





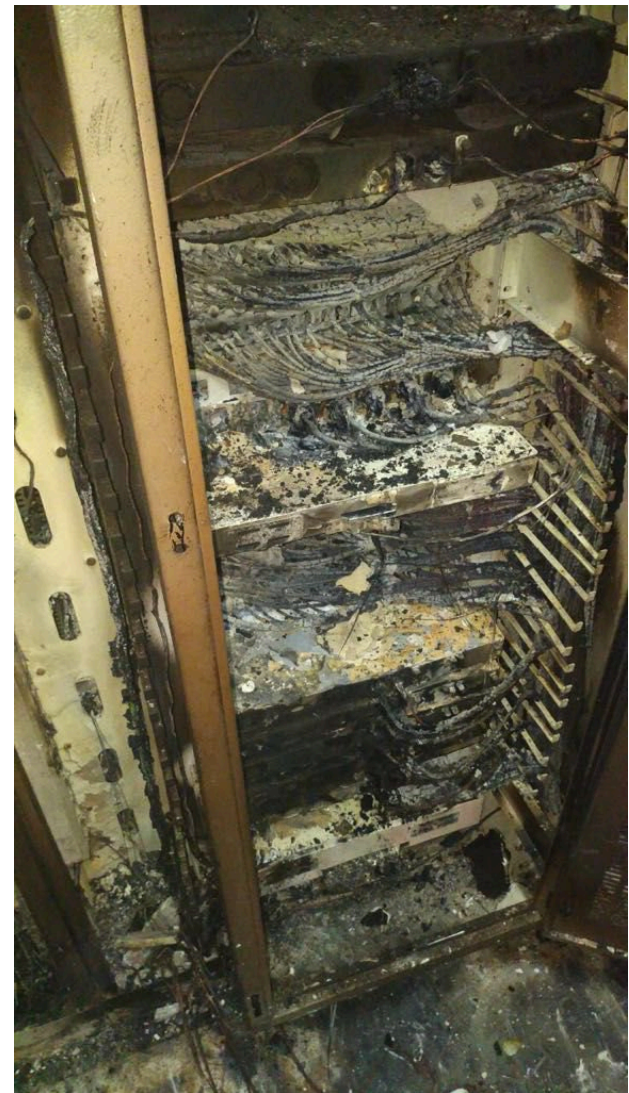
Fire! Fire! Fire! **(or maybe not)**

Steve Wright

NLNOG – 6th September 2019

swright@4d-dc.com

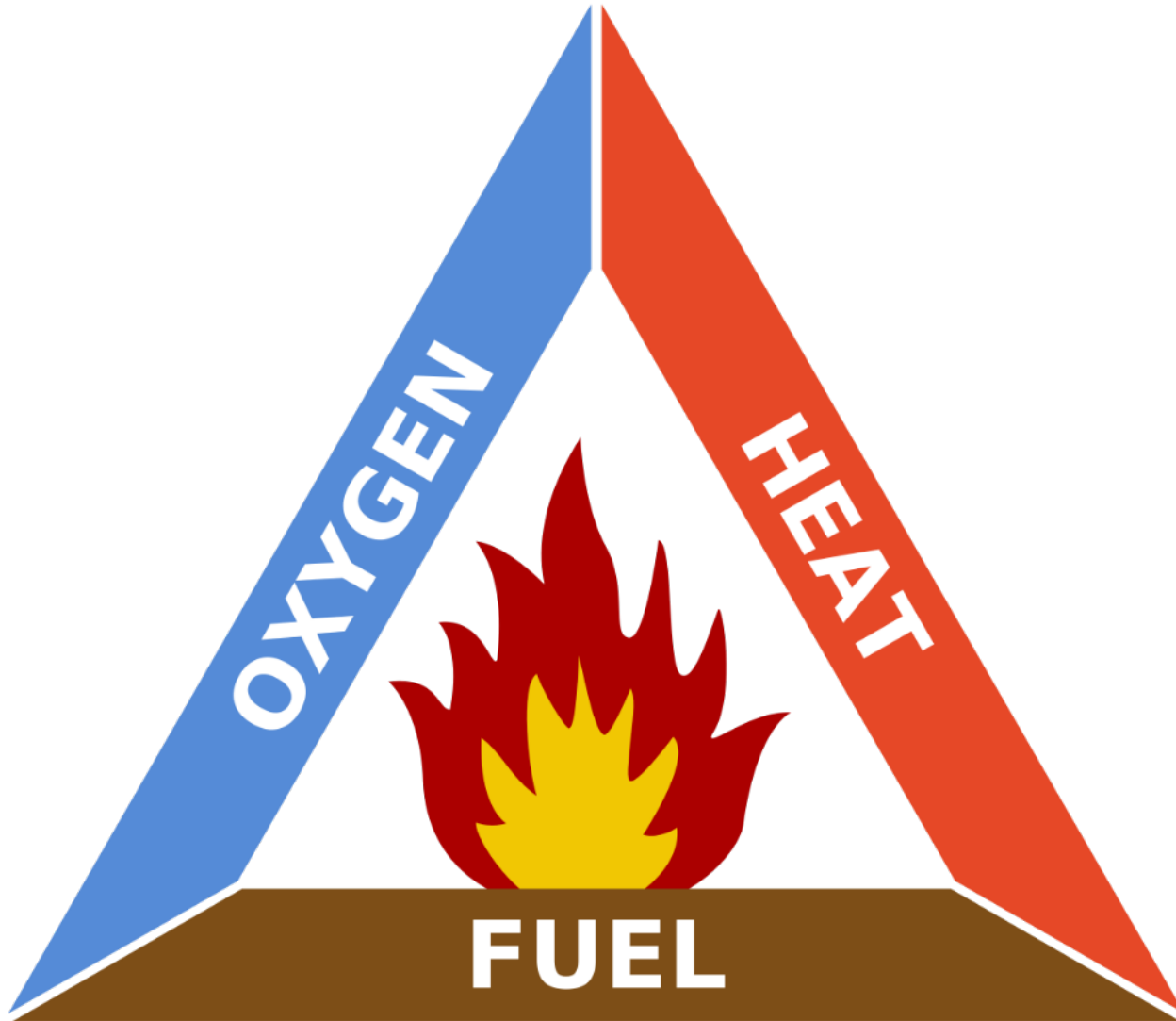




