

# RPE Fit Testing in Real World Scenarios What could possibly go wrong?

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Dave Lombardi MSc CertOH LFOH  
Occupational Hygienist / Operations Manager  
Environmental Essentials UK Ltd

Alex Bianchi PhD DipOH CFFOH  
Director  
Bianchi OH Sciences

Ten month MSc study in to RPE FFT to establish the degree of variance between the requirements of RPE Fit Testing and it's practical implementation



Share with you the findings of this study to highlight the fundamental failings noted and the good practices observed

# Purpose of this Presentation

# Expectation for RPE Programmes

Management are responsible for the development and successful implementation of RPE Programmes in their workplace

RPE is provided as a last resort or as a supportive secondary control measure. RPE must be suitable and sufficient for the task

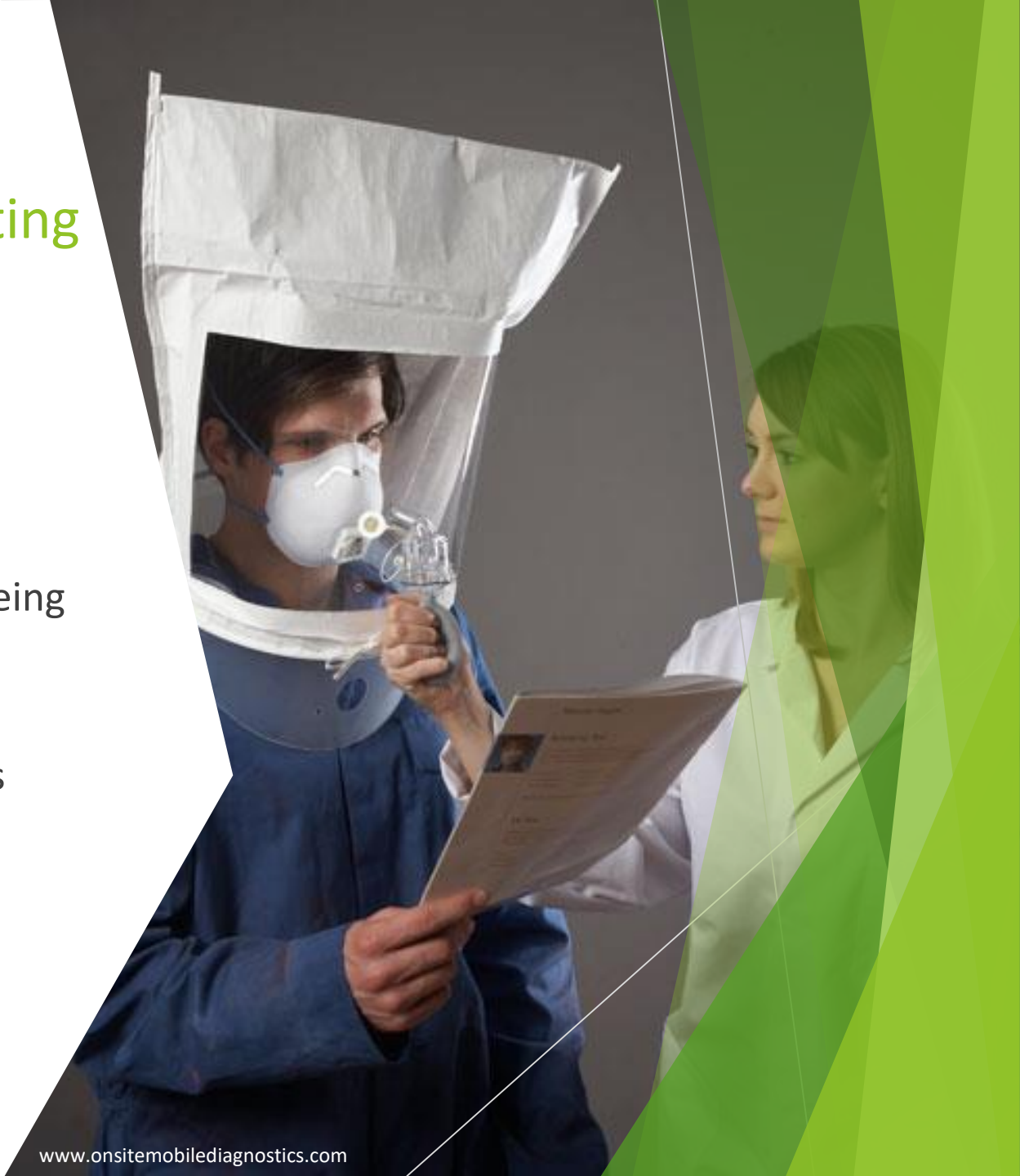
Employees have a responsibility to wear the respirator in the correct manner and use as instructed

