



**SCDF**  
The Life Saving Force

# Sharing of Fire Incidents in Waste Management Industry



# Scope

- Introduction to fire incidents
- Challenges faced
- Lessons learnt
- Conclusion



# Case Study 1

- **Location :** Tuas View Circuit
- **Date/Time:** 23 Feb 2017 0600 hrs
- **Nature of Fire:** Warehouse fire involving waste storage (Fire Large)
- **Initial Info from:** Something on fire  
Ops Centre



# Company Information

- Fully licensed by NEA as:
  - ✓ Toxic & Hazardous Industrial Waste Collector
  - ✓ General Waste Collector
  - ✓ Asbestos Removal Contractor
  - ✓ Wastewater Sludge Treatment
  - ✓ Tank Cleaning/Equipment Decontamination
- Comprised of 9 main treatment & recovery facilities:
  - ✓ Laboratory Services and R&D
- 7 hectare in size



# Responders & Appliances Involved



Total No. of Responders:

**200**

Total No. of Appliances:

**59**

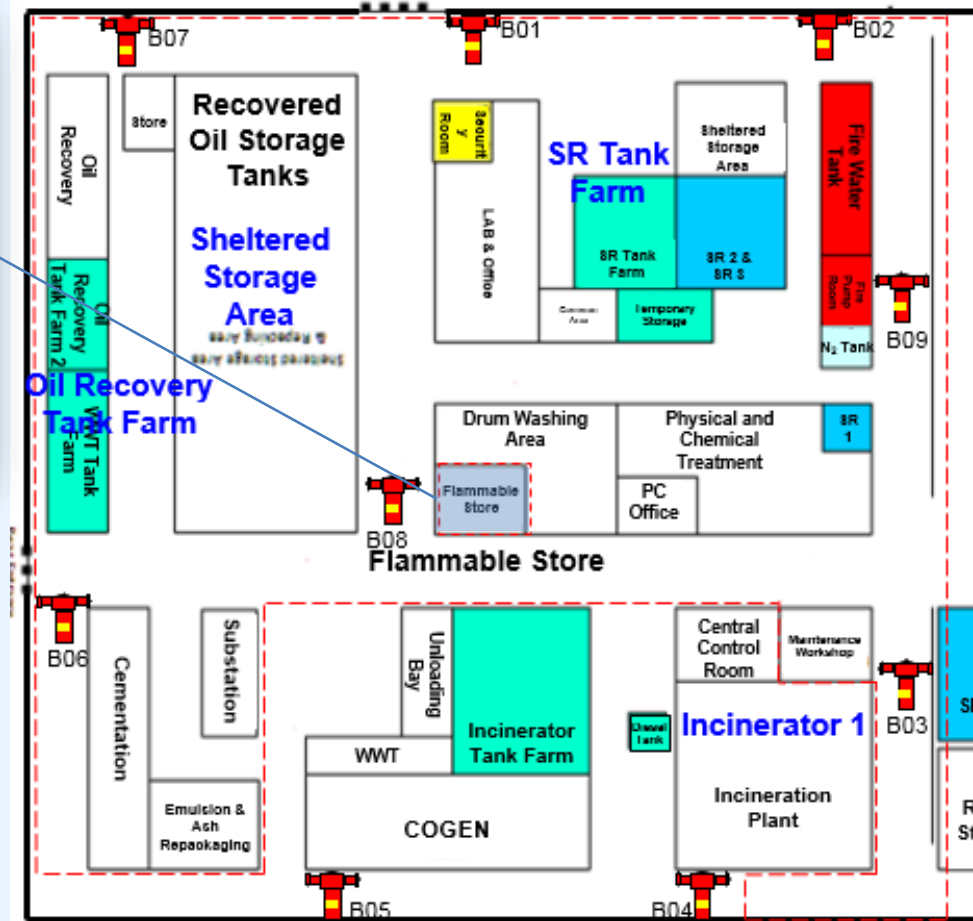




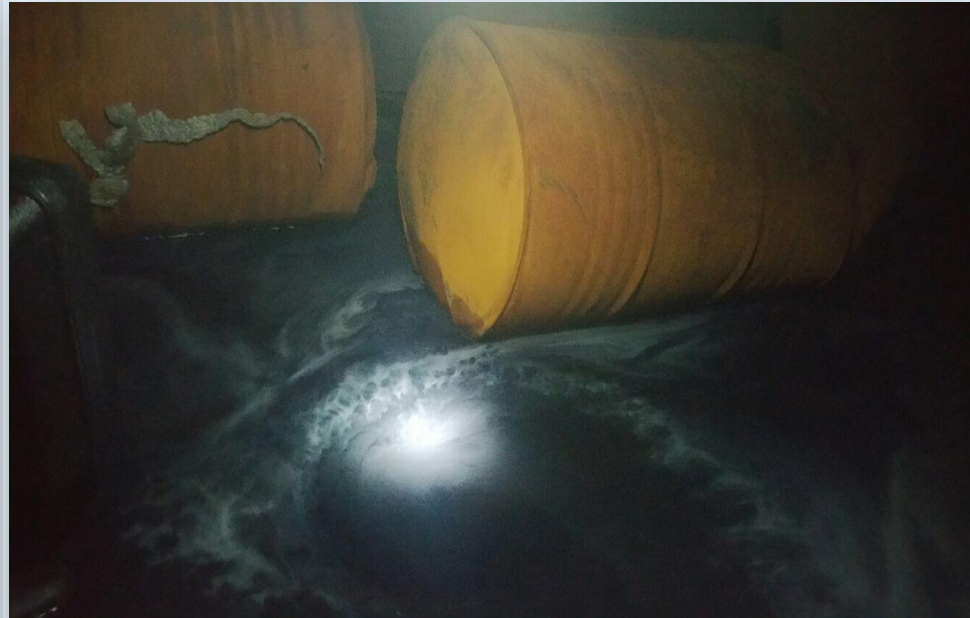
# Fire Watch



- Monitoring of hot spots & chemical gas leaks
- Detection of low levels of ammonia



# Fire Watch



- Use of vapour dispersion jet
- Several small cracks (~1cm in diameter) mitigated by HIT



# Challenges

- Chemical spilled into drainage system resulting in rapid fire spread, extended to Tuas South Ave 7





# Challenges

- Large area of operations
  - ✓ 7ha premises
  - ✓ Use of vehicle for AOS
  - ✓ Critical to maintain communications
- Multiple explosions rendered site unsafe to enter for offensive fire fighting
