Presentation to the CPSC

Assessment of Potential Consumer Exposure to Boric Acid through its use as a Fire Retardant in Mattresses

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Good morning, my name is Alan Posner. I am President of the National Cotton Batting Institute. I would like to thank the commission for allowing the N.C.B.I. to present the results of its assessment of potential consumer exposure to boric acid through its use as a fire retardant. This association has been in existence for 51 years and represents U.S. companies that manufacture flame-resistant cotton batting that is used in mattresses, futons, and upholstered furniture as well as suppliers of the boric acid that is used to make the cotton flame resistant. We also represent fiber suppliers for this industry. Any N.C.B.I. member that supplies FR cotton batting for mattresses must comply with the N.C.B.I. certification program. Underwriters Laboratories, as an independent third party, monitors compliance with the program.

The N.C.B.I. participated in the public hearing for a national mattress flammability standard last March. Questions were posed on the safety of boric acid. Those questions addressed issues such as ingestion, air quality above and in the room of mattresses containing boric acid, and dermal absorption as the result of sleeping on mattresses constructed with cotton batting that have been treated with boric acid. At that time, there were no quantifiable answers to these questions.

Let me say this on the front end: Boric acid has been used in the construction of mattresses since 1972, and to my knowledge there have been no known health problems. There are millions of mattresses in use today that contain boric acid. They are not only manufactured for residential use, but state and federal governments produce them for institutional use In fact, most state and government specifications call for “boric acid treated” cotton to be put into

their mattresses to make them fire safe. As I speak here today, boric acid is being put into mattresses in factories across the country.

In response to the hearing last March, the N.C.B.I. commissioned an independent study to test for boric acid emissions in an effort to address the data gaps that existed in the studies of boric acid as a safe fire retardant material. Our purpose today is to review those findings.

Although the protocol used in the testing is fully delineated in the report you received, I would like to briefly review it:

- Nine mattress styles were tested utilizing the Cornell Impact Machine that put each mattress under duress for 15 minutes to determine the measurable release of boric acid onto the surface of the mattress and into the air;

- Wipe sampling was conducted on the mattress surface for boric acid immediately before and after the impact testing;

- Duplicate air samples for boric acid determination were collected above the mattress being tested and in the room away from the test machine to measure background levels of boric acid during and immediately following the impact testing; and finally

- Respirable dust emissions were measured in the air above the mattress being tested and in the background.

Protocol for the testing was developed by Legend Technical Services, Inc.; the testing was carried out by Stork Laboratories, Inc.; and the test results were

analyzed by toxicologists at Geomatrix, Inc., one of whom, Dr. Kevin Connor, is with us today to answer questions about the findings.

As the N.C.B.I. noted in its March appearance before Commissioners and staff, boric acid has been used with cotton as a fire retardant since 1972 with no known health problems. The results of this extensive testing would seem to uphold our position that when properly applied, boric acid poses no health problems to mattress consumers. Our test results directly correlate with testing that has been performed by two other national companies. All tests indicate that boric acid is as safe as common table salt.

Among the findings of our recent testing were:

- Based on normal consumer use patterns, the dermal and oral exposures to boric acid via contact with mattresses is more than 1400-fold less than Environmental Protection Agency's threshold level. The anticipated boric acid exposure is also well below human health criteria established by the Agency for Toxic Substances and Disease Registry (ATSDR) and the National Academy of Sciences (NAS).

- The evaluation of dermal exposure assumed direct contact between a mattress surface and unclothed skin. That is unlikely to occur in most situations given the typical use of sheets and mattress pads.

- Air sampling tests found no detectable airborne boric acid.

- Because no boric acid was detected in the air samples, inhalation is not considered as a pathway of exposure to boric acid.

- There was no significant variance between the sampling locations – above the mattress and away from the mattress – in the measurement of respirable particles, nor was there any observed increase in respirable particles over the course of the impact testing.

- Although surface wipe tests contained measurable amounts of boric acid, there was not a consistent increase in surface concentrations following testing. Analyses for only 4 of the 9 mattresses tested showed an appreciable increase in surface boric acid following the impact testing. Again, boric acid on the surface does not contribute to human intake that would be considered significant from a health standpoint.

In their evaluation of potential consumer exposure to boric acid in the normal use of mattresses, the Geomatrix toxicologists determined that boric acid exposure in not expected to present any significant health risks to consumers. The model of exposure in these tests represents the high end of consumer exposure which is far below the EPA allowable thresholds.

In conclusion I would like to state that sleeping on a mattress that contains boric acid treated cotton will give less exposure to boric acid than the typical diet of an adult or child. Fruits, vegetables, and juices are just some of the consumer products that contain far higher levels of boric acid than does the typical treated mattress. Both cotton and boric acid are “green” products and are the natural way to make mattresses fire safe.

I would once again like to thank the Commission for allowing us to present our findings and would appreciate consideration for approval of our products to make beds safer for America.

If you have any questions, Dr. Connor and I will be glad to address them.

Thank You.