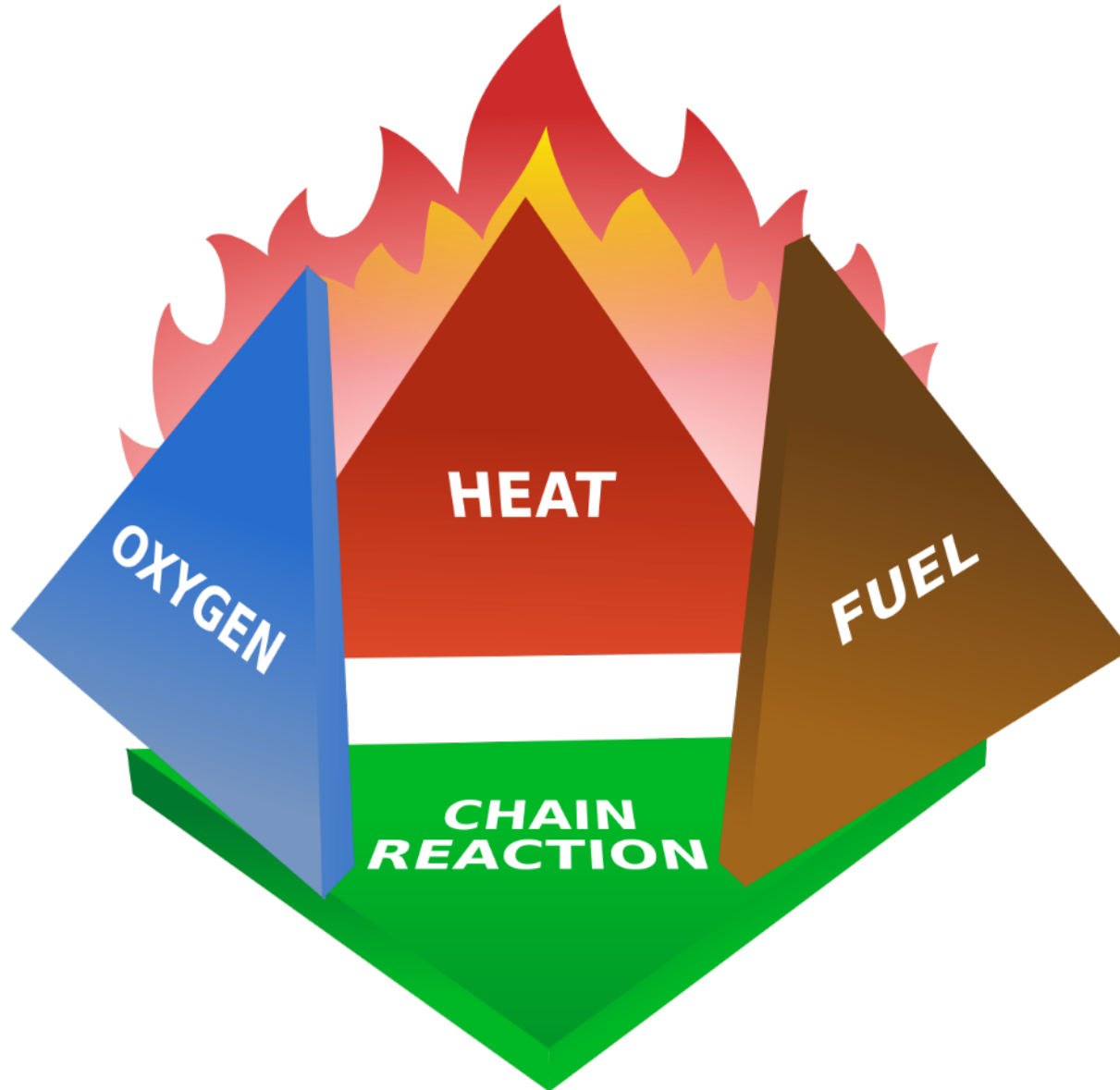
Overview

- **Science 101: Fire basics**
- **Detecting fires**
- **Suppression**
- **After effects of a discharge**
- **Is it worth it?**
- **Questions**

