

# WHAT COULD GO WRONG?

## Risk Assessment for Cultural Heritage Institutions

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2:00 pm ET



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## NEDCC



NORTHEAST DOCUMENT CONSERVATION CENTER

## Agenda

- **Emergency Preparedness for Collections**
- **Risk Assessment & Emergency Management**
  - Emergency Management
  - What is a Risk Assessment?
- **Identify the Risks**
  - Region/Setting, Building (Inside), Building (Outside), Collections, Care & Handling
- **Mitigating & Assessing Risk**
  - Taking Action: Mitigation Strategies
  - Tools for Risk Assessment

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What is Emergency  
Preparedness... for  
Collections?

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## Disaster!



<http://goo.gl/3ayvj6>



Source: Chicago Tribune

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## Natural Disasters

### Natural:

- Rain & wind storms
- Earthquakes
- Tornadoes
- Floods
- Pandemics
- Biological agents (mold, insect or vermin infestation)



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## Manmade Disasters

### Manmade:

- Building deficiencies (structure, design, environment, maintenance)
- Water (broken pipes, leaking roofs, blocked drains, **fire extinguishing**)
- Fires and Explosions
- Acts of war & terrorism
- Vandalism
- Chemical spills
- Power failures



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Source: National Geographic

## Why Prepare?

### Barriers to Preparedness:

*"It won't happen here."*

*"Whatever I do won't make a difference in the event of a big disaster."*

*"I can't worry about this until a threat is imminent."*

*"I just haven't thought about it."*

*"I don't like to think about it."*

*"I don't have the money/time."*

*"I don't know how to do this."*

*"I feel unable to do this."*

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## Your Disaster Plan

- A. INSTITUTIONAL INFORMATION
- B. SERVICES NEEDED IN AN EMERGENCY
- C. EMERGENCY EQUIPMENT AND SUPPLIES
  - LIFE SAFETY
  - FACILITIES
  - COLLECTIONS RESPONSE & RECOVERY
- D. ADD'L. SERVICES NEEDED IN AN EMERGENCY
- E. DAILY UPKEEP CHECKLIST
- F. WEEKLY UPKEEP CHECKLIST
- G. OTHER EMERGENCY ISSUES
- H. DRYING STATION LOCATION
- I. SALVAGE PRIORITIES
- J. PROCEDURES

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## Your Disaster Plan

- Publish your plan
- Reviewed and updated:
  - At least once a year
  - After events and changes in your organization
- Keep copies in multiple locations



Photo by Elena Ryzhenko on Unsplash

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## The Florence Flood (1966)



- November 4, 1966
- Arno river flooded its banks
- 112 dead
- 2 million books destroyed
- The beginning of the preservation movement as we know it.

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<http://go.gl/3l8eLh>

**RISK ASSESSMENT &  
EMERGENCY MANAGEMENT**

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## Phases of Emergency Management

1. **Mitigation/Prevention**
2. Preparedness
3. Response
4. Recovery



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## Risk Assessment: What?

- Identify possible hazards (natural & manmade)
- Determine vulnerability & impact -- "loss exposure"
- Monitor and reassess risks



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## Risk Assessment: Why?

- To maximize limited time and resources
- Cost-benefit analysis
- Identify mitigation strategies
- Implement mitigation strategies



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## Risk Assessment: Who?

- Institution staff
- Insurance agent
- Emergency Responders
- Recovery Vendors



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## The Cologne Archives Collapse (2009)



Image credit: <http://www.spiegel.de/fotostrecke/fotostrecke-40338-11.html>

“Buried more than a millennium’s worth of documents under tons of rubble.”

*(Der Spiegel)*

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## Vigilance!

### Cologne Archives Collapse - 2009



Image credit: <http://www.spiegel.de/fotostrecke/fotostrecke-40338-10.html>

“Cracks ran through a number of neighboring buildings after the collapse. Cracks had likewise been discovered in the archive recently, but had been discounted.”

*(Der Spiegel)*

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# IDENTIFY THE RISKS

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## Identify the Risks: The Site Survey

- The setting – where are you and who are your neighbors?
- The building – inside and out
- The collections – what do you have and what is it worth?



