

# Specific bronchial challenge testing to metal working fluid

Vellore AD<sup>1</sup>, Moore VC<sup>1</sup>, Robertson AS<sup>1</sup>, Robertson W<sup>2</sup>, Jaakkola MS<sup>1</sup> and Burge PS<sup>1</sup>

**1** Occupational Lung Disease Unit  
Birmingham Heartlands Hospital  
Birmingham, United Kingdom

**2** Public Health & Epidemiology  
University of Warwick  
Coventry, United Kingdom

Tel: 0121 424 0734  
Email: [Sherwood.burge@heartofengland.nhs.uk](mailto:Sherwood.burge@heartofengland.nhs.uk)

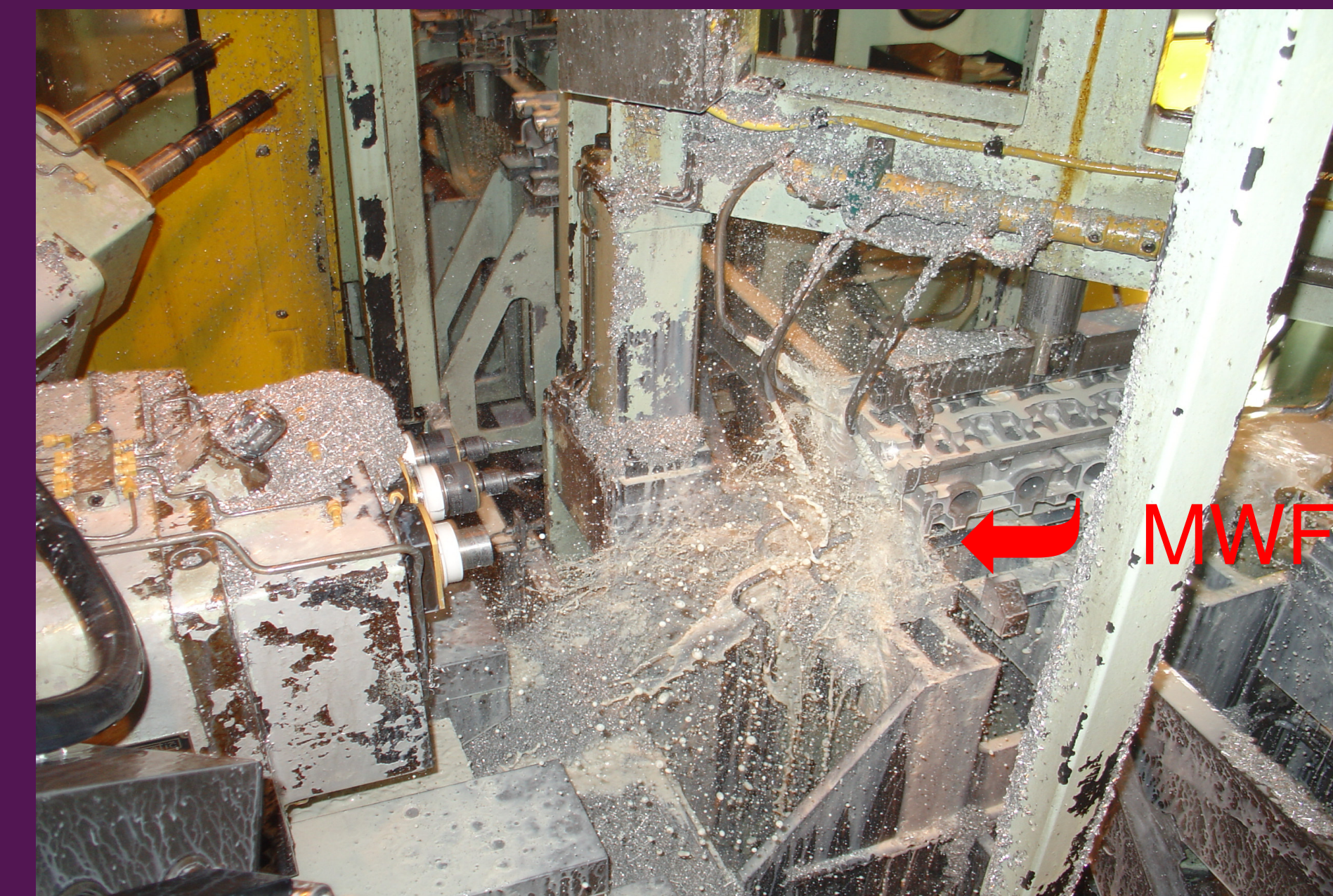
**Abstract:** Last year we reported an outbreak of 80 workers with occupational asthma and 22 with extrinsic allergic alveolitis from a car engine manufacturing plant<sup>1</sup>.

The cause was unclear, but aerosols from metal working fluids and washers were postulated, although endotoxin levels and microbial growth was very low.

We now report specific bronchial provocation testing in two workers, one with evidence of alveolitis, and one with occupational asthma alone.



