and international standards, for example Object ID, go to http://network.icom.museum/cidoc/working-groups/documentation-standards/L/12/
- provide customs with relevant documentation
- check with the police about the declaration of a national or international investigation
- notify the insurance broker (if the object was insured)
- cooperate with private companies like Art Loss Register or others
- provide relevant associated institutions with relevant documentation (local museum association, ICOM, etc)
- cooperate with antique dealers if possible
- report progress and actions to the director of your institution regularly

Note
Check also many other practical advices written in:
Collection Theft Response Procedures (Huntington Library and The Getty Conservation Institute, https://www.getty.edu/conservation/publications/pdf_publications/theftresponse.pdf)
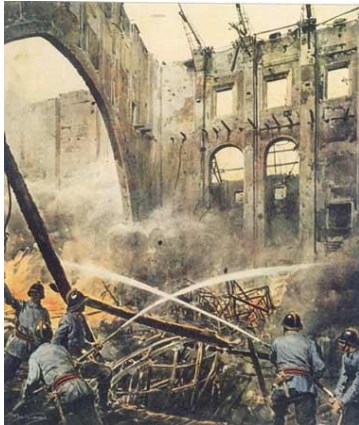*Running a Museum* (ICOM 2004, ISBN 92-9012-157-2,
http://unesdoc.unesco.org/images/0014/001410/141067e.pdf)

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Chapter 5: Fire

Carlo Teruzzi (Italy)
Hanna Pennock (The Netherlands)

Introduction

Forest fires

As **South Australia** faces quite often the danger of catastrophic fires, this can happen everywhere and may endanger museums in the area and their visitors.

The green arms of the tall forests embrace Melbourne's East. Mostly, this large natural area is considered to be a beautiful and benign feature. However, on scorching hot summer days in January and February each year Melbourne holds its breath, for a mere wisp of smoke can herald a fiery horror. It can become a death trap for people caught in the path of a bushfire. Several times last century and again in 2009, severe weather combined with drought created bushfires far beyond the capacity of fire fighters to control, claiming life and property.

Victims of a 1939 fire

In 2009 the Getty Museum in **California (USA)** was threatened by a forest fire, but the fire stopped at a short distance from the museum. The staff had already started the emergency plan.

Fire through electrical problems, smoking, welding, chemicals or other causes

On August 19 2009 a fire started in the boiler room of the State Library of **South Dakota (USA)** causing extensive smoke damage to the location. The fire was started by sparks from a concrete saw that smouldered for several hours before the fire was discovered around midnight. Reports state that the structure remained solid but that there was extensive smoke damage including damage to the collection.[3]

On September 10 2009 a drunken electrician fell asleep while smoking, starting a fire at the Tretyakov Gallery in Moskow (Russia) in the engineering building which is located next to the main gallery. Technical equipment was damaged and the electrician was hospitalised in intensive care, but it was reported that the Tretyakov Gallery with one of the

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[3] Credit to Bob Combs, J. Paul Getty Museum

most important collections of Russian art from the 8th century through the 19th century was spared from any damage.

On October 22 2008 welders were working on the roof of the Armando Museum in Amersfoort (the Netherlands) and caused a fire to the roof of the museum. When the fire started, nobody was in the museum. The museum had no sprinkler system and burned down completely. The whole collection of paintings by the Dutch painter Armando (1929) was lost.

Definition
Fire is a chemical reaction of combustibles, oxygen and heat to an extent of (self) inflammableness. Smoke is a sign of an existing fire.

Threats
Structural
- building materials
- lack of fire compartmentalisation
- incorrect width of emergency routes
- lack of fire mains
- lack of water
- absence of security systems, such as fire detection and automatic shutdown systems
- outdated systems
- proximity of dangerous activities
- lack of air lock security, the system that prevents the propagation of fire trough the ducting of air conditioning. It is used to create separate security zones

Management
- lack of inquiring if fire hazardous activities are taking place in the vicinity of building and/or collection
- lack of respect for security specifications
- lack of compartmentalising fire hazardous activities
- insufficient checks of building plans and technical plans
- failure to appoint a fire prevention officer
- outdated fire prevention plan
- use of resistance heaters
- forge-welding works
- use of patch cord
- permission to smoke in the building
- switching off security system for maintenance
- storage of flammable and combustible materials
- obstructed emergency routes
- lack of mandatory security signs during maintenance work
- work with open fire without safety measures

Exhibition rooms
- lack of fire detection systems
- lack of warning system
- use of flammable or combustible materials
- temporary electrical installations during exhibitions

- overcrowding entails the risk of limiting measures for fire repression and may inhibit visitors from safely escaping the fire
- malfunction of audio-visual equipment
- malfunction of lighting installations
- lack of emergency lighting
- incomprehensible security indications for foreign visitors when these are only written in the national language
- lack of regular drills (training) for evacuation staff
- lack of training fire security staff
- lack of air lock security on compartments

Storage and laboratories
- storage of flammable and combustible materials in high quantities
- uncontrolled accumulation of waste materials in infrequently used rooms
- accumulation of residual flammable and combustible materials
- incorrectly positioned fire, heat and smoke detection
- lack of fire, heat and smoke warning systems
- execution of fire hazardous activities and works in the vicinity of open fire
- no separate storage rooms for flammable dangerous collections
- presence of fire hazardous equipment and plants installations

Checklist
Decision making ability
- the Board of Directors should give the security manager the authority to make strategic and tactical decisions as far as the safety of people and collections are concerned. If a museum has a head of Collections or a Head Curator, the strategic and tactical decision-making should lie with him/her as far as collections are concerned

Museum location
- are there fire hazardous activities near the museum
- are there easy ways of access to the museum for emergency and assistance vehicles, for instance in order to evacuate collections
- how many ways of access to the museum are there for assistance vehicles
- if the streets are narrow, which vehicle should be used
- are there squares or spaces in the vicinity of the museum where you can temporarily store collections safely while waiting for the vehicles to evacuate the collections
- are there spaces fit to store evacuated collections temporarily
- if not, are there contracts with private organisations which have got suitable storage space to temporarily store evacuated collections

Museum building
- are there orientation plans and cutaway views
- do the evacuation floorplans clearly locate the rooms with the highest risks or dangers
- is there a fire truck connection
- is there an extinguishing water pipe
- is it possible for the fire brigade to enter the building any time without the assistance of museum staff
- are there portable fire extinguishers
- are there sprinkler systems
- are there fire protection systems verified by law
- do the orientation plans exactly show the position of hydrants and portable fire extinguishers

- do the orientation plans show the location of the emergency exits
- are there any fire detection systems
- is there a warning system
- is there a public address system

Emergency organisation
- Protection of human life
  - is there an evacuation plan for visitors and contractors
  - is there a security and emergency manager
  - is the security and emergency manager always available
  - is the emergency staff well trained
  - do the emergency staff have written procedures
  - are fire extinguishing drills held
  - when was the last fire extinguishing drill
  - is there evacuation signage
  - are there works in process that have an effect on the emergency routes
  - are the evacuation signs adapted after changes in the emergency routes
  - are the emergency routes free from obstructions
  - are the emergency routes well lit
  - are the emergency exits according to the law
  - are the emergency exits sufficient to address crowding
  - are the emergency exits controlled
  - are the emergency exits normally locked and opened automatically in case of fire
  - is the crowding controlled
  - is the warning system audible everywhere
  - are there works in progress for which the fire detection is turned off

- Protection of collections
  - is there an inventory of collections that identifies the problems about security, transport and emergency plan for the evacuation of objects
  - is there an equipment catalogue for transport of objects to a secure location
  - is there an emergency plan for the evacuation of objects
  - is there a priority plan for the evacuation of objects
  - is the fire brigade involved in the evacuation of the collection
  - is the fire brigade informed about the exact location of the objects
  - are there contracts with private organisations for the transportation of objects
  - are there contracts with public or private organisations to protect the objects stored outside during charging operations
  - is there suitable equipment to evacuate the collections
  - are there suitable vehicles to reach the charging areas
  - are there materials for the transportation of objects
  - if not, are there contracts with private organisations specialised in the transport of objects

HANDBOOK ON EMERGENCY PROCEDURES

Chapter 6: Floods

Michael John (Germany)
Pavel Jirásek (Czech Republic)
Willem Hekman (The Netherlands)

Introduction

Dresden

In the second week of August 2002 large areas of Europe were hit by the severest floods to affect the continent in 150 years.[4] At the highest point of the flood crisis, the inhabitants of Dresden (Germany) were largely left to their own devices. The authorities were not prepared for the catastrophe, and the selfless intervention by thousands of volunteers contrasted sharply with the lack of coordination on the part of officials at all levels of government.[5]

A week after the apex of the flooding, the main tourist area in the center of Dresden had been largely restored to normal. However, just a few hundred meters from the center, parts of streets were covered by ankle-deep, stinking mud. Heaps of rubbish had gathered in front of doorways—bicycles caked with mud, broken furniture, cushions, shelves, food waste mattresses, coverings torn up from floors—all of it moldy and rotten.