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## Identify the Risks: The Setting

- Where are you?
  - Geographically
  - City/town or rural
- Who are your neighbors?
  - What is in those buildings around you?
  - What is your area's crime landscape?



Photo by [iStockphoto.com](#) on [iStock.com](#)

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## Natural Hazards

- Can be community- or region-wide, possibly catastrophic
- FEMA, Disaster Declarations: <https://www.fema.gov/disasters/disaster-declarations>

The screenshot shows the FEMA website interface. At the top, the FEMA logo and navigation menu are visible. The main heading is "New York Severe Winter Storm And Snowstorm (DR-4322-NY)". Below this, the incident period is listed as "March 24, 2017 - March 25, 2017" and the declaration date as "July 12, 2017". A map of New York state is displayed, with several counties highlighted in orange to indicate the designated area. A sidebar on the right contains additional details such as "Disasters", "New York Severe Winter Storm And Snowstorm (DR-4322-NY)", "Designated Areas", and "Disaster Federal Register Notices".

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## Industrial/Environmental Hazards

- HVAC failure
- Power failure
- Water-main break/Sewer backup
- Train or auto accident
- Construction accident
- Industrial accident/fire
- Nuclear accident



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## The Human Element

- Arson
- Vandalism
- Violent Attack
- Theft
- Accident
- Civil Unrest



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## Identify the Hazards: The Building

- **Inside**
  - Building hazards (asbestos, etc.)
  - Fire protection
  - Maintenance
- **Outside**
  - Landscaping
  - Lighting
  - Maintenance



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Photo: Donna Wiegler - Bangor Daily News 25 July 2008

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## Fire Detection & Signaling

### Smoke Detectors

- Spot-type ionization and/or photoelectric
- Line-type or optical beam photoelectric
- Aspirating Smoke Detector (ASD)

You might also see flame and heat detectors!

### Alarm Systems

#### Protected Premises

- Local strobes, bells, and sounds to alert occupants

#### Auxiliary

- Direct link to a fire department

#### Central Station

- Link to a certified third-party company's monitoring station

#### Proprietary

- The owner of the property owns the monitoring station



Spot-type smoke detector



Line-type smoke detector

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## Fire Suppression



Label for A,B,C extinguishers

### Automatic Suppression Systems

- Wet-pipe Sprinklers
- Dry-pipe Sprinklers
- Preaction sprinklers
- Clean agent/gaseous system
- Fine water mist system

### Portable Extinguishers

- Look for ABC Dry Chemical extinguishers
- Inspect regularly

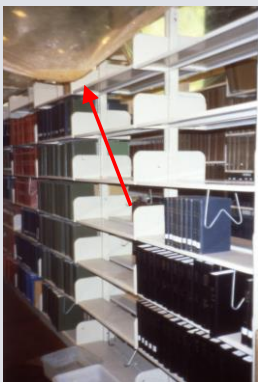
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## Building Maintenance - Inside

- Inspect:
  - Electrical,
  - HVAC,
  - Plumbing,
  - Masonry,
  - Fire suppression
- Schedule regular preventive maintenance
  - Professional assessment?



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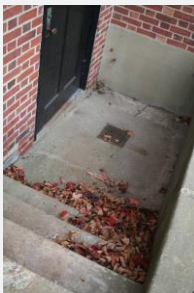
After a disaster – is there a new risk?

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## Building Maintenance - Outside

### Inspect

- Landscaping
- Sump pump drainage
- Street and parking lot drains
- Roof/Gutters/Eaves



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[http://www.getty.edu/conservation/our\\_projects/science/plastics/](http://www.getty.edu/conservation/our_projects/science/plastics/)

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# MITIGATING & ASSESSING RISK

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## Mitigation

- Perform a risk assessment
- Mitigate risks and take action
- Create/update policies
  - Mission statement
  - Collections policies
  - Care and handling policies
  - Exhibit policies
- Create/update a disaster plan