RPE Fit Testing for tight fitting facepiece respirators is required by regulation and should only be conducted by competent persons

# Review of RPE Fit Testing Methods

## Qualitative FFT

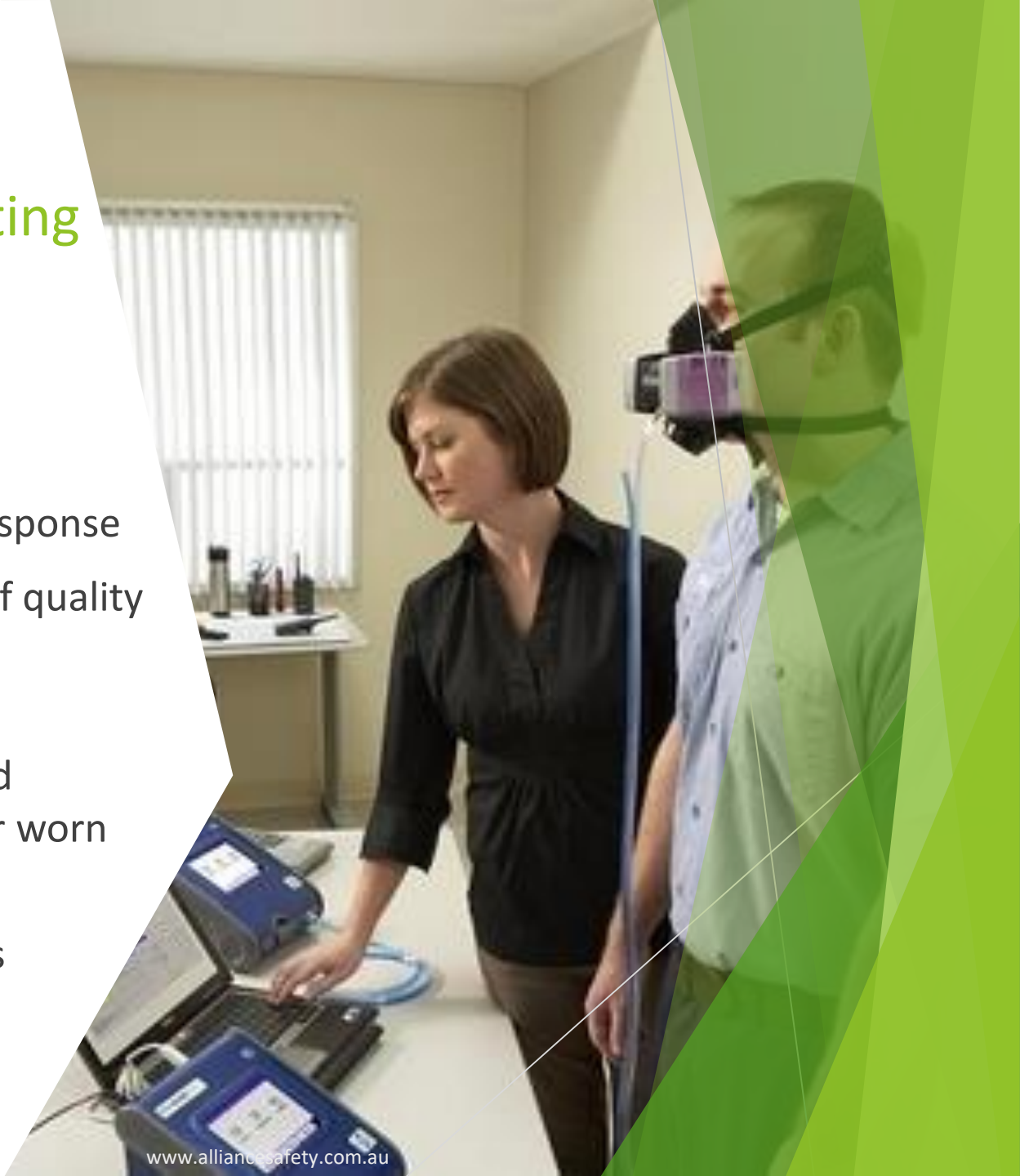
- ▶ Subjective response
- ▶ Reliant on the wearer being able to taste a chemical marker
- ▶ Seven stage test process
- ▶ 'Pass' or 'fail' outcome