Flood water precautions on the Elbe were also deficient. The existing system of protection, according to the city authorities, was not adequate for a 'century flood' such as that which swamped the city 150 years previously. Their general position was that nothing could have been done. One could only observe the situation and prepare for evacuation.

"The assembly points must organize themselves. There is no one at the assembly points responsible for coordination. The catastrophe prevention unit will report soon to deploy those willing to help. We thank all those committed people from Dresden and Saxony and their institutions for their readiness to make themselves available at the collection points."

In other words: there was no advance planning. The intervention during the floods was improvised under the pressure of immediate circumstances and with measures that often expressed a sense of helplessness.

According to a leaflet issued by 'Initiative for Dresden' one week after the onset of the flood:

"Essentially, helpers must organize themselves."

It was hardly possible to estimate the long-term consequences of the floods. Along with inevitable environmental problems caused by contamination of water and land, numerous houses have been threatened and in danger of being demolished.

"The authorities have told us to clear out our cellars. But how to do it—that's left up to us. They have not even provided us with containers for the rubble yet, and many of us are not exactly young any more."

"Once the catastrophe starts, there is nothing much you can do. These problems can only be solved by long-term planning and town development. Houses and railways should not be built in riverbeds and river meadows. The only real solution would be to tear down whole parts of the city."

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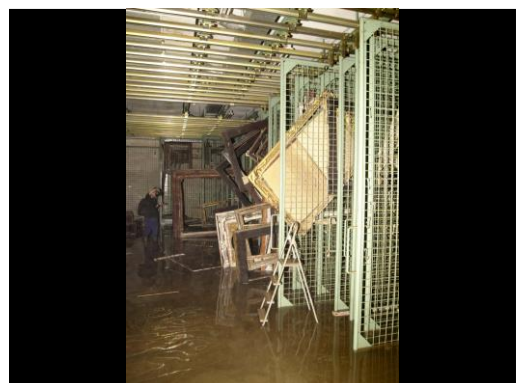
[4] Credit for the article: World Socialist Web Site
[5] Credit for the pictures: State Art Collection of Dresden

Prague

This happened in Dresden, but it can happen everywhere, like in Prague (Czech Republic) in August 2002.

Situation in Prague, floods in August 2002

Some examples from the Czech Republic:**Regional Museum in Roztoky**
A museum has an emergency team. All the members (let us say that there were five) come to the museum within 30 minutes. As a matter of fact, hopefully they have been on the alert, when the state of emergency had been announced by the local authorities.

Each of them had a clearly defined range of responsibilities. However, as the museum was already closed to the public because of the approaching danger, their tasks were somewhat simplified as it was not necessary to evacuate people, which in itself always proved to be a complicated task. What more could be done?

Further human forces were again summoned from among the museum staff or volunteers, of course tried and tested ones. First of all, collections and the most valuable equipment were evacuated – either out of the building or to the upper floors.

Doors and windows of the underground and ground floors were barricaded with sandbags. However, evacuation out of the building was soon complicated by roadblocks, constructed upon an order from the city authorities in various places of the town, but not in coordination with works going on in the museum. Unfortunately, the consequences of this fact were rather disastrous. In a laboratory situated on the ground floor of the building, there was equipment for the treatment of corroded metals, the so-called plasm chemical reduction. It took five hours before two technicians managed to dismantle the equipment, whose value has been estimated to circa 500,000 USD, and load the parts on a lorry. During that time, the only escape road from the area had been blocked with sandbags, and it therefore became impossible to take the load away. That is why all the parts were moved once more – to the second floor of the building, which took another two hours.

Central Storage Facilities of National Museum and National Technical Museum

Flooded building with plasm chemical reduction and road block

One of the museum store-rooms housed musical instruments – including heavy pianos. Due to the short period before the flood wave would arrive there was not enough time for the instruments to be moved to upper storage areas, and therefore they had to be left to their fate. The store-room with historic prints and sheet music presented the biggest problem. There were thousands and thousands of books and musical scores, which due to their bulk could not be moved.

In another store-room, there was the huge archive of the history of architecture and technology, with large artistic designs of famous historical buildings, including original

sketches on large format sheets, stored in metal cases. There were also many old photographs, books and other documentation on the country's technological development. Although they were deposited above the supposed tide level, they were, at least within the limits of the possible, moved to shelves higher up in the room.

When the water level reached its highest point, it was unfortunately even one meter higher than predicted in the worst hypothesis. The area remained closed for three days, and during the following two weeks only holders of special permits could visit the flooded areas. The permits were at first issued by the Ministry of Culture after consultation with the central emergency headquarters, and later also by the corresponding city district offices. It happened in some cases that the city police guarding access roads refused to acknowledge the permits issued by the state authority.

The first sight of certain flooded buildings was rather bleak. Water damaged large amounts of collections, some technological equipment and expensive laboratory devices were destroyed; the overall damage has been estimated at scores of millions of USD.

Definition
Flood is the rising and overflowing of a body of water, such as a river or the sea, especially onto an area not usually submerged. The level of submergence is such that a building and its environment is not protected.

Sources and possible countermeasures against floods
Water threatening the museum can originate from the following main sources:
- surface water like rivers, heavy rainstorms and melting snow
- waste water from the sewer systems
- groundwater

Countermeasures against surface water:
- up-to-date concept of dams and restraining systems for the rivers
- planning of a mobile system of walls against high water from the river
- installation of bulkheads in the courtyard and the doors of the gallery
- strong seal of all connections of the building under the waterline such as breakthroughs for pipes and tubes

Countermeasures against waste water from the sewer systems:
- installation of setback-flaps in the sewer system
- additional installation of a strong lock valve in the central imbedding

Countermeasures against groundwater:
- installation of sufficient wells with pumps in the basement to reduce the groundwater level
- these wells are decisive for the buoyancy forces

Systems for the elimination of water:
- installation of pumps in the basement to collect water no matter where it comes from (small leakages of the bulkheads or breaks in the water-system, sprinklers, and so on)
- providing equipment in the (direct) vicinity of each of these sources such as mobile pumps, electrical extension leads, tubes and connecting pieces
- some pre-installed tubes to prevent the handicap of movements in the walkways

Threats
Internal:
- location

- bad state of museum building
- inappropriate elements in building construction, such as windows on the ground floor
- unavailability of emergency storage facilities
- unavailability of an emergency plan
- emergency plan is not up-to-date
- lower level of external communication with central/regional/local emergency task force
- lower level of external communication with intervention forces
- lower level of internal communication
- insufficient protecting materials
- insufficient transport means
- insufficient defense materials (bags, sand, water barriers, …)
- unavailability of freezing space
- unavailability of dryers
- unavailability of disinfection means
- unavailability of conservation means
- no source of clear (distilled) water
- insufficiently trained security guards
- insufficient quality of documentation
- no power supply system (back up)

External (city, region, country…):
- global environmental changes
- low quality of urban development
- non-acceptance of international treaties in both developing and developed countries
- changes in river/water system development

Checklist
Long term business
- provide risk analysis periodically
- establish a chain of command for the decision to evacuate the museum
- establish and train the emergency team
- inspect the state of the building periodically
- keep the emergency storage facilities clean for the collections
- keep the emergency plan up-to-date
- provide an emergency plan for two situations (situation with enough time to react and an acute emergency)
- keep the transport corridors inside and outside available and clean
- maintain a cooperation arrangement with emergency task forces at the relevant level (local, municipal, county, state)
- have a representative of cultural institutions as a member in the integrated local emergency disaster organisation
- submit your emergency to the disaster intervention forces (fire department, police) and make the changes suggested by these professionals
- install water detectors (water level monitoring system) in the cellars of the building
- do not keep the heavy collection items (such as pianos) in the basement or ground floor
- install (emergency) power supply for pumps and other technical equipment
- meet with the responsible emergency bodies regularly
- maintain an insurance agreement (if available – according to policy of institution)
- create specific emergency instructions for all the staff, but differently according to the position of an employee

- provide a continual SWOT analysis[6] of your institution for emergency preparedness
- prepare and update the list of conservators for an emergency situation, keep them informed
- secure the areas for possible storage of contaminated objects and garbage
- prepare the equipment for voluntary workers in the event of an emergency

