

SAFETY ADVISORY

Cotton Flame Resistant Garments



Affected Fabrics: Ultra Soft®, Ultra Soft AC™ & Indura® manufactured by Westex

Products of Reaction

Cotton FRG

- +155 °F when exposed to 11% NaOCl solution
- +92 °F when exposed to 6% NaOCl (household bleach)
- Chloroform
- Carbon tetrachloride
- Phosgene

Nomex

- +10 °F when exposed to NaOCl solution
- No gas generation

The Channelview facility recently experienced a recordable injury when a contract employee accidentally dislodged a line containing NaOCl (bleach or sodium hypochlorite) and was sprayed. He experienced burns that were greater in magnitude than would have been expected from exposure to a 13% solution.

The contractor was wearing a cotton flame resistant garment (FRG). According to testing done by the Newtown Square Research Center and the clothing manufacturer, these fabrics can **exothermically react** with bleach solutions to produce enough heat to burn skin and give off toxic gases (see box above). Nomex flame resistant garments do not react similarly.

The manufacturer of the cotton FRG in this incident, Westex, cautions against the use of Bleach and Hydrogen Peroxide in their [laundry guide](#) but they do not communicate the potential for heat generation when these products are used.

What can you do to prevent a similar occurrence at your site?

- Share this information with all of your employees and contractors.
- Discontinue the use of cotton flame resistant garments in areas where bleach and other strong oxidizers are present or require chemical resistant clothing over cotton FRG.
- Ensure that employees are aware of manufacturer guidelines and laundering requirements for all PPE.
- Review the technical literature for all PPE for similar limitations and reactions.