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**Title:** Occupational asthma from sensitization to 4,4-methylene-bis-morpholine biocide in unused metalworking fluid

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**Body:** We present the first case of occupational asthma (OA) to unused metalworking fluid (MWF) with sensitization to the biocide additive 4,4-methylene-bis-morpholine. A 54-yr old Kenyan man presented to our unit with a 2-yr history of rhinitis, wheeze, dry cough and chest tightness, worse at work and better on holiday. He worked on an automated milling machine, using a semi-synthetic Ecocool Ultralife A MWF. He had positive skin-prick tests to multiple aeroallergens, unused MWF and 4,4-methylene-bis-morpholine (CAS: 5625-90-1; OA Hazard Index=0.98). Serum total IgE was 2048kU/L (<200), there was a peripheral eosinophilia 0.75x10<sup>9</sup>/L (0.04-0.44x10<sup>9</sup>/L) and raised FENO while exposed at 71ppb (<21ppb). OASYS analysis of 2-hourly peak flows confirmed OA (OASYS score=3.4; ABC score=30.5). He underwent specific inhalational challenge (SIC) to 7% unused Ecocool Ultralife A. Initial FEV<sub>1</sub> was 2.63L, which fell immediately by 20%, with a subsequent late fall at 3-11 hours by 29.7%. Subsequent SIC to 0.7% 4,4-methylene-bis-morpholine for a total of 50 minutes resulted in a late fall in FEV<sub>1</sub> of 16.5% at 9-11 hours after challenge (Figure 1). He had a >4-fold increase in non-specific bronchial reactivity to methacholine, but no clinically significant change in FENO after challenge. He had negative SIC to other MWF constituents. This is the first case of OA due to sensitization to a biocide additive in unused MWF.