Everyday or periodical business
- follow the weather report
- in case of an emergency evacuate the buildings without any delay
- take into account the changes of the flooding line
- inspect all the emergency information systems daily and thoroughly in recommended periods
- inspect the functionality and availability of transport means
- train all staff for an emergency situation
- inspect disinfection and conservation means (quantity/quality/durability)
- inspect the weak points (and security arrangements there – window shields etc.) in the construction of the building

After flooding
- close the affected area
- monitor and record any movement of staff (and visitors) in the affected area
- ensure the security of the emergency storage area
- do not pump the water from cellars immediately – consult such operations with a structural designer (changes in statics of the building)
- start to dry exhibition rooms and other spaces of the building carefully
- consult with a conservator on the saving procedures for affected objects
- if the flooded water was dirty or infected (pressure water from sewerage), before following conservation wash the affected objects in clear water
- immediately freeze paper objects (books, manuscripts, archival material …) and keep them frozen before conservation
- report (and update) all the financial cost of the damages to the Director and headquarters of the museum
- inform the press about the damages and financial needs immediately, organise a press conference as soon as possible
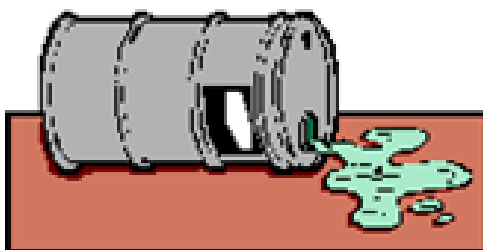

Photo from flooded depository of the National Technical Museum – library and archive (Prague, Czech Republic)

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[6] SWOT is a method to analyse the Strengths, Weaknesses, Opportunities and Threats of an organization.

HANDBOOK ON EMERGENCY PROCEDURES

Chapter 7: Chemical spills

Sergiu Bercovici (Israel)
Willem Hekman (The Netherlands)

Introduction

The range and quantity of hazardous substances used in laboratories require preplanning to respond safely to chemical spills. The cleaning of a chemical spill should only be done by knowledgeable and experienced personnel. Spill kits with instructions, absorbents, reactants, and protective equipment should be available to clean up minor spills. A minor chemical spill is one that the laboratory staff is capable of handling safely without the assistance of safety and emergency personnel. All other chemical spills are considered to be major.

The procedures outlined in this guideline are recommended to apply in all departments, laboratories and facilities in museums where chemicals are used.

This document is only a recommendation for museum institutions to prevent chemical spills, to identify and to evaluate the situation, to prepare an emergency plan and to give a correct and safe response to an emergency situation.

Definition

A chemical spill is a situation in which a chemical is accidentally released. In the case of non-toxic chemicals, dealing with a spill is usually very straightforward, since the spill simply needs to be cleaned up. However, spills of toxic chemicals represent a more serious problem, especially in the case of spills of multiple chemicals which could react with each other.

Checklist

The following questions may be helpful to check your risks for chemical spills:
The following questions may be helpful to check your risks for chemical spills:

- Are there chemical materials present in your museum
- Do you have an adequate storage area for chemical materials
- Are all chemical materials in your museum registered
- Does your museum use Material Safety Data Sheets
- Are all hazardous materials labelled
- Are all hazardous materials stored in adequate containers
- Do storage or/and work areas have adequate ventilation
- Do you have safety signs in the areas where chemical materials are stored
- Is the use of chemical materials restricted to laboratories only
- Is all work with chemical materials done only by adequate personnel and under supervision
- Is all personnel trained in using chemical materials before working with them
- Do you have regulations covering the occupational exposure to hazardous chemical materials in your museum
- Are the quantities of chemical materials in storage or/and in work places at a minimum
- Does your museum have an emergency plan for chemical spills
- Do you have appropriate material to contain and clean up any chemical spill in each storage or/and work area where chemical materials are kept or/and used
- Do you have an emergency phone list in the event of a major spill or a highly toxic chemical spill
- Does your museum have an emergency team for dealing with chemical spills
- Is this emergency team adequately equipped for safe interventions
- Does the museum have first aid equipment and trained personnel to apply first aid
- Does the museum have an alert and communications (public address) system
- Does the museum have an emergency energy supply system
- Does the museum have a disposal policy for hazardous materials in case of fire, floods or other natural disasters

Emergency plan

All laboratories and other places using hazardous materials should prepare an emergency plan for chemical spills, which includes national and museum regulations and practices for a correct and efficient response to any chemical spill. It must also include the quantity and location of all hazardous materials in the museum.

The emergency plan provides guidelines and specific procedures relevant to all areas where hazardous materials are stored or handled. However, each work or storage area may identify specific requirements and prepare an emergency plan for chemical spills.

The emergency plan must include:
- Collection information methods
- Study and analysis of all information (reactivity, flammability, corrosion, toxicity)
- Hazard identification and assessment
- The response plan including practices, procedures and materials needed to properly contain and clean up chemical spills
- The responsibility and authority of each staff member
- An emergency phone list
- Material Safety Data Sheets
- Quantity and location of storage and work places of hazardous materials
- A list with the appropriate materials to contain and clean up the chemical spill
- A list with appropriate materials to neutralise chemicals
- Appropriate water sources for flushing miscible liquids or water-soluble solids down the drain
- Fume hoods
- Personal protection equipment
- Emergency equipment: first aid station, showers, eye washes
- Fire extinguishing equipment
- Fire alarm system
- Communications system
- Electrical main board
- Ventilation/air conditioning/smoke control systems
- Employee training
- Exercise schedule

Immediate actions[7]
- Clear the area
- Check for any individuals involved
- Isolate the spill (if safe to do so)
- Contact the area supervisor or Safety Officer

The primary concern is to protect health and safety. No action should be taken during an emergency response that directly or indirectly violates this principle.

Considerations for evacuation
- Uncontrolled open flame
- Uncontrolled compressed gas release
- Any situation which poses imminent threat to human health or safety

When the alarm sounds, all individuals should immediately leave the building and report to their assigned assembly area. Elimination of potential sources of ignition should only be done if it can be accomplished without personal risk.

High risk spills
- Contact the emergency services by calling security and explain the situation.

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[7] Chemical Spills Emergency Management, University of Melbourne

- Determine who will take responsibility for the spill, i.e. contractor, fire department, another emergency service.
- Ensure appropriate museum staff is informed of the situation.
- Follow any advice or information provided by the Emergency Response Team.

Low risk spills
- Have at least two trained employees to handle the spill
- Use the proper protective equipment
- Ensure fire protection is available for flammable spills
- Contain the source
- Contain free liquids by damming, absorbing if appropriate
- Place all spill residues in an appropriate manner
- Decontaminate the affected area using the appropriate material
- Decontaminate the salvage equipment
- Check the area to ensure proper decontamination has taken place
- Examine walkways, floors, stairs equipment etc. for other hazards or damage

Debriefing
- All emergency personnel involved in the spill response should be debriefed after the spill has been resolved.
- All spill control supplies should be restocked.
- All damaged or used equipment should be repaired or refilled.

HANDBOOK ON EMERGENCY PROCEDURES

Chapter 8: Earthquake

Nevra Ertürk (Turkey)

Introduction

On February 2 2004, the Zümrüt Apartment building in Konya, located in the central part of Turkey, collapsed completely. This catastrophe resulted in 92 fatalities and 35 injured. The residents of the Apartment thought that it was an earthquake. However, only the Zümrüt Apartment shaked during the event. Afterwards it was understood that the collapse was not related to an earthquake or other external causes. The main reasons for the collapse and damage were the designed load selection, the inappropriate dimensions of the load-carrying elements, poor material quality and poor soil conditions. Some of the museum buildings in Istanbul also suffered like Zümrüt Apartment as a result of the 1999 Kocaeli earthquake. Although the earthquake was almost 80 km away from the center of Istanbul, some of the museums in the city were affected as they were housed in historical buildings and were not designed as earthquake-resistant structures.

The 1999 Kocaeli and Düzce earthquakes in Turkey, both exceeding magnitude 7, occurred within three months. The death toll exceeded 18,000, over 100,000 buildings were destroyed and financial losses reached an estimated $10-25 billion (US). Building structures and precast concrete facilities that did not possess sufficient seismic resistance played the most important role in the large losses of life and property. In addition, 50% of injuries and often more than 50% of economic loss is due to non-structural elements. Fortunately, only very little damage occurred in the storage areas of some of the museums during the 1999 earthquakes. The storage areas were not designed as part of the original plan of the historical museum buildings and consequently, storage areas were over-crowded and not large enough to accommodate the growing number of objects in the collection. In the 1999 earthquakes, some of the objects that were stacked on top of one another collided and broke down, and some of them fell off the shelves and got damaged.

