ALBUTEROL METERED DOSE INHALER PERFORMANCE UNDER HYPERBARIC PRESSURES

Garry A. Johnson¹, Veera R. Gutti², Sudarshan K. Loyalka², Kenneth A. O’Beirne Il, Steven K. Cochran¹, Hollis M. Dale¹, George R. Kracke¹,
¹Dept. of Anesthesiology and Perioperative Medicine, University of Missouri, Columbia, MO 65212; ²Nuclear Science and Engineering Institute and Particulate Systems Research Center, University of Missouri, Columbia, MO 65211

INTRODUCTION
The stimulus for this presentation was an asthma attack suffered on the first dive by a victim of a severe industrial electrical burn. The patient’s response to albuterol metered dose inhaler (MDI) treatment given at depth was felt to have been poor compared to normobaric conditions.

CONCLUSIONS
1. CFC and long canister HFA powered MDIs weight loss per actuation was less at 3 ATA compared to 1 ATA while weight loss by short canister HFA MDIs was not significantly changed with pressure.
2. The mean diameters of nano particles from the CFC and short canister HFA MDIs decreased with pressure whereas the long canister HFA aerosol diameters were not affected.
3. The numbers of nanometer size particles delivered by the short canister HFA MDIs were less affected by pressure than CFC and long canister HFA MDIs.
4. Our hypotheses were not supported by the experiments.