

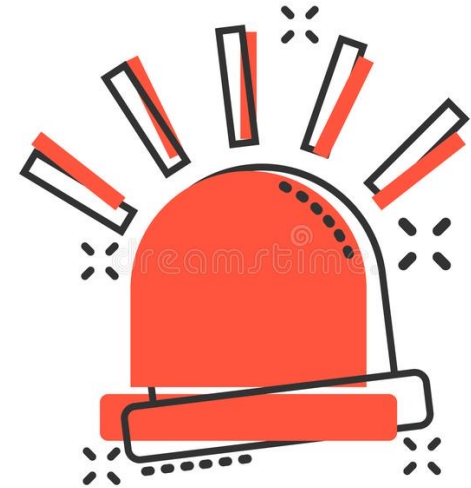
- What is an emergency?
- External and internal hazards
- Mitigation / Risk analysis
- Preparedness
- Response
- Recovery
- Water damage
- Fire damage
- Earthquakes

Disaster Preparedness and Emergency Management





What is an emergency?



- Hurricanes, tornadoes, flooding
- Earthquakes
- Wildfires
- Water main breaks, sewer system backups
- Proximity to hazardous materials or activities
- Civil disturbances, terrorist attack

External Hazards



- Poor maintenance of roof, gutters, and drains
- Pipes, skylights, or equipment over collections
- Leaking or wet basements
- Collections on the floor
- Book drop (fire hazard)
- Fire exits obstructed, fire protection systems inadequate
- Electrical system inadequate
- Shelving not braced
- Important data not backed up offsite
- Collections not insured
- No collection inventory

Internal Hazards





Minimizing
the effect
of a disaster

**Mitigation /
Risk Analysis**



Buildings

- assess risks for a building
- inspect and regularly reorganise spaces and building surroundings
- install fire-extinguishing systems and water-leak detectors and alarms
- take special precautions when risks can increase

Mitigation / Risk Analysis



Goods

- register safety copies of crucial documents
- protect computers and data
- sign insurance policies to cover any damage

Mitigation / Risk Analysis



Staff and equipment

- train the staff
- purchase necessary equipment
- test and update the emergency plan
- distribute the documentation to personnel
- concentrate tools and equipment in a dedicated storage
- appoint a rescue team

Mitigation / Risk Analysis



Planning
how to response

Preparedness



Preparedness is a determining factor and can make all the difference: libraries and archives are in need of prevention and have the duty to invest in it.

With this aim it is fundamental to have

EMERGENCY PLANS

Preparedness



dPlan
of the **Northeast Document**
Conservation Center
(NEDCC)

In Italy

Biblioteca Nazionale
Centrale di Firenze
(flood in 1966)

Direzione Generale degli Archivi

Preparedness



- deep knowledge
- opinions and recommendations from experts and scientists
- research and studies
- investment in equipment
- planning of the emergency response
- staff continuous training
- experience

Preparedness



Act to contrast
the hazards
created by a disaster

Response



- readiness
- promptness
- efficiency
- willingness
- collaborative spirit
- attention
- determination
- situation awareness

Response



I stage

- raise the alarm and follow the emergency procedures
- evacuate all personnel
- secure the area
- contact the rescue
- stabilise environmental parameters
- produce photographic documentation

II stage

- organise different areas (registration, packaging, drying, etc.)
- transport objects to be frozen to the closest available system, in the shortest time possible



Returning
the community
to normal

Recovery



- establish a program
- determine priorities of conservation
- entrust a conservator
- discard irrecoverable objects
- reposition objects in good condition
- contact insurance brokers for damage compensation
- evaluate results
- improve the emergency plan

Recovery



WATER DAMAGE



In most of the cases, whether it is a particularly devastating event or a little emergency, damage related to water is the most frequent.



WATER DAMAGE

Within **48-72 hours** after the event → **activation and growth of microorganisms**

After only 48 hours
at RH > 65% and T > 21°C →

- mould
- swelling and softening
- blocking



WATER DAMAGE

WATER RESISTANCE of photographs

- photographic process
- state of conservation
- correct handling
- duration of immersion
- water temperature
- water pH



WATER DAMAGE

MORE RESISTANT

- b/w photographic prints
- film negatives in good state of conservation

LESS RESISTANT

- modern colour photographs
- deteriorated nitrate and acetate films
- paper based materials



WATER DAMAGE

In water longer than 48 hours

- salted paper
- albumen prints
- platinum prints
- cyanotypes
- photomechanical processes

No contact with water

- contemporary colour processes
- wet collodion processes
- first additive colour processes
- digital printing processes