Fire Basics



Fire Basics

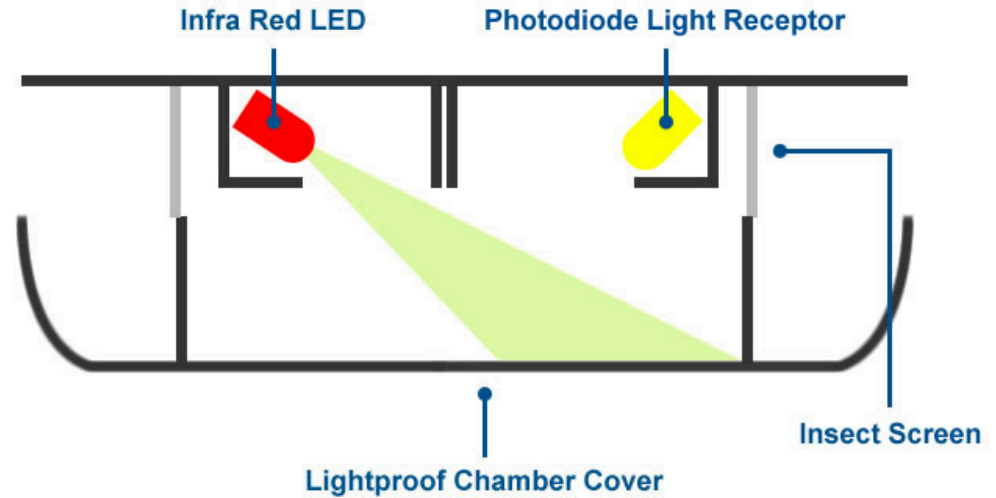


Detection

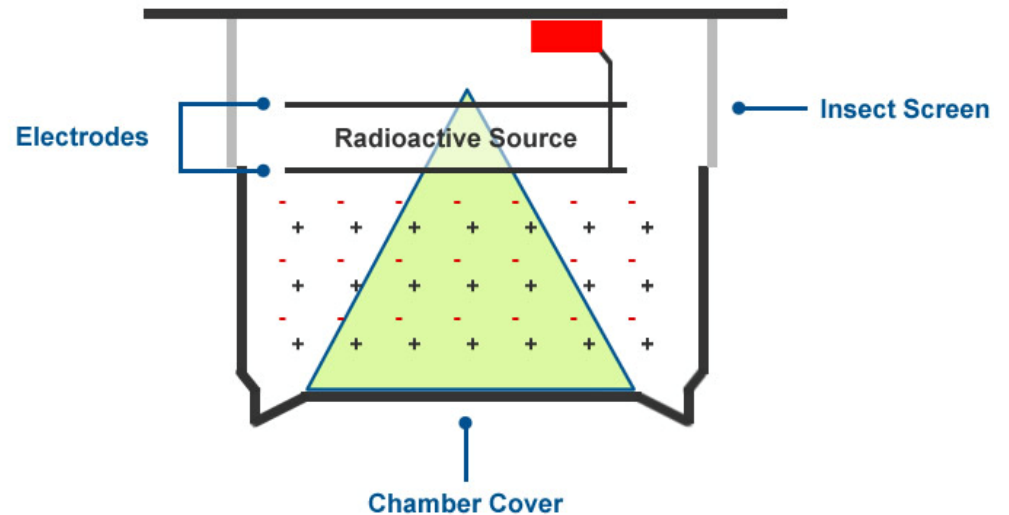
- **Aspirating – VESDA Very Early Smoke Detection Apparatus**
- **Smoke**
 - **Optical**
 - **Ionisation**
- **Heat (too late)**

