

CONTENT

1. General Introduction	6
Metal fume fever	6
Investigation of metal fume fever	8
<i>Precision-cut lung slices (PCLS)</i>	8
<i>Isolated perfused lungs (IPL)</i>	10
<i>Whole blood assay (WBA)</i>	11
<i>Aachen workplace simulation laboratory – studies with human volunteers.....</i>	12
 2. The present Research Program	 13
Study 1: The effects of hydroxyethyl starch and gelatine on pulmonary cytokine production and oedema formation	15
Study 2: Retrograde perfusion in isolated perfused mouse lungs - feasibility and effects on cytokine levels and pulmonary oedema formation	27
Study 3: The effects of zinc- and copper-containing welding fumes on murine, rat and human precision-cut lung slices	38
Study 4: The pro-inflammatory stimulus of zinc- and copper-containing welding fumes in whole blood assay via protein tyrosine phosphatase 1B inhibition .	49
Study 5: Increased neutrophil granulocyte and myeloperoxidase (MPO) levels indicate acute inflammation due to the exposure of zinc- and copper-containing welding fumes	60
Study 6: The effects of exposure time on systemic inflammation in subjects with exposure to zinc- and copper-containing welding fumes	71
Study 7: No Observed Effect Level (NOEL) for systemic inflammation by copper and zinc in welding fumes	78
Study 8: The Effects of Repeated Exposure to Zinc- and Copper-Containing Welding Fumes on Healthy Volunteers	97
 3. General Discussion	 106
Conclusions	111
<i>Experimental set-ups in lung toxicology research</i>	111
<i>Characterisation of metal fume fever</i>	113

4. Summary	117
5. References	118
6. Acknowledgements	127
7. Curriculum vitae	128
8. Liste eigener Publikationen	129