As a result of the Chi-Chi earthquake, magnitude 7.6, in Central Taiwan in September 1999, non-structural damage occurred in many museums. Objects fell down, the electricity broke down and floods came up. Objects made out of paper were soaked, wheeled showcases slid away and unmounted shelves overturned in storage areas. Major earthquakes in the world such as in Kobe (1995), Sichuan (2008), Sumatra (2004, 2009), Haiti (2010) or Chile (2010) also caused damage, both structurally and at collection level, due to the lack of and/or inadequate mitigation efforts against an earthquake.

Threats

Earthquakes cause different kinds of damage depending on the strength of the earthquake, the reach, the type of underlying rock or soil, the building construction or unmounted non-structural elements. The possible threats are as follows:
- non earthquake-resistant museum buildings
- free-standing objects, cabinets, showcases, humidity controllers, air conditioners, fire extinguishers, and all other storage, display and office furniture
- objects standing on an unsecured base

- objects, signs or storyboards hung on the wall with only one nail or objects hung on storage racks from a single point
- objects, lighting fixtures hung from the ceiling with open hooks or hung with inappropriate wires
- unmounted objects, pedestals, mannequins, light bulbs or fluorescent lamps/tubes within showcases
- unanchored or inadequately braced or anchored shelves, storage, display or office furniture
- overloaded showcases or cabinets
- cabinet doors without latches
- unsecured glass such as windows, doors, skylights, showcases, cabinet glass or shelves made of glass
- breaking of plaster relief or suspended ceilings
- secondary threats such as fire or gas explosion caused by flammable materials, defective electrical wiring or broken gas lines; and water damage caused by broken pipes, ducts, sprinklers, rain, flood or tsunami

Checklist (before an earthquake)

Keep in mind that earthquakes happen when you least expect them and when you are least prepared. So always be prepared and remember the following:
- define the seismic threat of where your museum is located (proximity to faults, site characteristics, building's response, historical and statistical records regarding earthquake)
- survey seismic susceptibility of the museum building (structural integrity of the building and of elements such as added gallery dividers, decorative elements, furniture and fixtures) and of collection both in storage and on display, as well as office spaces and furniture
- develop and regularly update an earthquake preparedness plan focusing on tasks and responsibilities of museum staff before, during and after an earthquake
- conduct periodic training programs as well as drills for museum staff on earthquake preparedness and emergency procedures
- provide an adequate space for the post-earthquake situation
- prepare duplicate records with photographs of the collection at different locations
- have a separate mount-making unit as well as trained staff to produce, install and deinstall adequate mounts or other mitigation methods
- check electrical wiring and gas connections regularly which are potential fire risks and repair them immediately, if necessary
- check for any hazardous materials (poisons, flammable materials) regularly and make sure they are secure
- check roof, ceilings, foundations, pipes and ducts regularly. Repair them, if necessary
- keep items away from pathways and exits that may hinder evacuation
- install outward opening doors, create wide exits and ensure that doors open easily
- cover glass surfaces with security/safety film
- use laminated glass to prevent glass breaking or cover windows with blinds to prevent shattering
- fasten showcases, cabinets, shelves and all other storage, display and office furniture to structural elements with adequate methods and safe materials
- secure free-standing showcases with a low gravity point either with a box inside which is weighted or have an access hatch in the rear to add a weight
- reduce the number of objects both in storage and on display to prevent crowding

- fasten objects with mounts, monofilaments (see photos) or a small and appropriate amount of microcrystalline wax depending on the size, weight, material or condition of the object
- fasten hanging objects, signs or storyboards with closed metal hooks
- secure objects with base insulation, if necessary
- place sand or lead bags inside the objects to lower the center of mass, if necessary
- anchor or brace cabinets or shelves
- check shelving capacity and place large or heavy objects on lower shelves
- use cabinets in stead of open shelving
- place restraints or netting across open shelves to reduce the risk of objects falling off the shelves, if you use open shelving
- use sturdy latches on cabinet doors to prevent opening
- box or containerise objects with appropriate materials
- use appropriate padding material between objects to minimise collision damage and abrasion
- use slanted shelves to prevent boxes from sliding out
- place rubberised shelf mats (that do not emit gas or harmful vapours) both in storage or in office space under small objects to prevent them from sliding out, however, objects must be supported or restrained as well
- secure hanging lights with safety cables, fluorescent tubes to casings and attach lighting to structural elements
- secure tall tanks with metal chains and fire extinguishers with straps in two places, near the top and bottom

Checklist (after an earthquake)
- do not use elevators, plumbing or gas until the utility lines have been checked
- do not use matches or lighters until the electrical andgas system have been checked
- be prepared for aftershocks
- always give priority to museum visitors and staff
- notify the security department about the location of the problem (building, floor, room number, etc.), the severity of the situation such as life threatening injuries, secondary threats such as fire, water, building or collection damage
- evacuate the room or the building according to the evacuation plan, if smoke, fire or any other life threatening hazards are present, do not move seriously injured people, unless they are in immediate danger
- after the emergency situation is over, the decision-makers such as facility managers, head curators, head conservators, head of security should come together to make a quick survey of the overall situation and advise on further steps about damaged objects or furniture
- take photographs and make a detailed description of the situation, of damaged objects as well as furniture
- report damage and all financial cost of the damage to the Director and headquarters of the museum
- organise a press conference and inform the press about the damage and financial needs

Using mount and monofilament
Credit: The J. Paul Getty Museum, Villa Collection, Malibu, California

Using decoupling mount
Credit: The J. Paul Getty Museum, Villa Collection, Malibu, California

Using contour mount and monofilament
Credit: The J. Paul Getty Museum, Villa Collection, Malibu, California

HANDBOOK ON EMERGENCY PROCEDURES

Chapter 9: Terrorism

Sergiu Bercovici (Israel)

Introduction

Cultural heritage institutions, like any other national symbol, are considered to be one of the main targets for terrorist acts. Not only because a terror attack may harm the national symbol, but there also exists a high probability of a large number of casualties due to the high concentration of people on such sites. In Italy, for example, there are over 13,000 potential targets. It is the place where a third of the western world's artistic masterpieces are located. Analysts believe that terrorists may strike such targets – museums, historical monuments or churches.

On May 27 1993, a terrorist bomb killed six people and wounded 26 outside the Florence's Uffizi Palace, destroying and damaging dozens of works in the gallery's priceless art collections.

In September 1997, nine German tourists and one Egyptian were killed outside the Cairo Museum. Two months later, in November, six gunmen opened fire on a group of tourists preparing to enter the Temple in Luxor – 58 tourists and 6 Egyptians were killed.

On June 10 2009, well-known anti-Semitic blogger James Wenneker von Brunn walked into the Holocaust Memorial Museum in Washington DC and opened fire. Two security guards were shot; one was dead and the other severely wounded. Von Brunn himself was killed in return fire.
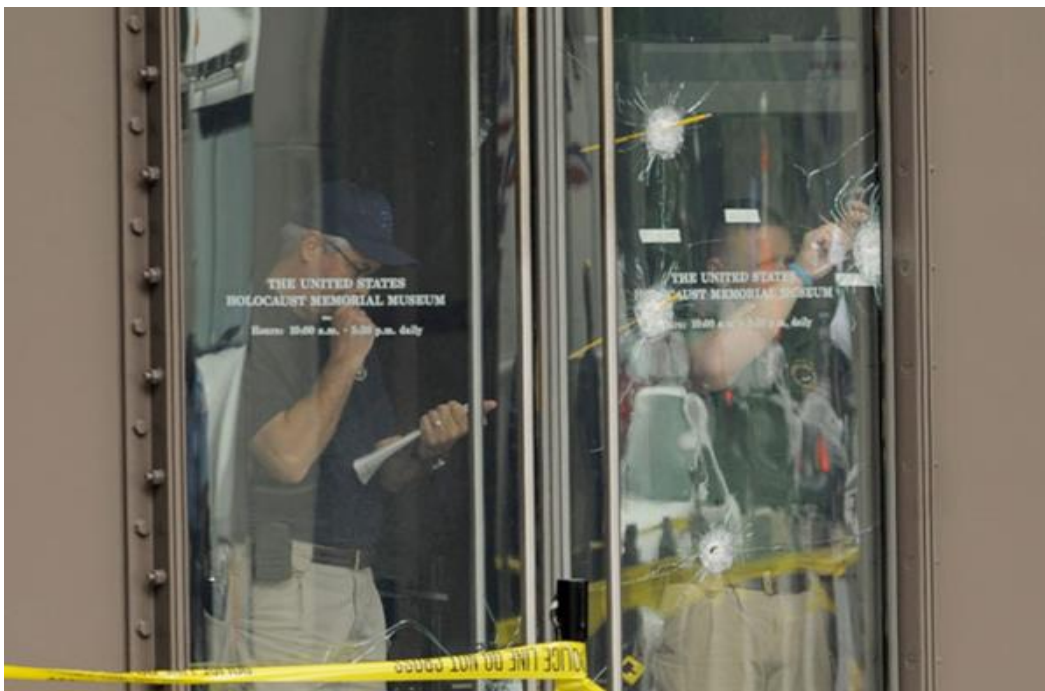
Holocaust Memorial Museum – the bullet signs in the windows door entrance

In January 2014, a car bomb explosion close to Cairo Islam Art Museum.

