

Emergency Services Case Study:

Hazard: **Smoke, Toxic Gases & Chemical Vapours**



Fire Investigation and Research Unit | Fire and Rescue NSW

Challenge

NSW Fire Research & Investigation Unit (NSWFIRU) operates in some of Australia's most hazardous environments.

Fire investigators and field officers regularly encounter smoke, toxic gases, chemical vapours and particulate matter during fire ground operations, incident investigations, and training exercises.

The team works in contaminated atmospheres for long and extended periods. They needed a respiratory protection solution that wouldn't compromise their mobility or effectiveness.

The problem was that the traditional and bulkier PAPP systems were very restrictive, especially for the dynamic, hands-on nature of their fire investigation work.

What they needed:

- Lightweight protection for extended wear during 10-12 hour operations
- Flexibility to have full mobility in tight spaces and challenging terrain
- Clear visibility and communication capabilities
- Equipment that was easy to train and deploy, and is inclusive
- Reliable protection against multiple respiratory hazards



Solution

CleanSpace Technology provided the CleanSpace CST ULTRA with Full Face Mask and ABEK Filter for a comprehensive field trial across NSWFIRU operations.

The lightweight, compact design of the CST ULTRA addressed their mobility concerns while the positive pressure system and full-face protection met their stringent safety requirements for hazardous atmosphere operations.

Key features that made the difference:

- < 450 grams - lightest PAPP on the market
- Positive pressure protection against smoke and toxic gases
- Full face mask compatibility for maximum protection
- 14-hour battery life for extended operations
- Simple training and deployment process

Results & Benefits

- **Enhanced worker safety** – provided reliable protection in hazardous environments.
- **Improved operational efficiency** – streamlined workflows and reduced downtime.
- **Cost-effective, reusable solution** – lowered replacement costs over time.
- **Simple maintenance and training** – was easy to clean and quick to learn.

Team Feedback

"All positive feedback from the team - everyone appreciated the lightweight design and superior protection it provided during field operations"

Cameron Simpson, Fire Investigator (NSWFIRU)

"Very easy to clean, with excellent battery life – maintenance is straightforward and reliable."

Jason Taylor, Fire Investigator (NSWFIRU)

Performance Scores: Consistent high ratings across all metrics

Metric	Score (1-5)
Comfort	4-5
Weight/Mobility	4.5-5
Visibility	5
Ease of Breathing	5
Voice Clarity	4-5

"Yes - this represents a significant upgrade in respiratory protection for the team, improving both safety and operational confidence"

Cameron Simpson

"Excellent, easy to use - the team found the system intuitive and effective across all our operations"

Jason Taylor

Conclusion

- CleanSpace has already shifted how NSWfiru approaches respiratory safety
- Expansion of use is planned across broader teams
- Both participants consented to being featured in this case study.



CleanSpace CST ULTRA Specifications

Key Features:

- Lightest PAPR (<450g)
- Peak airflow: 230 L/min
- AirSensit® technology
- 14-hour battery*
- IP65 rated
- Bluetooth connectivity
- 2-year warranty
- Australian Made

Applications:

- Fire investigation & suppression
- Emergency response
- Hazardous materials
- Confined space
- Training

Filters:

- CleanSpace® CST P3 Filters
- ABEKIP3 Combined Filter



For more information:



sales@cleanspacetechnology.com



Telephone to speak with our team (during business hours)
Australia (Head Office): +61 2 8436 4000



WWW.CLEANSPACETECHNOLOGY.COM



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*Operating time varies with conditions.