Halon Replacement for Airplane Portable Fire Extinguishers - Progress Report

International Aircraft Systems Fire Protection Working Group Conference
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Presented by Doug Ferguson
Objective

Provide a progress report on development of BTP (2-bromo-3, 3, 3-trifluoropropene), a promising new environmentally safe Halon replacement handheld fire extinguishing agent.
Agenda

- Steps to Commercialization

- BTP Current Progress

- Future

- Questions
Steps to Commercialization

✓ Cup burner testing - 2002
✓ Initial toxicity tests (Ames, cardiotox…) - 2002
✓ 2D ODP, GWP and atmospheric lifetime - 2004
✓ Prototype extinguisher, near drop-in replacement for Boeing 1211 extinguisher - 2009
✓ UL 711 5B pan fire tests - 2009
✓ UL 711 cold temperature pan fire test - 2009
✓ FAA MPS AR-01/37 hidden fire tests - 2009
✓ 3D model analysis of ODP and GWP - 2010
✓ FAA MPS AR-01/37 seat fire toxicity tests - 2011
✓ ASTM flammability tests (per NFPA 704) - 2011
✓ Airplane material compatibility tests - 2011
✓ Synthesis of BTP for toxicology testing - 2011

☐ Publication of 3D ODP scientific paper
☐ Additional BTP physical properties testing
☐ Toxicology testing
☐ PBPK testing and modeling
☐ Provide PBPK data to FAA for inclusion in AC 20-42D and FAA/AR-08/3
☐ US EPA TSCA inventory listing
☐ US EPA SNAP approval
☐ EU REACH approval
☐ 3.25” diameter bottle
☐ UL 2129 fire extinguisher bottle tests and UL listing
☐ ASTM standard for BTP
BTP Current Progress

✓ University of Illinois at Urbana Champaign (UIUC) submitted paper on 3D atmospheric modeling to the *Journal of Geophysical Research – Atmospheres*
  ṝ UIUC responding to a reviewer comment
  ṝ Expect publication in 2012

✓ Additional physical properties testing
  ṝ Start this year and complete 1Q12: Surface tension, water solubility, etc...all physical properties tests.

✓ Toxicology testing
  ṝ Complete this year: 14-day range finder
  ṝ Complete next year: Skin irritation in-vitro, biodegradation, eye/skin irritation, local lymph node assay, 90 day subchronic inhalation, reproductive/fetal toxicity, blood concentrations at LOAEL, PBPK modeling.
  ṝ ECD 4Q12 for toxicology test completion and SNAP/REACH application submittal.
Further update will be provided at the next IASFPWG meeting in 2012
Questions?

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