# Review of RPE Fit Testing Methods

## Quantitative FFT

- ▶ Numerical / scientific response
- ▶ Independent measure of quality of fit – Fit Factor
- ▶ Comparison of particle concentration inside and outside of the respirator worn by the user
- ▶ Seven stage test process



# Relevance of First & Second Fit Testing

- ▶ Definition – variance in performance between two test periods due to the gaining of user experience and familiarity
- ▶ Data and observation comparison indicated a correlation between the user gaining experience and familiarity with RPE following the initial fit test and how they performed during the second test
  - ▶ 57% - greater performance in all seven exercises
  - ▶ 43% - greater performance in at least four exercises
  - ▶ 100% - achieved successful fit test on first attempt of the second test

# So knowing that...

HSE driven

Fit2Fit Scheme

Sufficient Guidance

Various RPE Types

HSE 282/28 & HSG53

Widely used Control Measure

Approved Test Methods

Extensive Research Studies

## ...what could possibly go wrong?

# Influencing Factors & Real World Issues

The Presence of Facial Hair & the Clean Shaven Policy

RPE Selection & the consideration of Facial Anthropometrics

Limitations & Beliefs of QLFT & QNFT Test Methods

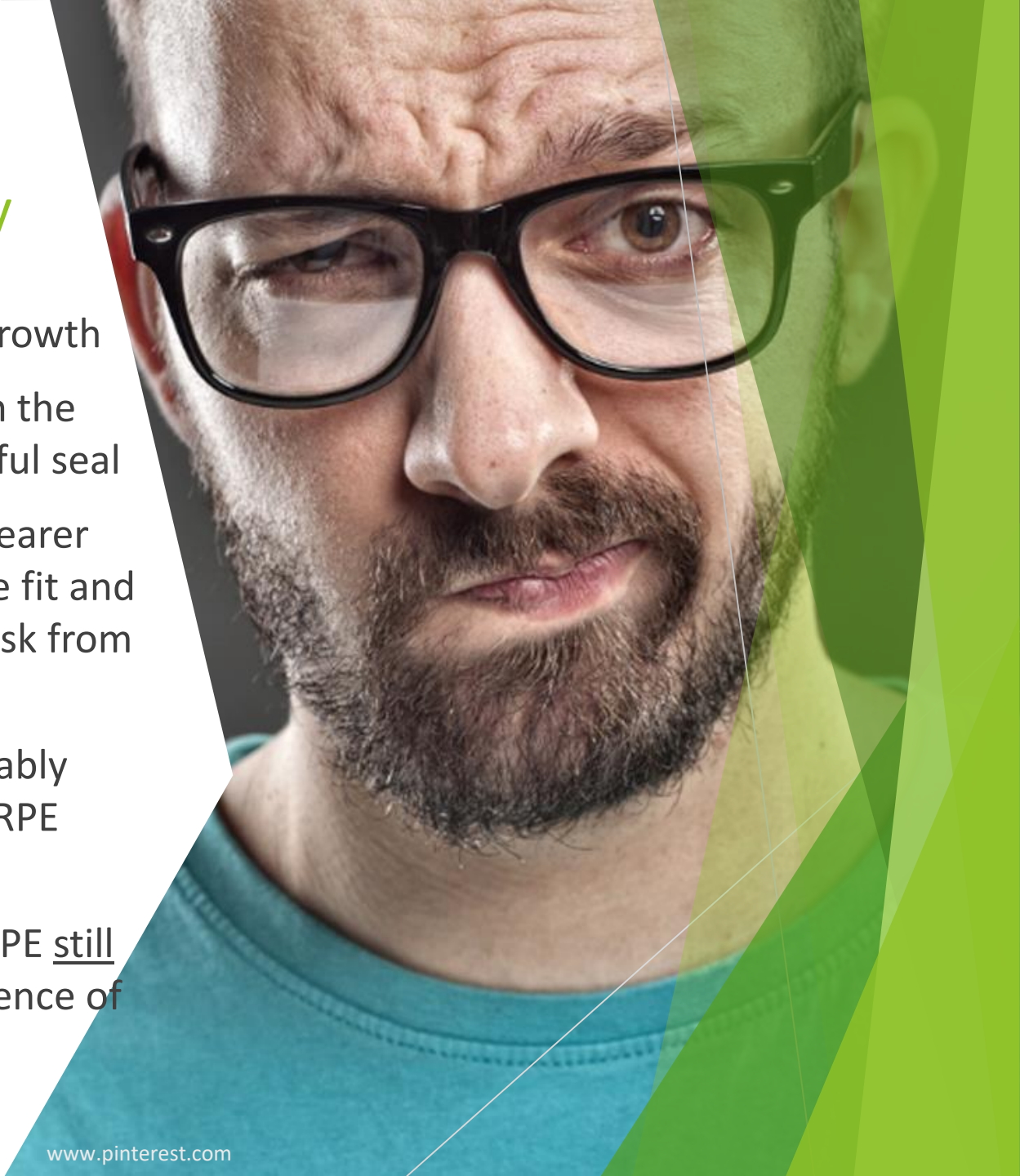
Human Behaviour & Acceptance

Post RPE Fit Testing – What happens next?



## Facial Hair and the Clean Shaven Policy

- ▶ Test requirement <8hrs growth
- ▶ Facial hair detrimental on the achievability of a successful seal
- ▶ In almost all cases, the wearer will not achieve a suitable fit and will be placed at higher risk from inward leakage
- ▶ Recognised as a considerably sensitive element of the RPE Programme
- ▶ Evidence of tight fitting RPE still being used with the presence of facial hair



- ▶ Anthropometrics – the study of sizes, proportions and variations in human characteristics
- ▶ Relevance of facial anthropometrics during the RPE selection stages should be recognised as a fundamental factor
- ▶ Recent findings suggest this may not always be observed as such
- ▶ In many cases, a ‘one size fits all’ approach has been noted

## RPE Selection & Facial Anthropometrics

# QLFT Vs QNFT

## Limitations & beliefs of the test methods

- ▶ Subjective Vs Numerical response
- ▶ Perception of test quality by wearer
- ▶ QLFT - Scope for falsifying response
- ▶ QLFT – considered intrusive by some
