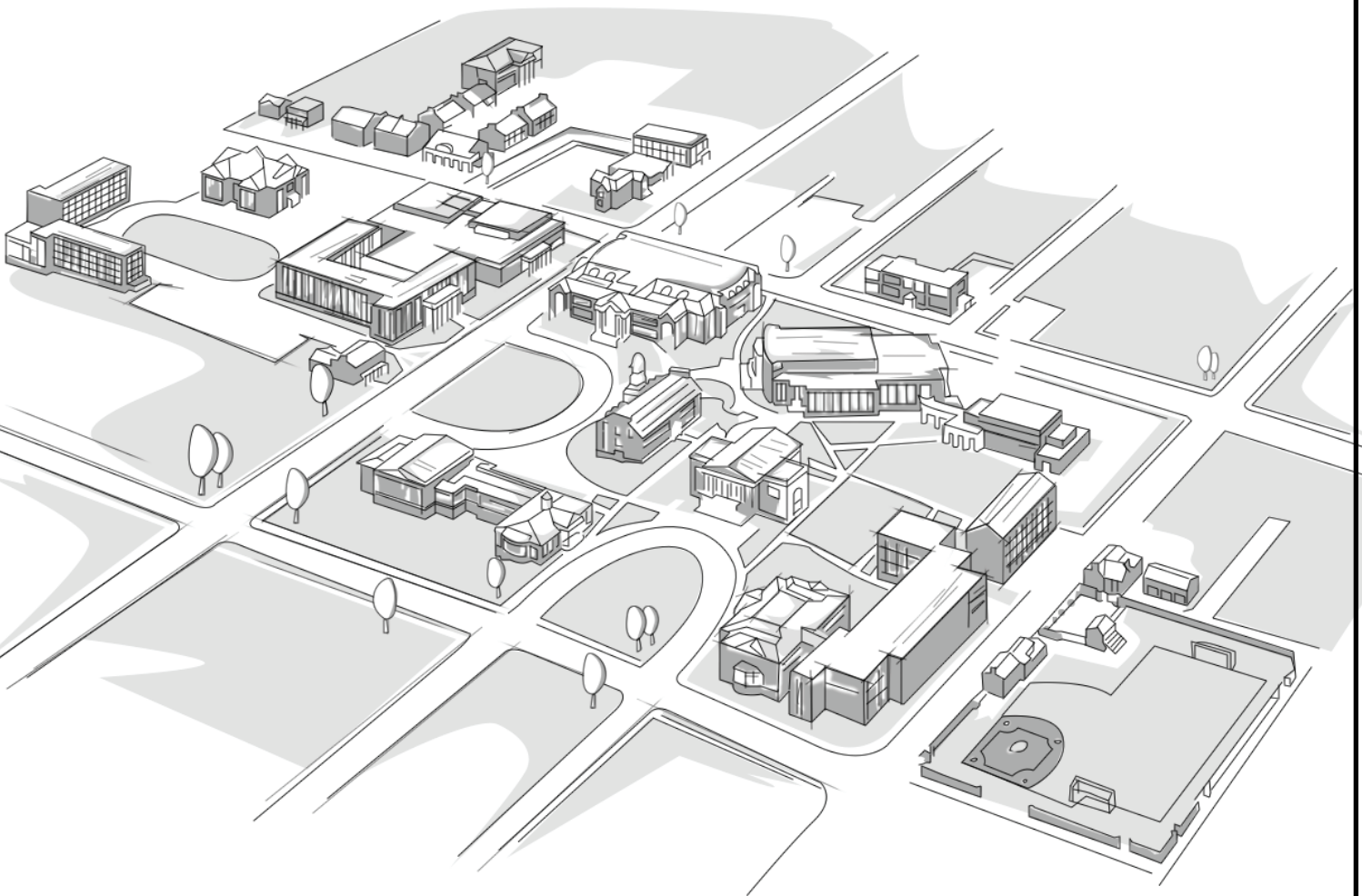


EPS

Lecturer: Toby Salmon





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WHAT IS EPS?