Detection

- **Optical**

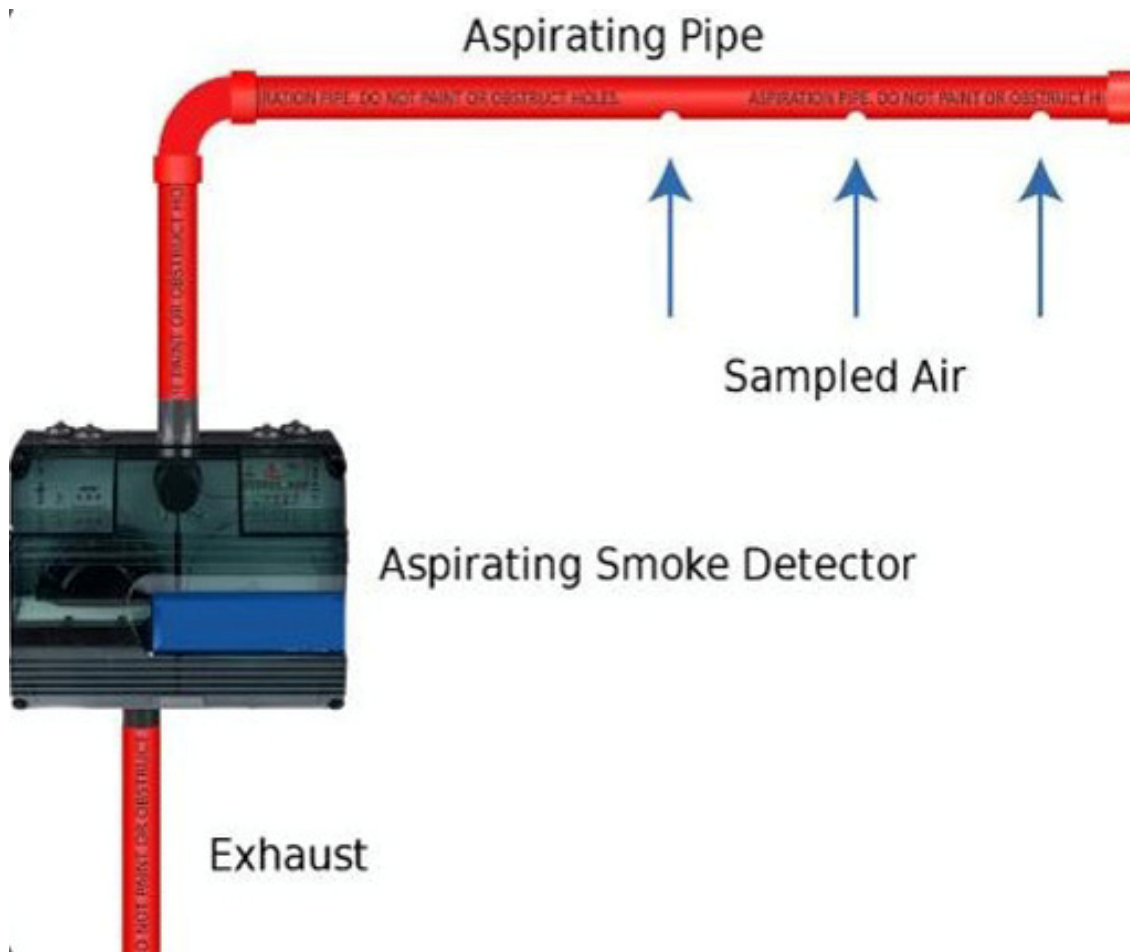


- **Ionisation**



Detection

- **Aspirating**



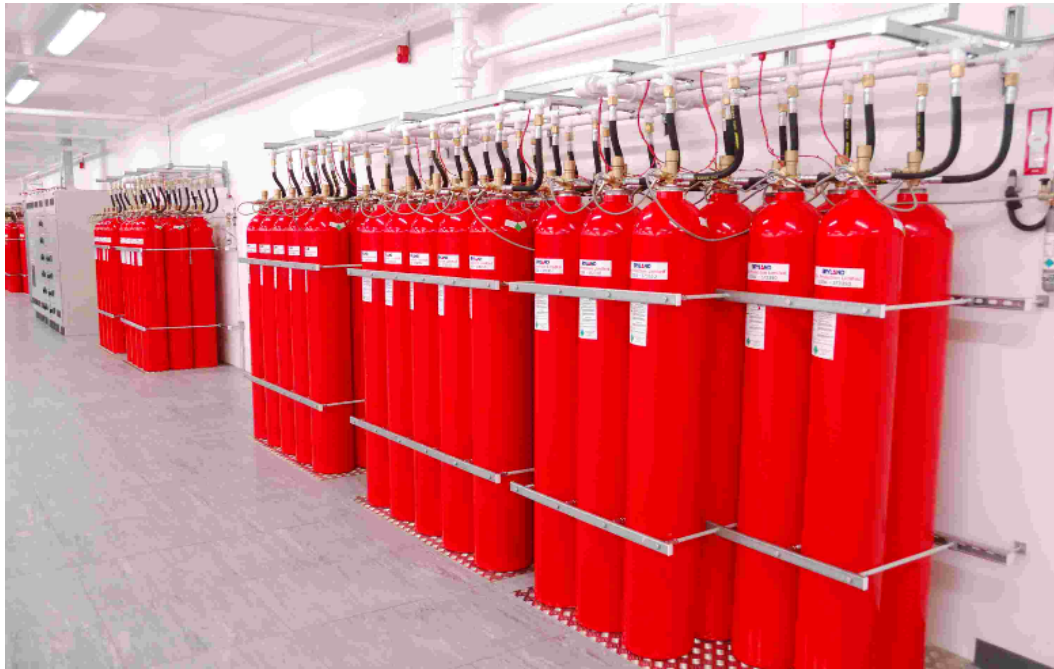
Detection

- **Fire development**

[Add in picture of time vs fire growth]

Suppression

- **Water**
- **Oxygen Reduction**
- **Chemical**



Suppression

- **Water**
- **HiFog**



Suppression

- **Oxygen Reduction**
 - **IG55 - Argonite**
 - Argon 50%, Nitrogen 50%
 - **IG541 – Inergen**
 - Argon 40%, Nitrogen 52%, CO2 8%