## Specific Bronchial Provocation Test



## Specific bronchial challenge testing to metal working fluid

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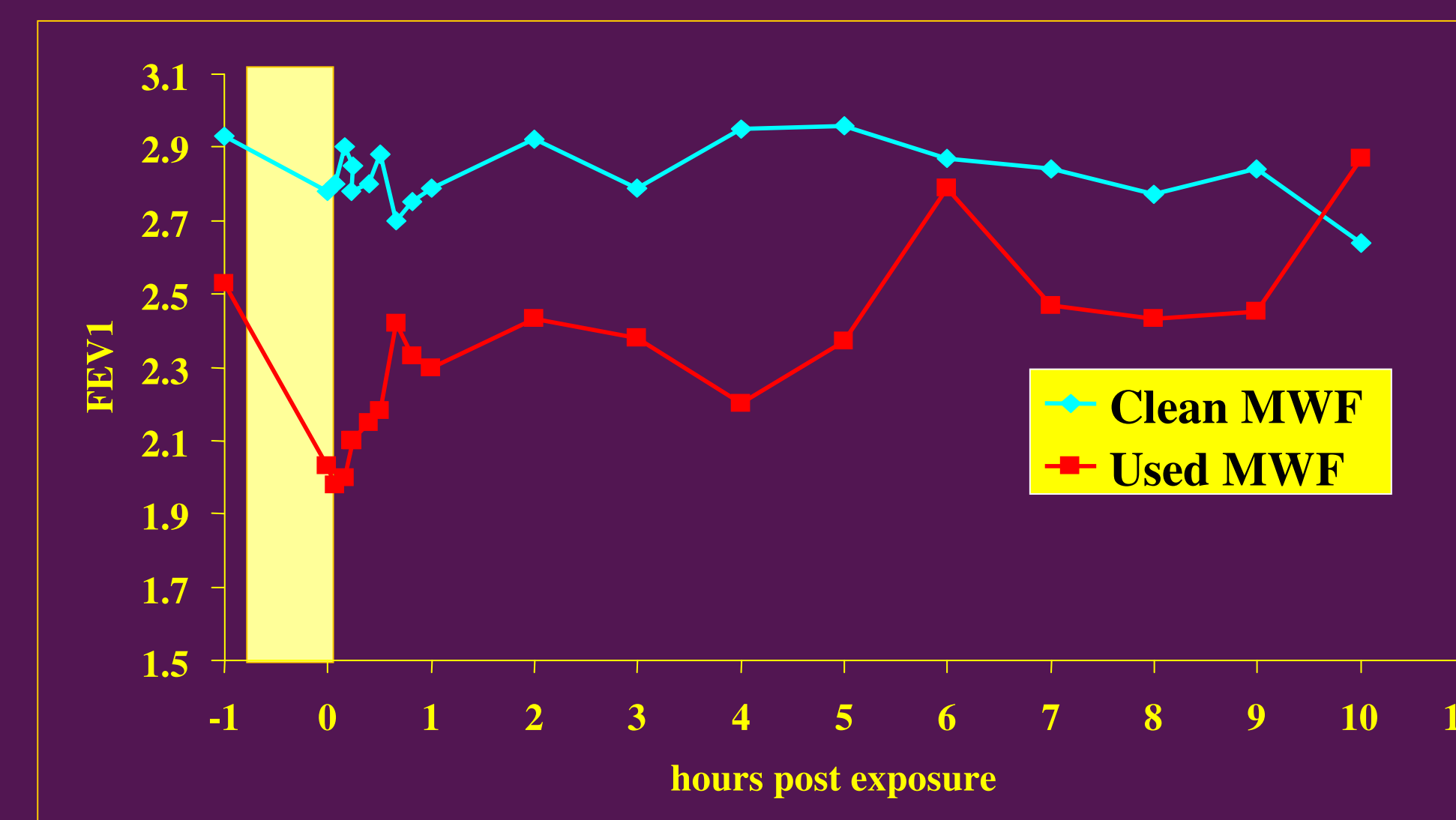
<sup>1</sup>Occupational Lung Disease Unit, Birmingham Heartlands Hospital, Birmingham, United Kingdom  
<sup>2</sup>Public Health & Epidemiology, University of Warwick, Coventry, United Kingdom.

Tel: 0121 424 0734  
Email: [sherwood.burge@heartofengland.nhs.uk](mailto:sherwood.burge@heartofengland.nhs.uk)

### The worker with alveolitis had a late reaction to used Metal Working Fluid:

- 14.6% fall in FEV<sub>1</sub> following indirect exposure
- 22% fall in FEV<sub>1</sub> after direct exposure
- <1% change following unused metal working fluid exposure.
- No change in methacholine reactivity, which was normal throughout.

