UNIVERSITY OF MARYLAND
Department of Fire Protection Engineering

Impact of Fire on Property/Contents

Property protection

- Methods?

Damage to Property

- Damage sources
  - Fire (thermal)
  - Smoke (gas, particulates)
  - Extinguishing agents

http://protechfcs.com/knowledge

http://www.education.purdue.edu/edit/backup/

Collateral Damage by Extinguishing Agents

http://theaviationist.com/2012/05/18/stealth-black-hawks-but-its-only-another-hangar-foam-party/

http://www.szelagart.com/firedamage.html

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Protection of Property

- Protection methods
  - Consider damage thresholds for
    - Temperature:
      - cable insulation degrades at 205 °C
      - Computer hardware ~ 80-90 °C
    - Heat flux: electric panel degrades at 6 kW/m^2
    - Gas concentrations:
      - Electronic equipment: Visual Damage at 100 ppm HCl, electric damage at 1000 ppm HCl
    - Corrosivity of smoke particles

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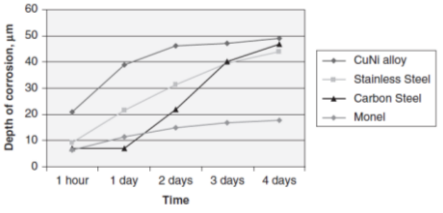
Smoke Corrosivity

PVC Smoke



J.S. Patton, *Journal of Fire Science*, 1992, **10**, 294 [2]

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Protection Methods

- Compare collateral damage by extinguishing methods to that from fire and smoke

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Summary

- Protecting property and contents requires an understanding of the tolerance of such materials to fire and smoke.
- Extinguishing agents are selected considering the potential for collateral damage.

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