Suppression

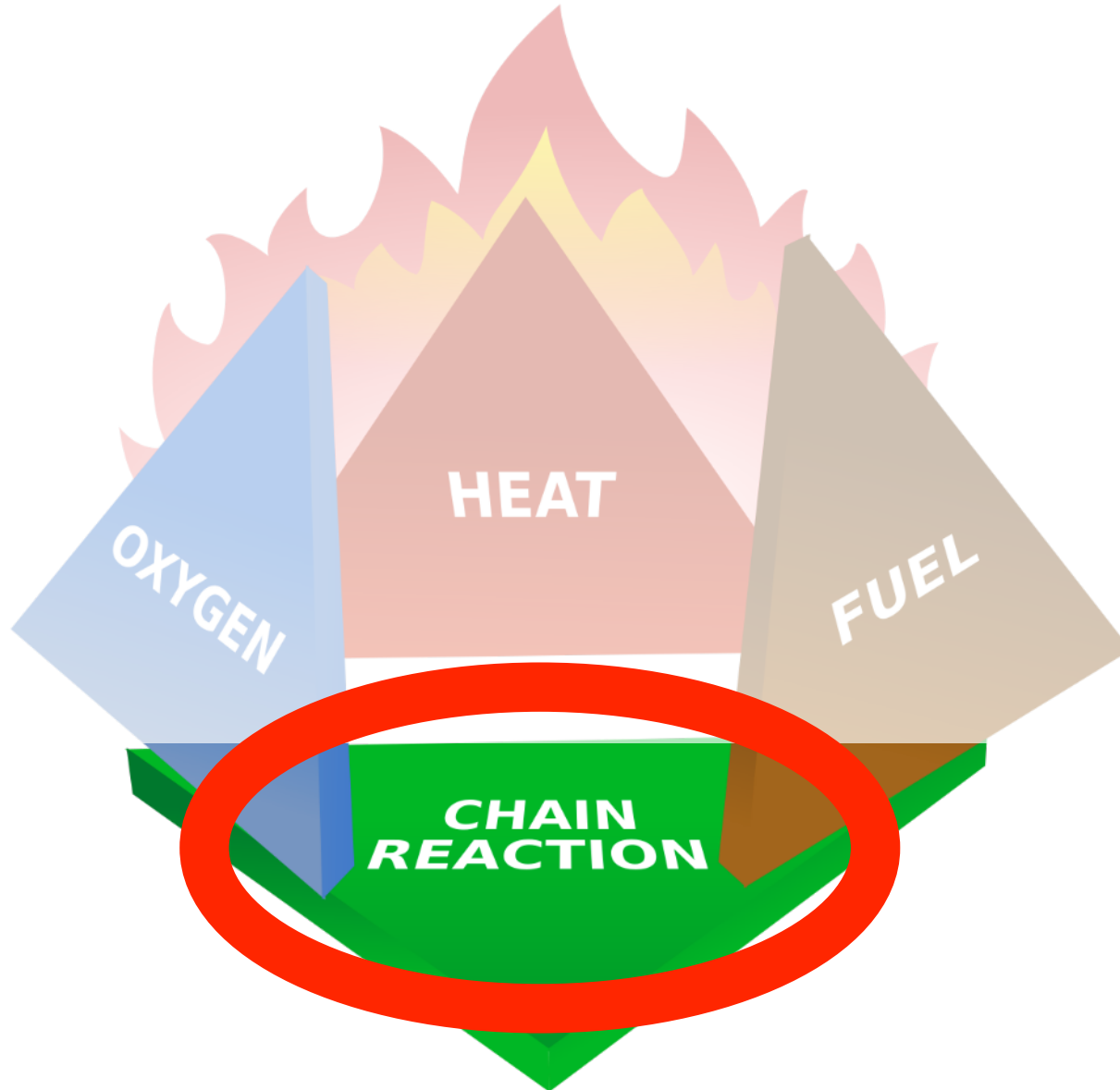
- Chemical
 - FM200 (HFC-227ea)
 - Novec 1230 (FK-5-1-12)
- **NO** Halon



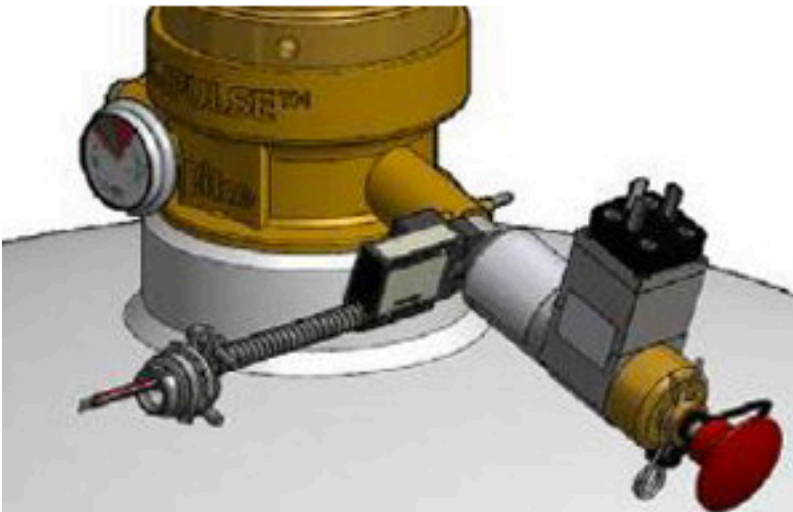
All together

- **VESDA Pre-Alarm**
 - Immediate reaction & investigation needed
- **VESDA Fire**
 - Area Alarms, Evacuation, more investigation
- **First Knock**
 - Oh fsck... full evacuation
- **Second Knock**
 - Bigger oh fsck in 30 – 60 seconds
- **System discharge**
 - ££,£££ ☹️

Oh fsck...