In May 2014, 3 people were killed in terror attack in the Jewish Museum of Belgium**.**

In February 2015, ISIS destroys the Mosul Museum, as well as additional archeological sites across Iraq.

In March 2015, 23 people dead in an terror attack in the Brado Museum in Tunis.

The Louvre museum is also considered to be a potential target for a terrorist attack due to its value as a symbol as well as the fact it has a high concentration of people all year round. The greatest vulnerability is not inside the museum (driven by the security measures which provide a sterile zone), but rather outside the museum and by queues leading to the security control stations.

Definition

Terrorism is the systematic use of power and violence towards random, innocent citizens, performed by organised groups or an individual in order to achieve targets.

The motivation for a terrorist action may be one of the following:
- national or ethnic conflict
- religious conflict
- political profits
- an attempt to seize the regime
- anarchist action

Common terror techniques

Common terror techniques relevant in the context of cultural sites:
- ambush
- armed attack
- planted bombs
- biological/chemical attacks
- suicide attacks
- hostage incidents
- kidnapping
- sabotage
- cyberattack
- weaponised drones

Who is responsible and for what?

The entire responsibility in the context of protection against terrorist activities rests on the security forces of the host country. Cultural heritage institutions should prepare their security measures according to the local legal requirements, as guided by security services that are responsible for the joint implementation.

It is the duty of the security services to inform, instruct and supervise their personnel, as well as handle any terrorist event. The cultural heritage institutions should prepare themselves to these situations by providing passive and active protection measures, guiding their personnel and preparing emergency-situation plans.

In the event of a terrorist attack, the cultural heritage institutions should cooperate with the security services, providing any relevant information and technical measures available.

Basic components of the security plan

The preparation of a security plan is the first and foremost important step needed to bring the institutions to a state of readiness to terrorist events. This preparation is essential in order to give institutions the ability to provide the right reaction to any terrorist attack in real time. A threat-assessment should first identify, and then quantify the potential risk. Preventative measures may intercept or discourage terrorists. The plan must be simple and the security teams must be trained in new detection techniques and technologies.

The plan must be dynamic. The security manager and his team must continually test and examine the security plans and systems with the objective of finding potential vulnerabilities.

Program steps include:
- hazard identification and assessment
- preventative procedures

- answers to possible terrorist scenarios
- feedback loop, re-assessing potential vulnerabilities

Critical area protection
Locations in museums which are potentially dangerous in the context of terror, must be taken into account in the security plan:
- main entrance
- building proximity
- parking lot
- exhibition area (especially with high concentration of visitors or art items that can be considered to be an insult to a religion, nationality or social group)
- restaurant/refreshment room
- ventilation and air conditioning systems

Detectable threats
Threats that can be detected by the security personnel in the institution:
- suspicious mail items
- firearms and other weapons
- suspicious vehicles
- suspicious objects
- suspicious individuals (using profiling techniques)
- materials that are suspected to be biological/chemical threats

Precautionary actions and equipment
Precautionary actions and the use of technological equipment:
- anticipating possible scenarios and matching solutions
- passive protection of the institute:
- laminate existing windows with a minimum of 200-350µ polymer film or replace the entire window with material that does not produce fragments
- installation of physical barriers (such as fences, nets, etc.) to prevent the intrusion of people or objects
- installation of measures that prevent vehicle movement near buildings or crowded locations
- installation of barriers that prevent the entrance or intrusion of booby-trapped vehicles and bomb-cars to the courtyard or the interior parking spaces located beneath the building
- installation of visible and invisible (e.g, IR) security measures
- installation of CCTV surveillance around the building and the parking lot

Laminate glass with blast energy absorption

- active protection measures:
- daily search for suspicious objects/vehicles/individuals inside and outside the building
- access-control
- check entering individuals in a visual fashion and through the use of technical measures (metal detectors, etc.)
- check all items like bags, backpacks, etc., using adequate equipment
- recording and performing surveillance on individuals' entrance and exit
- checking vehicles in a visual fashion and through the use of technical measures
- material checking and continuous surveillance during structural improvements or construction in order to prevent the implantation of 'sleeping' bombs or the aggregation of weapons and explosive materials (the assassination of the Chechnyan president and the Baslan school case)

Inspection procedures
- inspecting individuals:
- outer circle identification of suspicious individuals by security personnel, based outside the building entrance
- checking entering individuals outside the building through the use of hand detectors or metal-detector gates
- creation of a sterile zone between the individuals who were checked and the individuals who were not
- it is recommended to use turnstiles to allow an individual inspection, creating a distance between the examined individual and the individuals standing in line

-       in order to avoid crowding around the location in which the security inspection is performed, it is recommended to provide numerous check points which are distant from one another, and in the field of vision of the incoming visitors

-       inspecting vehicles:
-       any vehicle that is supposed to park in a closed space or next to the building must pass a security inspection
-       the security inspection should be performed between two barriers that are able to prevent the breaking of vehicles
-       barriers should be installed on the parking exit as well
-       check for suspicious items inside and outside of museum building(s)

Identification procedures

-       signs of suspicious individuals:
-       inappropriate dressing
-       shaking hands/touching the face/nervous
-       sweat/blush
-       impulsive movements
-       shining eyes
-       mumbling
-       blood vessels showing

-       signs of suspicious mail items:[8]
-       is there any powdery substance on the outside
-       is the mail unexpected or from someone unfamiliar to you
-       does it have excessive postage, handwritten or poorly typed address, incorrect titles with no name, or misspellings of common words
-       is it addressed to someone no longer with your organisation or otherwise outdated
-       does it have no return address, or one that cannot be verified as legitimate
-       is it of unusual weight, given its size, or is it upside down or typically shaped
-       does it have an unusual amount of tape
-       is it marked with restrictive endorsements, such as 'Personal' or 'Confidential'

-       signs of suspicious vehicles:
-       car identification plate
-       intelligence information
-       vehicle's visible content
-       breaking in signs
-       suspicious driver/passengers
-       lower back side of car (heavy trunk)

-       signs of suspicious object:
-       appears to be out of place
-       unknown owner
-       of unusual weight, given its size
-       suspicious contents
-       visible content: boxes, pipes, batteries, wires, mobile phones
-       liquid leak from the bag with combustible smell

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[8] U.S. Postal Service outlined security measures

Reactions to events

- main steps:
- identification of threat
- evacuate the area and report to security authorities
- isolate the threat
- search by qualified personnel for other suspicious individuals/vehicles/objects/materials
- the potential event
- declaration of event termination
- back to routine

- suspicious objects:
- be alert for objects that are out of place, freshly painted places, disturbed dirt, replaced ceiling tiles, objects recently moved, broken cabinets and cables
- do not touch anything
- do not change the situation in the area
- do not use mobile phones or walkie-talkies
- evacuate the area and report the suspected event to the authorities
- look closely in the area, near doorways
- stay away from windows, electrical equipment
- be prepared for a possible explosion

- suspicious vehicles:
- do not touch anything
- do not use mobile phones or walkie-talkies
- evacuate the area and report to the authorities
- stay away from windows and power lines
- go to the nearest safe place
- be prepared for a possible explosion

- suspicious mail items or chemical/biological materials:
- do not handle the mail or the chemical/biological suspicious materials
- shut down the air conditioning or ventilation system
- close windows and doors in the room
- isolate the people who had contact with the suspicious mail/materials
- as soon as possible, shower with soap and water
- evacuate the area and report to the authorities

Hostage situation

- if you hear or see a hostage situation:
- immediately remove all people and yourself from any danger
- report to the authorities
  - remain calm and keep things calm
  - do not change the situation
  - do not excite the hostage takers
  - convince the hostage taker to allow for medical treatment or release the sick and injured hostages
  - talk with the hostage taker
  - report to the authorities
  - communicate all relevant information from the museum to the authorities

- if you are taken hostage:
  - remain calm, be polite and cooperate with your captors
  - do not complain, avoid being belligerent and comply with all orders
  - do not draw attention to yourself with sudden body movements, statements, comments or hostile looks
  - do not attempt to escape unless there is good chance of survival
  - try to stay low to the ground or behind cover away from windows or doors.
  - If possible, send information and pictures with your phone. (remember to mute your mobile phone)

- in a rescue situation:
  - do not run; drop to the floor and remain still
  - make no sudden moves
  - wait for instructions
  - even if you are handcuffed and searched, do not resist

Decision making in an event

When security personnel faces one of the previously described situations, ad-hoc difficult decisions must be made. For example, one can decide to evacuate the place. What alternatives does one have?