### Worker 1: Specific bronchial challenge testing to Metal Working Fluid

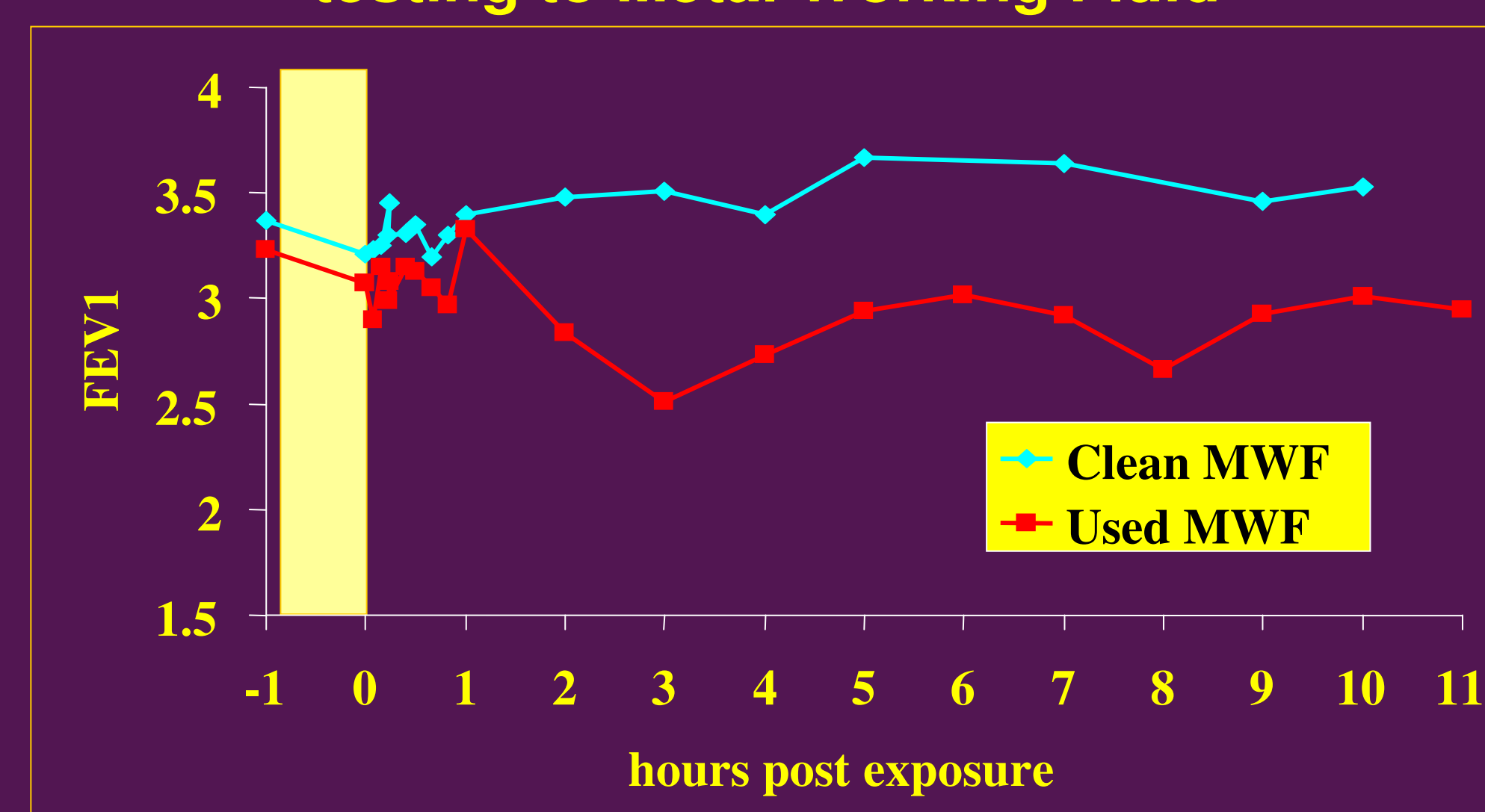


**Methods:** Challenges to unused Metal Working Fluid (*Hocut B300 8%, Hocut B205 1.5% in water*) and used metal working fluid taken from the common sump were performed.

Initially, a *Pari Pot nebuliser* with aerosol directed generally into the challenge chamber was used for 70-minute exposures.

Further challenges were made with the aerosol inhaled directly from the nebuliser for up to 17 minutes.

### Worker 2: Specific bronchial challenge testing to Metal Working Fluid



### The asthmatic worker had a borderline reaction to the indirect exposure

- Immediate fall in FEV<sub>1</sub> : 13.7%
- Late Fall in FEV<sub>1</sub> : 11.2%

### A significant dual asthmatic reaction with direct exposure

- Immediate fall : 21.7%
- late fall : 13%

- *Methacholine reactivity* deteriorated from 2400ug (pre-challenge) to 300ug the day after positive challenge

### Conclusion:

These results suggest that constituents of the used oil, rather than known asthmagens present in the unused oil, were the cause of the asthma and alveolitis in this outbreak.

<sup>1</sup>Robertson A et al. *ERJ* 2005; 26 suppl 49:150s