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## Mitigation

- Schedule the regular walkthrough
- Schedule Preventative Maintenance
  - Roof
  - Fire Alarms
  - Fire Suppression & Extinguishers
  - HVAC
- Improve Storage Practices

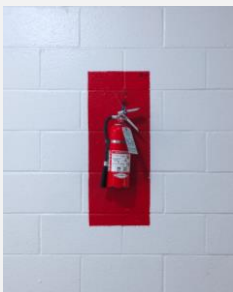


Photo by Andrei Stoltsev on Unsplash

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## Mitigation: Fire

- Unplug small appliances
  - Use of extension cords
- Inspect supply closets and storage for chemicals
- Be aware of concealed spaces
- Keep exits unobstructed & fire doors closed
- Know how to shut off HVAC vents



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## Mitigation: Water

- Keep pipes and plumbing in good condition
- Avoid basement storage
- Lift collections at least 4 inches off the floor
- Avoid plumbing above collections
- Use water detectors in known problem areas
- Keep gutters and drains clean and check roof annually



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## Mitigation: Mold

- Keep RH between 30-50%
- Don't store collections in damp areas or on the floor/against foundation walls
- Eliminate stagnant pockets of air
- Regularly change HVAC system filters
- Isolate incoming and infested collections
- **RESPOND QUICKLY TO WATER DAMAGE!**



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## Mitigation: Pests

- Seal routes of entry
- Control water and food sources
- Perform routine housekeeping
- Isolate and examine incoming collections
- Monitor for pests



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## Mitigation: Security

- Alarm systems
  - Intrusion detectors
  - Motion detectors
- Surveillance
  - Human or CCTV
- Policies and practices
  - Exterior lighting
  - Establish closing procedures
  - Protect internal book drops
  - Key policies



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## Mitigation: Digital

- Back ups
  - Important documents, records, systems
  - Geographic distribution
  - Removable media and evacuation plan
- Security
  - Strong and updated passwords
  - Update operating systems
- Equipment Replacement Fund



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## Assessing Risk: Helpful Tools

- FEMA, Flood Map Service Center:  
<https://msc.fema.gov/portal>
- Probability/Impact chart
- University of California, Library Collections Risk: Assessment Tool  
<https://www.ucop.edu/enterprise-risk-and-resilience/erm/tools-templates/library-collections-risk-model.html>

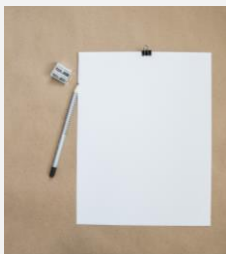


Photo by Kelly Sikkema on [iStockphoto](#)

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## FEMA, Flood Map Service Center



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## Probability and Impact Chart

	High Probability	Low Probability
High Effect	Flood Fire Burst Water Pipe Hurricane	Earthquake Nuclear Fallout Civil Unrest Pandemic Flu
Low Effect	Leaking Pipe/tap/toilet Wet books returned	Shelf Collapse Animal intrusion

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## Library Collections Risk Model

Risk Events	Frequency	Severity	Recovery Time	Financial Impact	Relative Rating
Earthquake					
Fire	Once per decade (Medium)	10% of collection (Medium)	Ten weeks	Up to \$5 million	Moderate 32.8
Flood					
Water leak					
Deterioration					
Theft, mishandling, and mischeling					
Defacement					
Mold					
Insect infestation					
Damage					

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## Additional Resources Mentioned in Presentation

- NEH Infrastructure and Capacity Building Challenge Grant: <https://www.neh.gov/grants/preservation/infrastructure-and-capacity-building-challenge-grants>
- Historic New England's research on site drainage and downspouts: <https://www.historicnewengland.org/preservation/for-professionals-students/property-care-white-papers/site-drainage/> and <https://www.historicnewengland.org/preservation/for-professionals-students/property-care-white-papers/gutters-and-downspouts/>
- American Museum of Natural History, Residual Pesticides: <https://www.amnh.org/research/natural-science-collections-conservation/general-conservation/health-safety/residual-pesticides>

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**THANK YOU!**

**Questions?**

**Preservation Services**

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