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**
  - ✈ **UIUC responding to a reviewer comment**
  - ✈ **Expect publication in 2012**
- ✓ **Additional physical properties testing**
  - ✈ **Start this year and complete 1Q12: Surface tension, water solubility, etc…all physical properties tests.**
- ✓ **Toxicology testing**
  - ✈ **Complete this year: 14-day range finder**
  - ✈ **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.**
  - ✈ **ECD 4Q12 for toxicology test completion and SNAP/REACH application submittal.**

Future

Further update will be provided at the next IASFPWG meeting in 2012

Questions?

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