- Expanded polystyrene foam (EPS) is a material that has special insulating properties because of its structure.
- Because its cells are not interconnected heat cannot travel through EPS easily
- The raw materials used in the main component (styrene) are derived from petroleum or natural gas and formed by a reaction between ethylene and benzene.



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WHAT IS EPS?

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- Acronym for 'Expanded Polystyrene' foam
- 'Sandwich Panel' or 'Insulated Panel' system
- Two metal [aluminium] faces bonded to a core of insulation – EPS
- A “system” includes:
 - The panels
 - Their jointing
 - The support structure



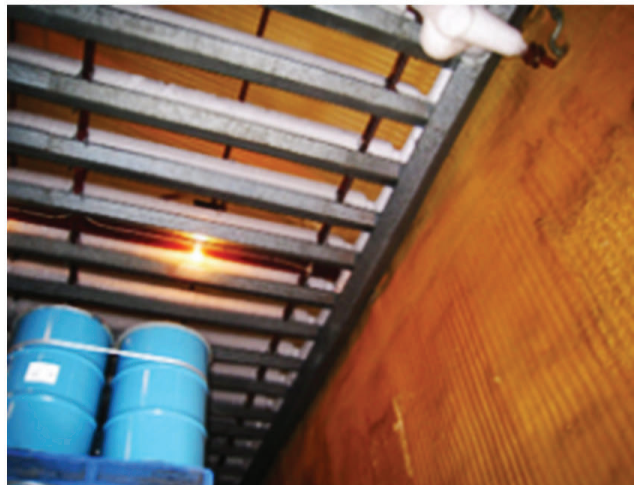
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WHAT'S NOT 'EPS'?

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PUR – Polyurethane

- Cheaper insulation material
- Usually sprayed onto surface
- Still highly flammable
- Thermal degradation ~ 200°C



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WHAT'S NOT 'EPS'?

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PIR – Polyisocyanurate

- Commonly referred to as “New” EPS
- Manufactured in Australia from 2006 onwards. “Bondor” and “Kingspan” are two recognised brand names.
- Some evidence suggests superior fire performance to traditional EPS



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WHERE DO WE FIND EPS?

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- Abattoirs / butchering
- Smallgoods manufacturing
- Vegetable / Fruit wholesaling
- Seafood co-op's
- Cold storage
- Bakeries



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WHERE DO WE FIND EPS?

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- Dairies
- Poultry operations
- Pharmaceutical manufacturing
- Residential homes



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WHAT'S GOOD ABOUT EPS?

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- Has excellent thermal characteristics for 'controlled' environments e.g. cool stores
- Provides good hygiene (hence use in food processing)
- Lightweight and easy to build / work with
- Water resistant (e.g. Brisbane markets - flood)
- Offers no nutritional value to pests
- Relatively inexpensive



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WHAT'S BAD ABOUT EPS?

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- Relatively low flash-point ~ 250°C
- Can induce a fire to spread quickly
- Produces large amounts of toxic smoke when on fire
- May contribute to fire-load – melts into liquid
- Can become structurally unstable when exposed to large amounts of heat / flame

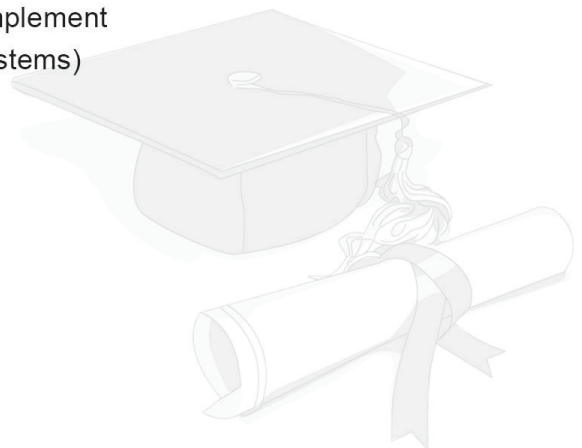


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WHAT'S BAD ABOUT EPS?