Video Credit: IPI's DP3 Project



DRYING METHODS

IMMEDIATE DRYING	TEMPORARY FREEZING	
air drying	air drying	freeze-drying



AIR DRYING

Advantages

- delicate and potentially less invasive operation

Disadvantages

- extremely laborious method
- to be carried out with particular care and experience
- it requires a lot of space



AIR DRYING

Before drying

- delicately rinse photographs in clean cold water
- clean them with a soft brush or wet cotton swabs
- maintain the material wet until the designated place for the operation will be ready



Image Credit: Marta Cotelli



AIR DRYING

While drying

- place photographs horizontally on blotting paper, emulsion side up
- never leave an item drying in contact with another
- organize items
- do not force detachment of photographs
- periodically substitute wet blotting papers



Image Credit: Federica Delia



AIR DRYING

Framed photographs

- immediately remove from frame
- if attached, do not try to separate glass and let dry with the glass face down

Cased photographic objects

- do not open
- do not try to separate components
- do not remove fragments
- do not wash
- do not freeze or freeze-dry



AIR DRYING

Albumen prints

- generally can be air dried safely
- may roll up
- may show craquelures once dry
- must be put under low pressure to prevent distortion

Collodion prints

- can endure even extended immersions
- although, cracks in the emulsion can cause stains and water-stains

Gelatine prints

- may show swelling, detachment and/or lifting
- do not touch wet emulsion side



AIR DRYING

Film negatives

- dry vertically on plastic threads or ropes, fastened with plastic clips on margins
- orient in the same direction

Air drying method
is less effective and appropriate for:

- soluble materials
- bindings



Image Credit: Federica Delia



TEMPORARY FREEZING

Advantages

- let us save time
- allow us to plan and organise each phase of the intervention with a relative calm
- delays deterioration and mould growth
- doesn't interfere on the reproducibility of a negative

Disadvantages

- may irreversibly modify photograph's features
- may cause stains and imperfections, distortions and alterations of binders and adhesives
- is not appropriate for wet collodion processes



TEMPORARY FREEZING

Before temporary freezing

- gently rinse in clean cold water
- place in polyethylene envelope
- interleave with silicone paper
- seal envelopes



Image Credit: Marta Cotelli

Attention!!

Not all photographic materials can be frozen depending on their structure and composition.



TEMPORARY FREEZING

Transport to refrigeration systems

- pack photographs in boxes divided in small groups
- transport collections as fastest as possible in refrigerator trucks
- prefer blast freezing refrigerators



FREEZE -DRYING

- place frozen materials in a **vacuum chamber**
- to a **low heat source** to accelerate thermal transfer and facilitate evaporation
- by **sublimation** water passes from solid state to vapour

Attention!!

A prolonged treatment may excessively dehydrate the material.

If necessary, a **further humidification** might be carried out.



FIRE DAMAGE

Plastic supports	→	distort
Emulsions	→	become embrittled
Paper based materials	→	can get stained by smoke and soot



What to do:

- interleave and place in boxes to be examined later
- dust and minimise local discolouration and stains
- use reproduction techniques to obtain visual information



EARTHQUAKES

Buildings



may collapse



Photographic materials



appear covered by dust and dirt

show mechanical damages

could be damp or wet

What to do:

- recover materials fast
- catalogue and take photographic documentation
- call a conservator



In conclusion

Get ready and never underestimate a disaster.

- Know and become familiar with rescue procedures
- Research and experiment rescuing methods
- Invest in prevention and maintenance
- Update emergency plans
- Train internal staff
- Share experiences

GOAL

to limit
damage and loss
and to reduce
recovery costs



Bibliography

- Canadian Conservation Institute and International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCR), *A Guide to Risk Management*, 2016 available also online https://www.iccrom.org/sites/default/files/2017-12/risk_management_guide_english_web.pdf
- Gwinn N. – Wellheiser J., *Preparing for the Worst Planning for the Best: Protecting Our Cultural Heritage from Disaster*, IFLA Publication Series, München: K.G. Saur, 2004
- United Nations Educational, Scientific and Cultural Organization (UNESCO), *Disaster Preparedness and Mitigation. UNESCO's Role*, Paris: UNESCO, 2008 available also online <https://unesdoc.unesco.org/ark:/48223/pf0000150435?posInSet=2&queryId=77c455dc-7cc5-4011-95fa-8164ae0fb6b1>

Internet Sources

- dPlan <https://www.dplan.org>
- Emergency planning <https://www.nedcc.org/free-resources/preservation-leaflets/3.-emergency-management/3.3-emergency-planning>
- Wet photographs <https://www.nedcc.org/free-resources/preservation-leaflets/3.-emergency-management/3.7-emergency-salvage-of-wet-photographs>
- Freeze-drying <https://www.nedcc.org/free-resources/preservation-leaflets/3.-emergency-management/3.12-freezing-and-drying-wet-books-and-records>