1. Postpone the evacuation instruction until state's official security personnel arrive to the scene, so they can examine the situation and respond;
2. Choose to declare immediate evacuation of the place, leading individuals to a safe location, until state's security personnel approve returning to the routine. This action is the safest in terms of saving lives;
3. Order evacuation, and concurrently start the search using trained and instructed teams. Through the use of this option, valuable time for dealing with the actual threats can be used, so property can also be saved. The disadvantages are that such actions may be putting the security teams at a higher risk.

The process of making decisions must be an integral part of a response system, one that has to be approved by both the institute's management and state's security institutions. Through these approvals, the person taking the decisions on site is released from the heavy pressure that comes from the great responsibility of real-time decision making.

Checklist

- in general:
  - do you have telephone numbers of the police and other security authorities at hand
  - do you have a plan for a terrorist event
  - do you have access to a first aid kit
  - do you have a terror alert information from the authorities
  - do you have instructions in case of a terrorist threat and/or attack
  - Does the museum have an alert and communication systems
- exterior circle:
- is the outside area that is part of the site completely fenced
- is the fence adequate and in good physical condition
- do you have adequate physical barriers and gate

-       do the yard and the buildings have adequate light during nighttime
-       do you have a close-circuit TV around the buildings
-       do you have an exterior intrusion detection system

-       interior circle:
-       do you have numerous check points and more than one entrance and ticket booths for visitors
-       have you spread out the check points, entrances and ticket booths over the area
-       do you have a metal detector gate
-       do you have a screening device for checking bags, electronic items etc.

A crafted bomb built from iron pipes filled with explosive material, with in-nails supplementation to increase the amount of shrapnel, and electronic device to trigger the explosion

-       do you have a daily inspection in the exterior and interior circles for the detection of suspicious objects, cars etc.
-       do you have laminate windows with a minimum 200-350 μ polymer film

The management of the security services in museums is obliged to collect data in connection with the terrorist activities in the near areas, to keep a tight connection with local security services in order to receive information in real time, and in order to receive the professional instructions needed to prepare the institution for the case of a terrorist incident.

HANDBOOK ON EMERGENCY PROCEDURES

Chapter 10: Museums under threat of bomb and rocket attacks and war

Sergiu Bercovici (Israel)
Willem Hekman (The Netherlands)

Introduction

War and museums are two antagonistic (conflicting) words. War refers to a state in which people are hurt, and damage is inflicted, either explicitly or implicitly. Museums, on the other hand, refer to the storage and protection of human achievements throughout history, for the purposes of education, culture and heritage.

Two stories to illustrate the problems.
The National Museum of Iraq was established by the British author Gertrude Bell and opened in 1926. It was originally known as the Baghdad Archaeological Museum. The museum closed in 1991 during the Gulf War and was not re-opened until April 28 2000.

National Museum of Iraq

In the months preceding the 2003 Iraq war, starting in December 2002, various antiquities experts asked The Pentagon and the UK government to ensure the museum's safety from both combat and looting.
On April 8 2003 the last of the museum staff left the museum. Iraqi forces, in violation of Geneva Conventions, engaged US forces from within the museum as well as the nearby Special Republican Guard compound. Army uniforms were later discovered in the building. Iraqi forces had built a fortified wall along the western side of the compound, allowing concealed movement between the front and rear of the museum.
Thefts took place between April 10 and 12 when some staff returned to the building and fended off further attempts by looters to enter the museum until US forces arrived on April 16.
While the staff instituted a storage plan to prevent theft and damage (also used during the Iran–Iraq War and the first Gulf War), many larger statues, steles, and friezes were left in the public galleries, protected with foam and surrounded by sandbags. Forty pieces were stolen from these galleries, mostly the more valuable.
In addition, the museum's aboveground storage rooms were looted, even though the exterior steel doors showed no signs of forced entry. Approximately 3,100 excavation site pieces (jars, vessels, pottery shards, etc.) were stolen, of which over 3,000 have been recovered. The thefts did not appear to be discriminating; for example, an entire shelf of fakes was stolen, while an adjacent shelf of much greater value was undisturbed.
The third occurrence of theft was in the underground storage rooms, where evidence also pointed to an inside job. Evidence indicated that the thieves possessed keys to the cabinets but dropped them in the dark. Instead they stole 10,000 small objects that were lying in plastic boxes on the floor. Of them, nearly 2,500 have been recovered.

The Middle East, 2006

In the summer of 2006 a new Middle-East war took place, inflicting tremendous damage.
On the 13th of July 2006 at 20:00, the first rocket hit mount Carmel, 30 meters from the Carmelite's monastery. From that point on, and for a period of a month, dozens of missiles landed in the area of Haifa. They landed in the National Naval Museum area, where the Modern Art Haifa Museum, the Mane Katz Museum, and the Japanese Art Museum are

located. A rocket that landed on the last day, landed next to the City Museum, its shards hitting the structure walls.

Haifa Museum of Art

Looting and destruction in the Kabul Museum
When rockets slammed into the National Museum of Afghanistan in Kabul in May 1993 a fire melted supporting beams holding up the ornate vaulted roof, sending it crashing down on the upper galleries. The next day, Najibulla Popol, the 37-year-old museum curator, peddled his bicycle through the fighting to the shattered building. He and a few staff members transferred what they could salvage to vaults in the museum's basement.

But the destruction of the museum building and part of its collection – the sole comprehensive record of Central Asian history – was only the first stage in a larger tragedy. In the months following the first rocket attack, a stream of Mujahedin soldiers repeatedly breached the steel doors of the vaults and systematically looted their contents, often guided by detailed instructions from Afghan and Pakistani antiquities dealers. In January 1994, when the United Nations agency Habitat bricked up the museum's windows and repaired the doors, the move only appeared to encourage more looters to break in. When new padlocks were again installed in March 1995, soldiers simply shot them off.
The National Museum of Kabul caught fire in May 1993 after rocket attacks. The second floor of the museum was completely abandoned. Except for a small number of artefacts, they lost all of the showcases and the screens that were used for exhibitions.

In general
In this chapter I will share some of my experiences (Sergiu Bercovici). These include the preparation of the museums, and the operations that were executed in order to prevent possible damage to the exhibits presented in the museums throughout Israel, and Haifa in particular. The environmental state to which I am referring is a constant short rocket/missiles attack to the town centers.

