You may have seen...
Critical Oxygen Safety

or

The Low Oxygen Hero Challenge

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Cryogenics and Depleted Oxygen Atmospheres

• Expansion of cryogenic fluids creates very large volumes of gas

• Gas displaces breathable air

• Depleted oxygen levels leads to asphyxiation risks
Death in the cryogenics industry

• 80 people died due to nitrogen related asphyxiation between 1992 and 2002 in USA. Chemical Safety Board USA, 2003.

• Deaths in the UK

• Numerous near-miss incidents
Do you work with cryogenic fluids?

• Do you feel safe?

• Are you safe?

• Do you have O2 depletion monitor alarms?

• Have you considered exactly what to do in the event of an alarm?

• Have you considered exactly what to do in the event of someone collapsing due to asphyxiation?

• Could have? Would have? Should have?
The "NEVER" event...

So the unthinkable event that should *NEVER* happen has happened. A co-worker has collapsed in the LN2 store. Do you know what to do? Has this part of your procedure been defined?

Limited time to act:
- 3 minutes before brain damage is likely
- 5 minutes before death is likely

**THIS IS NOT THE TIME TO BE DEFINING A NEW PROCEDURE - YOU SHOULD BE TAKING ACTION**
But I can hold my breath...

...the HERO scenario!

- It is often stated that if a person collapses due to asphyxiation that another person (hero) could hold their breath, run in and pull the casualty out.

- This is much harder than it might seem

- Highly likely that hero will become second casualty making the situation twice as bad.
Still think you could be a hero?

• Within practicable limits it may be that your only action is to call the Fire Service and wait for them to arrive with breathing apparatus

• At this time the temptation will be great to try and be a hero

• Can you hold your breath and perform a demanding physical task?

How hard can it be..?
Your motivation...

Win an Apple iPad 2
Our casualty

• Please meet Fred the coffee sack
Hero Challenge Rules

- Order determined by random selection
- Position swimming nose clip
- Take a deep breath
- Surgical-tape across the mouth – with an easy release tab
- Set off to rescue Fred
- Pick up Fred
- Return to stage with Fred
- WIN

- Audience please shout out if you spot cheating

Challenge ends when Hero removes tape / clip
Or
Hero successfully returns to the stage with Fred
YOU FAIL

(but thanks for trying)
We have a WINNER!
What is usually covered?

• Reducing / mitigating the risks
  – Limited gas volumes
  – Ventilation systems
  – Procedures
  – Staff training
  – Monitoring alarms
Have you also considered...

• How to rescue a casualty procedure?
  – Emergency stop / shut-off systems
  – External repeaters
  – Waiting for the fire service
  – Confined entry procedures
  – Breathing apparatus

• Stop a hero becoming a further casualty.
Thanks for Listening
Stay Safe