- ▶ QNFT – detachment of tubing during exercises
- ▶ QNFT – Particle count in the room
- ▶ QNFT – Insertion of test adaptors for full face RPE
- ▶ Importance of test Vs production down time

# Human Behaviours & Acceptance

How well planned and successful the implementation of the RPE Programme is will have an impact on user behaviour and acceptance

It has been shown that there is a significant value in employee involvement at the design stages of the RPE programme as a means of increasing user acceptance

A few factors...

- The 'I've always done it this way' response
- Appreciation of risk
- Understanding of the relevance of the fit test process and how to don/doff the RPE post test?
- Protection offered – actual Vs perceived

Often accepted that once an RPE user has passed a fit test they are protected from the substances of concern every time the respirator is worn; however...

- ▶ Concerns raised that wearers can potentially conduct their duties under false pretenses of protection offered
- ▶ Begg the question of what should be done to ensure the continuation of a successful RPE programme?
  - ▶ Education of post test pre-start fit checks
  - ▶ The use of auditing, supervision and wearer follow up

Post RPE Fit Testing  
What happens next?

# Lessons Learned

Size selections and anthropometric impact not always at the forefront. Focus appears to be on handing out RPE in some instances rather than driving a suitable programme

Great variance between available guidance and successful implementation of RPE programmes

Worker acceptance from initial testing through to continued wearing is highly dependant on the way the programme is implemented and level of employee engagement

For what can be considered a simple concept, a clean shaven policy can be very difficult to enforce

Wearers may consider themselves protected although the actual level of protection achieved may be significantly below expectation

# Special Mention

- Thank you to Alex Bianchi for his support and guidance during my MSc year and the development of my dissertation
- Thank you to Mike Clayton from the HSE for his contribution to the study research
- Thank you to the University of Manchester for supporting my thesis topic

Thank you for your time...

Any Questions?

Dave Lombardi

[dave@eeukltd.com](mailto:dave@eeukltd.com)

T: 07796714452

Environmental Essentials UK Ltd