General instructions
- museum visitors as well as the museum's personnel must carry out the army instructions during the event of bomb or rocket attacks

- the security guards must have a safety shelter
- verify that the fire extinguishers are all in a working condition and that the area around them is not obstructed
- verify that the escape route is clear and the escape doors are not obstructed
- verify that all communication channels are active and safe for communication, in order to be able to communicate with the museum's personnel and security guards
- make sure that the museum's plans as well as the items list are safely placed outside the museum (e.g., a bank, Ministry of Culture, etc.)
- reduce the use of both electric and gas appliances; after use, make sure to check that all are closed down
- all flammable materials should be brought outside the museum and its surrounding areas
- locate the main water valves and mark them on the maps and in the streets
- cover all window panes with transparent film, up to 350 micron thick for prevention of glass fragments in case of explosion
- verify that the first aid box contains all required equipment
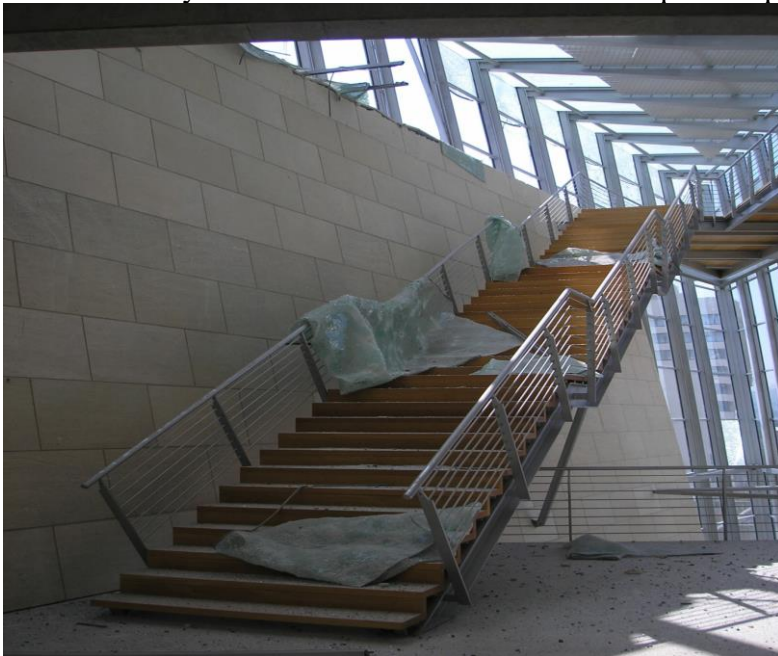
Laminate glass after a rocket explosion

Preparation for the state of war

All museums are obliged to have emergency programs. The main clauses of the program include:
- an up-to-date documentation of all of the exhibits
- organisation regulations and responsibility division
- preparation of a safe place for the exhibits
- improvements on the museum's defense such as prevention of glass scattering as a result of the shock wave
- store museum programs and the documentations in a safe place outside the museum
- any exhibits that are not easily ready for transfer due to either weight or size must be covered
- prepare a list of guard companies, have signed contracts so that these will respond in time of need
- prepare a contact list with army officials, the police, the fire department, the saving forces, and of course, the museum personnel
- prepare a list of volunteers

- train and practice the evacuation of people and exhibits to a safe place
- implementation of defense strategy against rocket attack when constructing new museums
- organise protection in order to prevent the plundering of the museum, in case of a hit
- prepare regulations for returning to the routine

Recommendations for exhibitions and collections
- all items that can be damaged by blasts must be taken down from the exhibition, wrapped up and stored in a safe place
- glass, ceramics and other breakable items must be taken down from the exhibition, wrapped up and stored in a safe place
- remove and store in a safe place all items which are near the windows
- remove and store in a safe place all items which are not placed under a reinforced concrete ceiling and wall
- remove and store in a safe place all valuable items, at the discretion of the museum management; a safe place for people may be considered as a safe place for the items as well
- storage of museum items in underground places necessitates placement on shelves 15 cm above ground level, at minimum; also, one should check that a good drainage system is in place
- temporary storage for museum items must be according to the following conditions:
    - reasonable physical protection against bomb/rocket attacks and theft
    - without water, drainage or sewage pipes
    - without flammable, explosive, oxygenated or corrosive materials
    - without a biological threat
    - maximum temperature of 24º C and a relative humidity that does not exceed 65%
    - a good locking system (we recommend that the lock is changed to a new lock); this lock must be marked with a secret sign
    - have an armed guard equipped with a communication device

Prevent plundering
- call the police or the army for help
- prepare a list of security companies
- mobilise museum staff for searching the museum items in the ruins
- close the museum area to all unauthorized people; the guard should be placed in the exterior circle. Access to the ruins area should be approved by the army and engineering authorities and by them only.

HANDBOOK ON EMERGENCY PROCEDURES

Chapter 11: Building facility risks

Willem Hekman (The Netherlands)
Michael John (Germany)

What to do if you have problems with your museum building?

Introduction

As a building shelters the museum's most important priorities it can be
seen as the first and strongest line of defence in an emergency or disaster. But when a building is poorly equipped or maintained it can cause or worsen emergency situations. So when you are having a small problem with your building it can easily grow into big trouble for your collection or organisation.

Asbestos in the Rijksmuseum Amsterdam

In April 2003, the Rijksmuseum in Amsterdam, one of the most popular museums in The Netherlands with more than a million visitors a year, had to close indefinitely after asbestos was found in the building during a routine inspection. Officials decided to close the museum which contains one of the largest collections of Dutch art, including Rembrandt's The Night Watch. It was closed until further notice as a precaution, also for the 400 members of staff. After two weeks a small part of the building was safe to be opened again.

Water damage

Damage from a burst water pipe forced Blanding museum to close in November 2004. Gushing water from a ruptured water pipe flooded Edge of the Cedars State Park Museum in Blanding, Utah on Tuesday afternoon, forcing officials to close the museum for at least three months. A spokesman said that a pipe joint connection in a section of the museum's fire suppression system was not properly crimped when it was installed more than 25 years ago. The system was inspected two weeks before, but no problems were detected. The pipe joint burst, releasing a torrent of water that damaged walls, flooring and display cases on the first and second floors of the museum. An estimated 18,000 gallons of water poured from the pipe in the 15 minutes it took park staff to shut down the system's main water valve.

In June 2009 Vienna, Austria experienced the heaviest downpours in 50 years, causing damage to the underground depot of the Albertina museum.

The staff removed 950,000 artworks from the leaking depot to another location in Austria.

Threats
- electrical wiring does not meet code standards
- emergency generator or power back-up systems are not available
- fire department personnel are not used to the building
- inadequate fire, smoke or water detection
- malfunction in climate systems, cooling, heating etc.
- building and construction drawings not up-to-date
- not enough technical budget
- only single water and electricity supply
- poor asbestos insulation
- poor housekeeping
- problems with the foundation of the building
- technical staff and knowledge are outsourced
- unprotected IT systems and software
- water and gas pipes in bad condition

Checklist (preventive)
- are stairs and banisters secured
- is emergency back-up lighting available throughout the building and regularly tested
- is the museum totally dependent on a local utility for power
- does the museum have dual or redundant power supply lines
- are the plumbing work and electrical wiring well maintained, including service contracts
- is asbestos a problem in the museum
- do the electrical circuits and boxes meet code standards
- is a technical staff available
- are there service contracts for climate systems
- are the IT systems well protected
- is the fire department personnel well trained in the building

- are up-to-date building and construction drawings available
- is the building part of the emergency plan
- are weight statistics for the floors available
- is the use of scissor lifts for the work on artworks in the exposition halls in accordance with the weight capacities of the floors
- are the pipes for the rainwater and the tanks waterproof and clean of debris and do they have enough capacity to serve drain purposes
- are the roofs capable to carry the snow which can be expected
- are the lightning conductors in place and effective