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- Because of these qualities, Fire Authorities are unlikely to enter an EPS site ablaze, can = Total Loss
- Can be expensive to retrofit with newer products or implement some Risk Improvements (e.g. automatic sprinkler systems)

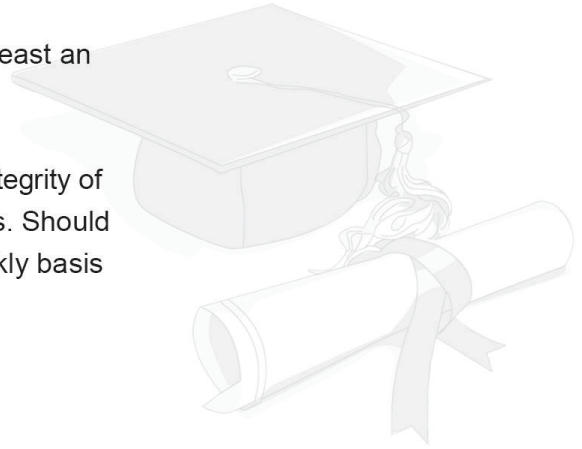


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COMMON THINGS THAT GO WRONG WITH EPS RISKS

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- Exposed EPS cores due to unsealed panels
- Electrical wires are not housed in an appropriate conduit
- Electrical switchboards are not thermo-scanned on at least an annual basis
- No documented self inspection programs in place for integrity of EPS panels – e.g. damage to panel by forklift or pallets. Should have a designated staff member that checks on a weekly basis



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COMMON THINGS THAT GO WRONG WITH EPS RISKS

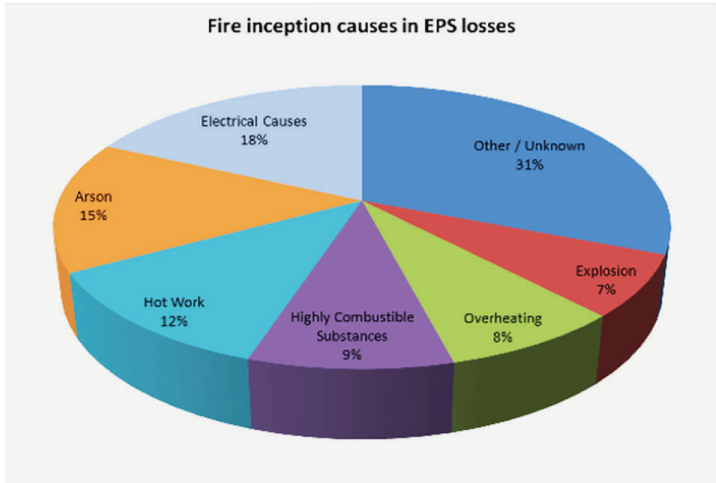
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- No hot work permit in place when welding/cutting performed on site
- No early warning fire detection system in place. E.g. VESDA, thermal or hardwired smoke detectors
- Poor housekeeping – idle pallet storage near EPS panels
- Forklift battery charging units near EPS panels and combustibles



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COMMON CAUSES OF EPS FIRES BROOKLYN



Remember.....EPS will not start a fire on its own – it needs an ignition source



Source:
Munich Re, Minimising Property Losses, A Risk Management Tool, 2008

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WHAT AN EPS FIRE LOOKS LIKE BROOKLYN



New York, USA, Cold Storage Fire
Dec. 2006



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CLOSER TO HOME....!

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Food Manufacturer NSW, Oct. 2007
Insured loss - \$200,000,000+



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**AN EPS FIRE CASE STUDY –
FOOD MANUFACTURER 8TH OCT 2007**

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Source: Superintendent Chris Jurgeit,
Manager, Structural Fire Safety Unit
NSWFB



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Chain of Events

- 9.59am – Automatic Fire Alarm (thermal) direct call to NSW FB
- 10.07am – Fire crews en route “large volume of smoke issuing”
- 10.16am – Escalated by FB to ‘13th alarm’ (heightened state of emergency)