Oh fsck...



Oh fsck...



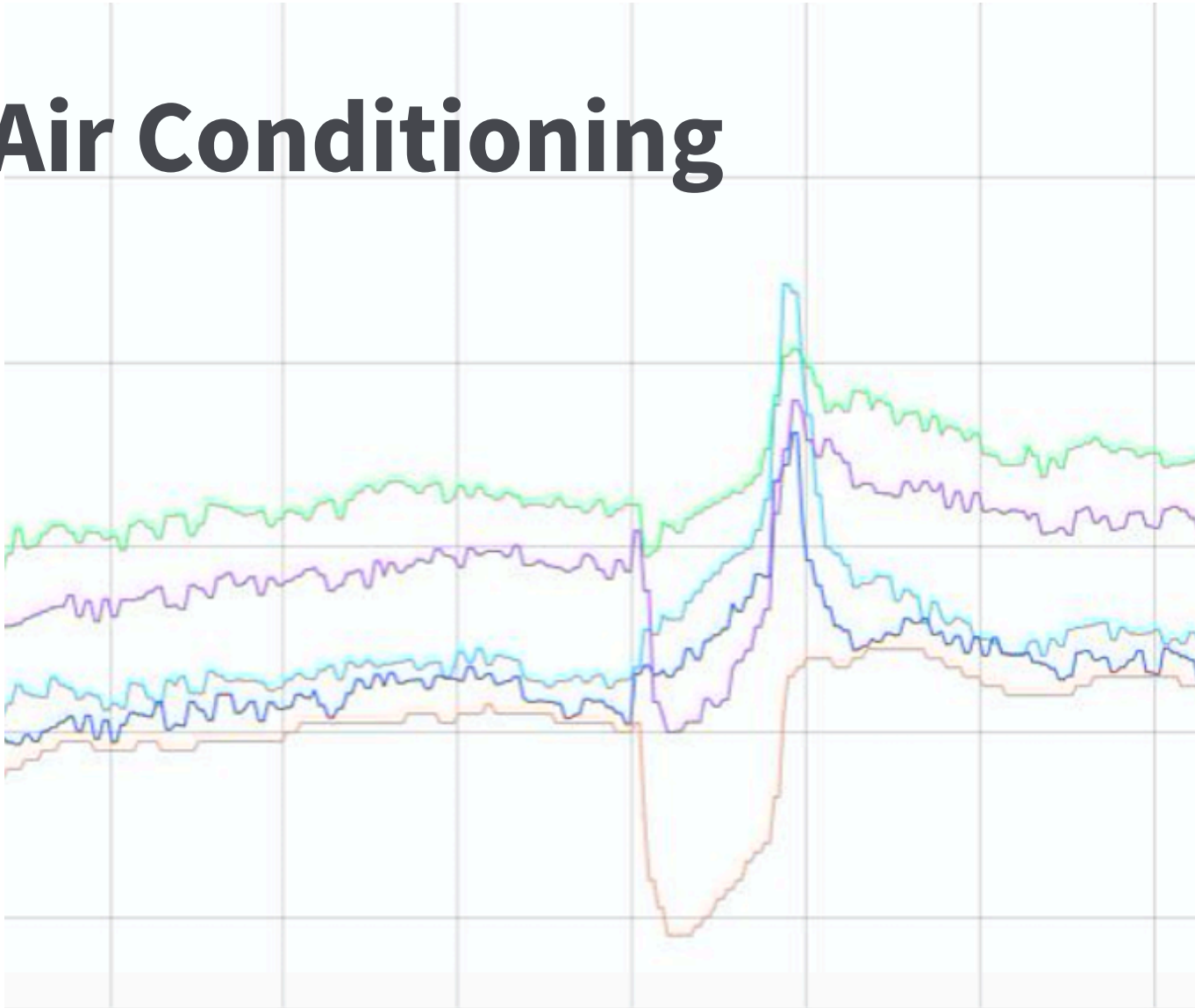
Side affects

- **IG55 - Freezing**



Side affects

- **Air Conditioning**



Side affects

- **Too much noise!**
- **110dB upper limit for HDDs**



Side affects

- **FM200 - A very deep voice!**



Side affects