- Exact chemical contents unknown
  - ✓ FSM provided early info



# Initial Fire Scene





# Initial Fire Scene





# Pictures from the ground



*Combined Platform Ladder conducting aerial fire fighting operations*





# Pictures from the ground



*Image taken from UAV*

*Unmanned Fire Fighting Machine conducting fire fighting operations*



# Pictures from the ground



*Image taken from UAV*

*Unmanned Fire Fighting Machine conducting fire fighting operations*



# Pictures from the ground



*SCDF officers conducting offensive fire fighting operations*





# Pictures from the ground



*SCDF officers conducting offensive fire fighting operations using Compressed Air Foam*





# Pictures from the ground



*Unmanned Fire Fighting Machine conducting fire fighting operations using Compressed Air Foam*

# Pictures from the ground



*Unmanned Fire Fighting Machine conducting fire fighting operations using Compressed Air Foam*

# Pictures from the ground



*Unmanned Fire Fighting Machine conducting fire fighting operations using Compressed Air Foam*



# Pictures from the ground



*Unmanned Fire Fighting Machine conducting fire fighting operations using Compressed Air Foam*



# Challenges

- Insufficient & inconsistent water supply
  - ✓ Hydrants all running on same supply line
  - ✓ Reduce number of jets. Focus on critical areas
  - ✓ Tapping on private hydrants of nearby buildings
- Multiple hydrant pit covers jammed along Tuas South Ave 3
  - ✓ Despite PUB's assistance