Chain of Events

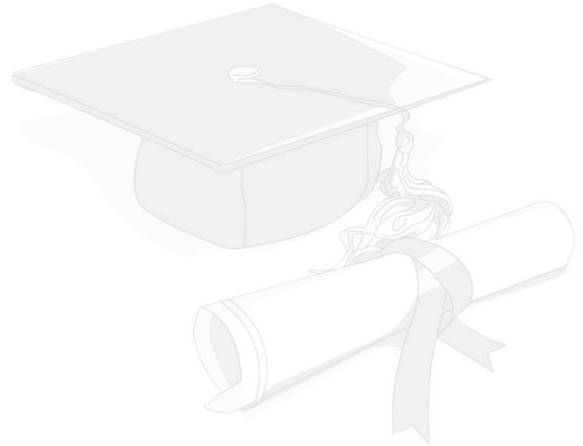
- 12.40pm – Fire spread to adjoining building
- ‘Surround and drown’ strategy
- Fire burned for ~2 days internally



FOOD MANUFACTURER FIRE
8 OCT 2007



A = EPS panelling and 3m roof void
Fire undetectable below roof void



FOOD MANUFACTURER FIRE
8 OCT 2007



B = Fire Brigade accessed fire by cutting through exterior



Outcomes / Lessons

- Early warning systems work!
- Fire Brigade familiarisation is crucial
- Risk Management plans (housekeeping + electrical)
- Cut-out panels can improve Fire Fighter efforts
- PIR rebuild at Greenacre site



Outcomes / Lessons

- Contingency plans i.e. alternate operating sites and ability to continue operations in the event of an emergency
- Business Interruption costs calculated correctly to ensure adequate cover in this area



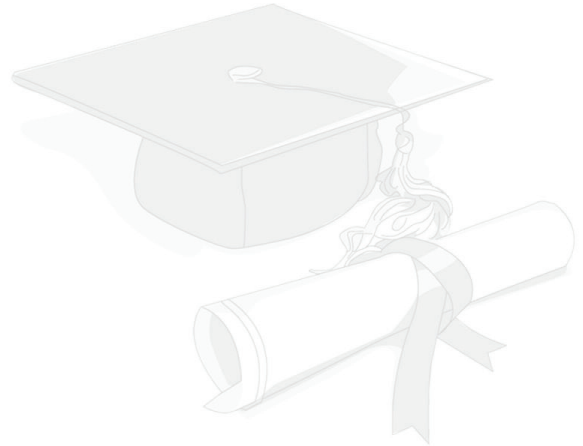
WAYS TO IMPROVE AN EPS RISK

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There are inexpensive AND expensive ways to improve EPS risks and 'Risk Management' is the key! As a broker you need to demonstrate your client's approach to Risk Management to prospective Insurers.

Cheap and easy

- High standard of general housekeeping
- Clear idle pallet storage away from EPS panels
- Hotwork permits and controls



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WAYS TO IMPROVE AN EPS RISK

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Moderate costs

- Annual thermographic testing of electricals
- Installation of Auto-fire alarms (smoke / thermal)

Expensive

- Automatic Sprinkler Systems
- Retrofit old EPS with newer product



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TYPICAL INSURER REQUIREMENTS

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- Quote slip – with supporting photos and site plans if available. Distinguish on site plans what buildings contain EPS
- Independent survey – less than 2 years old
- Lengthy lead time of at least 2 weeks for all new submissions
- Claims experience for at least the last 5 years



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TYPICAL INSURER REQUIREMENTS

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- Detailed description of business, including what activities are conducted in the EPS buildings
- Asset schedule distinguishing EPS part of risk from Non EPS – supported by a valuation report less than 3 years old



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SUMMARY

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- EPS is a complex character and often misunderstood. Can be 'good' and 'bad' but does not act alone, i.e. it doesn't start fires.
- There is a lot of EPS and PIR products out there and new products are coming to market with different fire properties.
- EPS, on balance, is a "Good Guy", and its use in Australia likely to increase



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SUMMARY

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- Expect a tough market for EPS insurance, with high premiums and few insurers
- Education of Insurers is the key!



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EXTRA CONTENT

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- www.youtube.com/watch?v=bJAWPfZzIKY



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EXTRA CONTENT

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- https://www.youtube.com/watch?v=ld0QQ7_Uf5k



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