- **Instructions (during the event)**
  A typical emergency procedure in case of a technical emergency situation

```
                         ┌─────────────────┐
                         │   Technical     │
                         │   emergency     │
                         └────────┬────────┘
                                  ↓
                         ┌─────────────────┐
                         │  Control Room   │
                         └────────┬────────┘
                                  │
          ┌───────────────────────┼───────────────────────┐
          ↓                       ↓                       ↓
  ┌──────────────┐        ┌──────────────┐        ┌──────────────┐
  │Inform collection│     │Inform head of│        │inform building│
  │   manager    │        │  security    │        │    staff     │
  └──────┬───────┘        └──────┬───────┘        └──────┬───────┘
         │                       │                       │
         └───────────────────────┼───────────────────────┘
                                  ↓
                         ┌─────────────────┐
                         │ Decision making │
                         └────────┬────────┘
                                  │
          ┌───────────────────────┴───────────────────────┐
          ↓                                               ↓
  ┌──────────────┐                                ┌──────────────┐
  │Collection staff│                              │ Containment  │
  │   standby    │                                │  available?  │
  └──────┬───────┘                                └──────┬───────┘
         ↓                                               ↓
  ┌──────────────┐                                ┌──────────────┐
  │Security staff│                                │Clean-up spills│
  │   standby    │                                │  available?  │
  └──────┬───────┘                                └──────┬───────┘
         ↓                                               ↓
  ┌──────────────┐                                ┌──────────────┐
  │Evacuate people│                               │ Hazard areas │
  │ and/or art?  │                                │   marked?    │
  └──────┬───────┘                                └──────┬───────┘
         ↓                                               ↓
  ┌──────────────┐                                ┌──────────────┐
  │Inform fire department/│                       │Repair schedule│
  │   police     │                                │ prioritised? │
  └──────────────┘                                └──────────────┘
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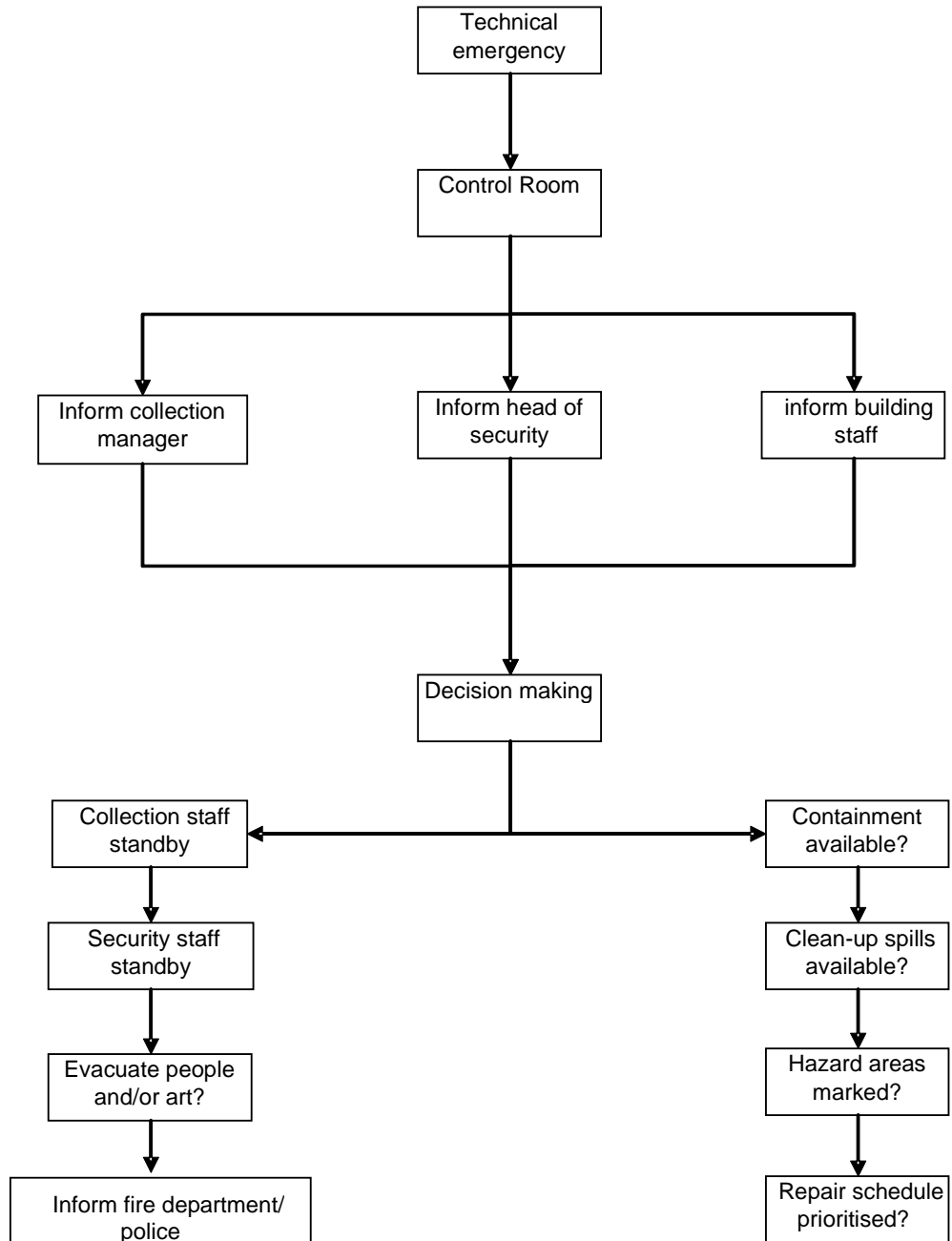
HANDBOOK ON EMERGENCY PROCEDURES

Chapter 12: Movement of antiques

Tian Kai (China)

Introduction

In order to save the stone archway which commemorates the Assistant Minister of War of the Ming Dynasty and which has been under water for a long period, Zhongxiang City of Hubei Province lifted the whole archway from the water-logged low-lying parts to the plaza of new museum on April 26 2010 for maintenance and protection.

The ancient stone archway, built in 1581, is 11 meters in height and 9.9 meters in width with a huge volume. Parts of the components could not be dismantled, thus the archway needed to be lifted and transported as a whole and as a result had caused quite some difficulties for the move. Zhongxiang Museum organised the relocation and construction based on the original plan, but the upper part and lower part of the archway suddenly broke apart causing the upper stone-carving archway to crush the inscribed stone tablet into four pieces.

From March 30 to June 28 2004, there were 114 antiquities from eight Chinese museums displayed in the exhibition of Sacred Mountain Peaks held in the Grand Palais in Paris. But due to lack of sufficient preparation by the French, the simultaneous arrangement and follow-up decoration attributed to poor light in the exhibition rooms and disordered the field of operation. After the Liushan Pattern Bronze Mirror of the Warring States Period – an exhibit from the Shanghai Museum - was arranged, a member of the French staff put the protective glass on the display case without any help from others. In the process he accidentally touched the mirror; the huge impact caused the mirror to fall to the ground and smash to pieces.

On the morning of September 20 2007, a keeper of the Wuwei Museum of Gansu Province, China took the antique wooden dove from the storage cabinet in the antique store-room. When the antique wooden dove in the box was put on the upper layer of the storage cabinet,

the bottom of the box suddenly came off and the wooden dove fell to the ground. The bird's beak was ruptured.

These are most painful examples of risks while moving antiques.

Definition
The risk of the movement of antiques refers to the actual security risk when antiques are moved from exhibition hall, storage room and original sites to the other locations.
Possible threats
- Falling
- Bumping
- Squeezing
- Shatter
- Robbery
- Traffic accident
- Accident during loading and unloading

Checklist (preventive)
- be aware of trust and quality when recruiting operators from external companies
- do not employ unprofessional transportation companies
- do not use incorrect methods to move antiques by single staff members
- make sure there are sufficient security guards to escort the move of antiques
- make sure the driver of the transport vehicle is proficient
- do not use fragile transport containers
- use the proper materials for packing and protection of the antiques
- do not use one container for more than one antique
- do not use logos of special care on the containers
- select a safe time schedule for the transportation (weather, war)
- use the correct transportation vehicles and inspect their safety and security provisions
- use correct hoisting equipment
- use vehicles with correct facilities for climate control
- lock and seal the transportation vehicles
- fasten all containers in the transportation vehicle
- make sure that the prescribed speed is not exceeded
- select the safe route without traffic jams and obstacles
- make sure that during stops and loading and unloading the vehicle is under guard
- select the proper train, vessel or aircraft with separate space for the antiques
- in case of movement inside the building check the lights, obstacles and obstructions
- in case of movement during opening hours check crowd control, open areas and CCTV coverage

Instructions (during the event)

- Assess the antique for connection rigidity, corrosion, decoration, exterior denudation, decay, status of glass with thin porcelain body, fragility
- Assess if antique with a long figure and excessive height is fit for long distance movement
- Provide the appropriate checklist for climate control
- Assess the route to be used for obstacles like bridges and culverts, security areas, elevators, road surface, flow of traffic, areas with hazardous climates or war zones
- In case of travel over water routes assess wind, waves and current as well as loading and unloading docks
- Assess transportation means for use of containers, climate control, power supply for climate control
- Provide checklist concerning the transported antique such as name, date of antique, excavating site, size, weight and photos
- Take special care when movements take place within the museum or exhibition hall such as use of special personnel, use of packages with lining, suitable handcarts
- If possible, move antiques from the museum when the museum is not open to the public
- When the move takes place to another part of the city/country, check signed agreements with the destination, wall-to-wall insurance, transportation schedule, route, notification of public authorities, selection of vehicles with GPS, back-up vehicles, armed escorts (if possible and legally allowed), sufficient security guards

Instructions in case of an emergency

a. Accidents within the museum
- while carrying an antique and a rupture happens, put the antique down quickly
- take precautionary actions and take photos
- when there is severe bumping or tip-over, stop the movement and check the content of the boxes

b. Accidents in traffic
- stop the vehicles and make an exclusion area
- rescue personnel when injured
- notify the public authorities
- take photos of the accident
- check the damage with representatives of all parties involved in the accident
- do not unnecessarily open the packages
- if needed request for a back-up vehicle

c. Accidents on a train or in a vessel
- without prejudice for the life of personnel, guards should watch the surroundings of the antique
- make an exclusion area
- take photos of the accident
- request assistance from security personnel
- notify all parties involved in the transportation
- request another vessel or vehicle to transfer the antiques