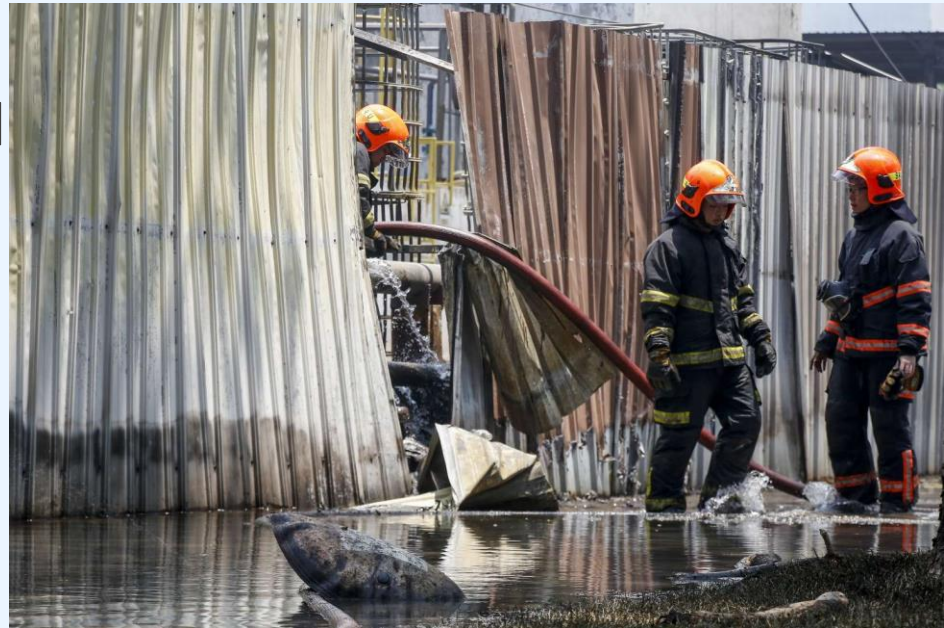
# Challenges

- Pungent smell from burning chemicals
  - ✓ BA sets for personnel entering the site
  - ✓ N95 masks were used but found to be ineffective
  - ✓ Health concerns of responders who attended for the call



# Challenges

- Flooded with chemical waste sludge which heavily stained PPE
  - ✓ Lack of a proper decon point for quick wash down
  - ✓ Water jets unable to completely remove the chemical contamination
  - ✓ Contamination hazard



# Pictures from the ground



*SCDF officers conducting damping down operations*





# Pictures from the ground



*200l steel drum along on Tuas South Street 3*

# Pictures from the ground



*Metal railings damaged by the fire spread along the drain of Tuas South Ave 7*



# Case Study 2





# Case Study 2

- **Location :** Tuas South Street 8
- **Date/Time:** 7 June 2017 1800 hrs
- **Nature of Fire:** Warehouse fire involving waste storage (Fire Large)
- **Initial Info from:** Something on fire  
Ops Centre



# Company Information

- Fully Licensed by NEA
  - ✓ General Waste Collection & Disposal
  - ✓ Class A & B
    - Inorganic Waste e.g. construction debris, wooden crates etc.
    - Organic Waste e.g. food & other putrefiable waste
- Comprised of a 3-Storey Administrative building with an adjoining sheltered general waste collection area.



# Responders & Appliances Involved



Total No. of Responders:

**100**

Total No. of Appliances:

**15**





# Pictures from the ground



# Pictures from the ground



# Pictures from the ground





# Challenges

- The presence of the bags of batteries were not made known earlier
  - ✓ Explosive chemical reaction of the lithium batteries and water
- Although the surface fire was extinguished, there were deep seated ambers within the 3 x 3m-high stacks of general waste
  - ✓ Large amount of debris and many were oversized items (large reels of cables, large tyres etc)
  - ✓ Use of the company's excavator



