Previous reports from this laboratory have shown that flexible polyurethane foams (FPU) treated with copper dust, cupric oxide, curprous oxide or copper sulfate produced significantly less hydrogen cyanide (HCN) when thermally decomposed than the identical but untreated control foams. The decreased atmospheric concentrations of HCN resulted in the reduction of the acute inhalation toxicity (as measured by lethality in Fischer 344 rats) produced from exposure to this smoke.

This reduction of HCN and toxicity occured regardless of whether the cooper or copper compound was added to the foam during its formulation (prior to the foaming process) or as a post-treatment (after formulation).

In all these reported experiments, the foams were thermallt decomposed in the NBS Toxicity Test Method apparatus via a two phase procedure previously shown to produce high concentrations of HCN.

This report addresses the issue of whether the addition of a copper compound to a flexible polyurethane foam would affect the flammability characteristics of the foam. The following properties were examined:

1. ignitability in three systems (the NBS Toxicity Test Method, the Cone Calorimeter, and Lateral Ignition and Flame Spread Test (LIFT),
2. heat release rate under small-scale (Cone Calorimeter, and Lateral Ignition and Flame Spread Test (LIFT)
3. heat release rate under small-scale (Cone Calorimeter) and mediumscale (furniture calorimeter),
4. smoke obscuration (Cone Calorimeter), and
5. rate of flame spread (LIFT). In all cases, no differences in flammability characteristics between the treated and untreated foam were observed.