A Remarkable Advance in Lab Coats for Chemical Exposure Prevention

Professor Craig Merlic
Executive Director
Reported Laboratory Safety Incidents at UCLA

- About 100 reported lab accidents per year at UCLA from roughly 10,000 postdoctoral scholars, graduate students, undergraduate students, and staff in research labs.
  (About 7 from Department of Chemistry & Biochemistry)
- 17% of lab accidents at UCLA over eight years were Chemical Exposures
- 35% of the Chemical Exposures were “splash to body”

Do lab coats provide adequate protection?
Reducing Chemical Exposures: Lab Coats

Performance Requirements for Lab Coats

1. Comfortable material to wear
2. Breathable
3. Non-porous for liquids
4. Non-wicking for liquids
5. Chemically resistant
6. Flame resistant

Cotton or Polyester

Flame Resistant Treated Cotton

Flame Resistant Nomex
Reducing Chemical Exposures: Lab Coats

Performance Requirements for Lab Coats

1. Comfortable material to wear
2. Breathable
3. Non-porous for liquids
4. Non-wicking for liquids
5. Chemically resistant
6. Flame resistant

But, more than 100 years after the invention of lab coats, they FAIL criteria 3, 4 and 5!
Reducing Chemical Exposures: Lab Coats

Performance Requirements for Lab Coats

1. Comfortable material to wear
2. Breathable
3. Non-porous for liquids
4. Non-wicking for liquids
5. Chemically resistant
6. Flame resistant

A potential solution has emerged – Westex ShieldTEC fabric by Milliken & Co.
Reducing Chemical Exposures: Lab Coats
Reducing Chemical Exposures: Lab Coats
CONCLUSIONS

• Lab coats made from Milliken ShieldTEC have the comfort and breathability of cotton coats.
• They have flame resistance due to the core Nomex fiber.
• They are non-wicking and non-porous for polar liquids such as aqueous solutions and organic solvents such as ethanol, DMF, and DMSO.
• They exhibit remarkable chemical resistance due to a proprietary fabric treatment that also enables the non-wicking and non-porous properties.
Acknowledgements

- Dr. Jason Spruell, Milliken & Company
- Ken Smith, Executive Director, EH&S, UCOP
- DuPont
- Milliken & Company
- Workrite
- Mission Linen