# Batteries



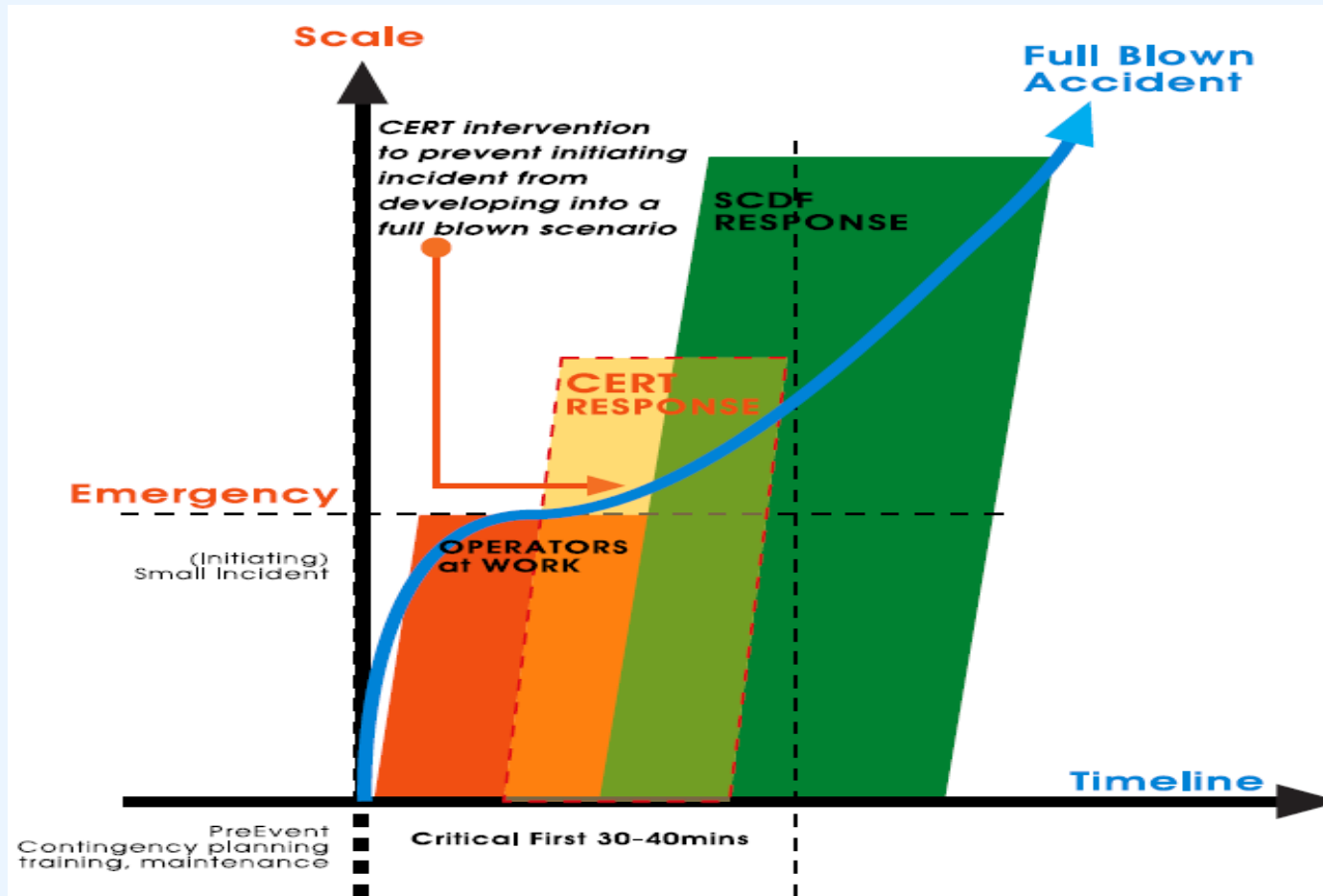
# Challenges

- The deep seated ambers and nature of the burnt products created huge amounts of smoke.
  - ✓ The smoke logged environment persisted throughout the damping down operations, close to 10 hours.





# CERT Response



**Critical first 5 – 10 mins**

# Conclusion

- CERT response is critical during the onset of any incident to prevent the escalation
- Conduct of site assessment & determine extent of emergency by CERT
  - ✓ AOS
  - ✓ Early intervention e.g. fire fighting, rescue, mitigation
- Linking up with SCDF
  - ✓ Sharing of information crucial to the operations
  - ✓ On site assistance to SCDF e.g. company layout, forklift
- Synergy between SCDF & CERT for a successful outcome



# Thank You



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