- Pipework moves ☹️

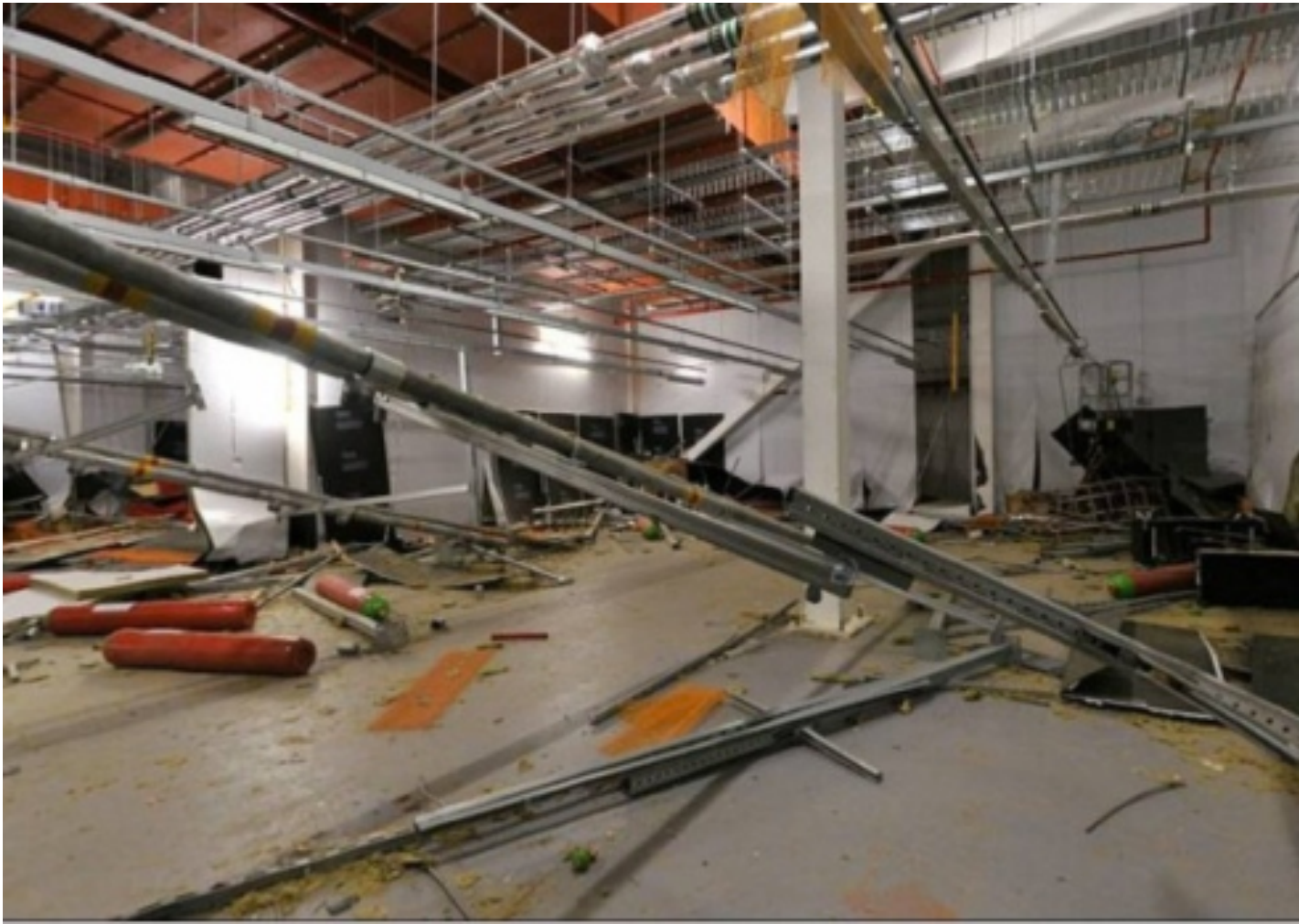


Side affects



Side affects

- **Fatalities**



Side affects



Improvements

- **People**
- **Process**
- **Training**

Is it worth it?



Questions

Steve Wright

NLNOG – 6th September 2019

swright@4d-dc.com