



# UTS: Engineering



## Trampoline product safety - Ensuring compliance with safety standards

A/Prof David Eager



### Overview of this presentation

- Introduction
- Injury data
- Some typical modes of failure
- Discussion
- Conclusions and questions





## Introduction

- Trampoline injury data indicate that there are many children being injured as a result of trampoline use
- The Australian Standard Trampolines AS4989:2006 objective was to decrease the frequency and severity of childhood injuries
- Five years have passed since the publication of the original Trampoline Standard and there is little evidence of product compliance to this non-mandatory Standard



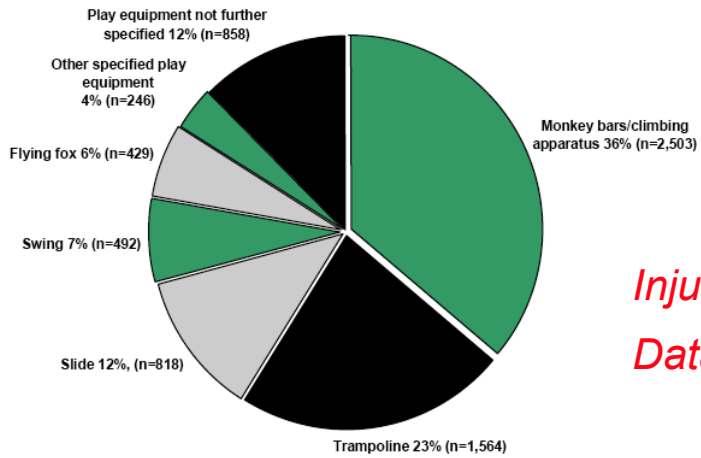
## Introduction (cont.)

- The engineered safety measures for injury intervention primarily involved the introduction of padding to cover exposed springs, metal frame and hooks, and safety netting or enclosures
- The non-engineering safety measures include product labelling, point-of-sale instructions, and user instructions





Hospital treated playground equipment fall injury: equipment items (July 2002-June 2004)



Injury Data

Source: VAED - admissions and VEMD - presentations (non-admissions)



Failure above spring

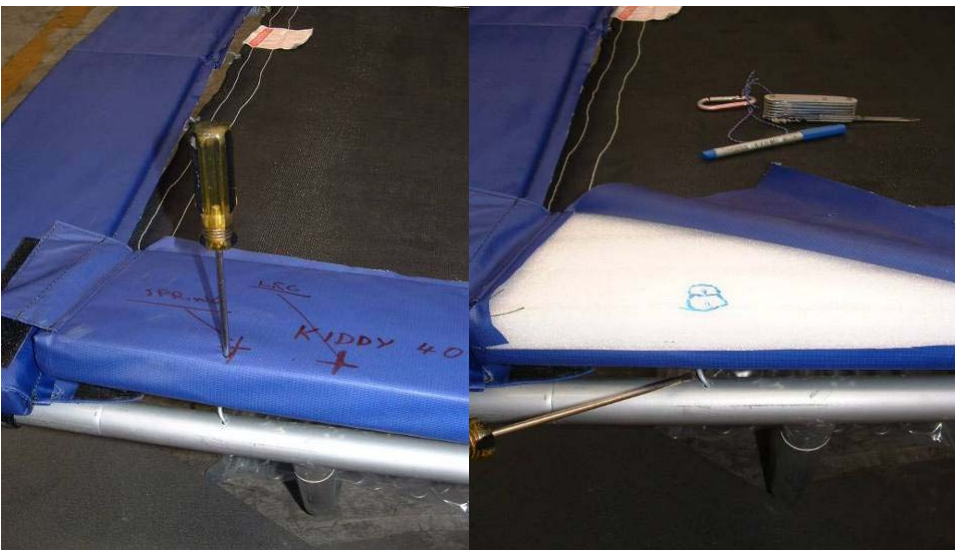




Failure above a spring / leg combination

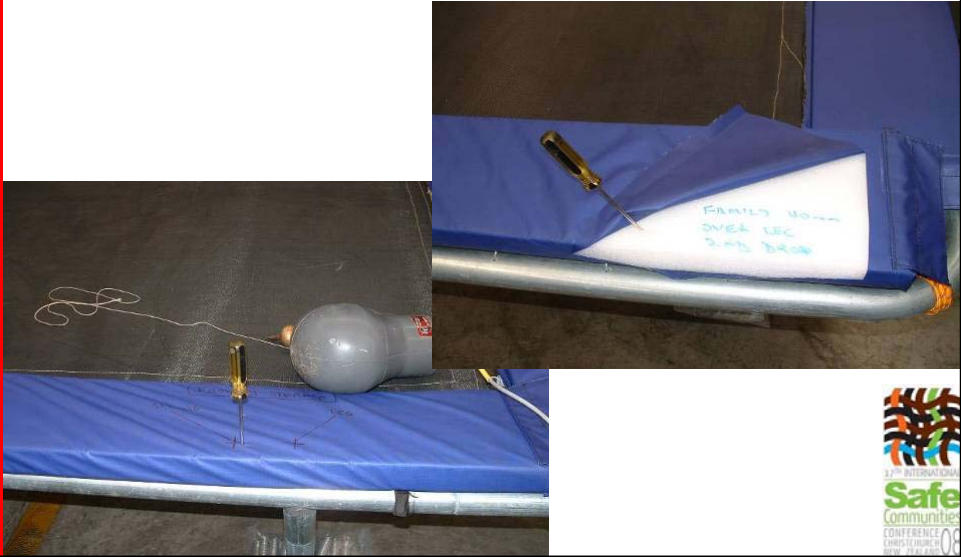


Failure above a spring





*Failure above a spring*



*Failure above a leg*





## Failure above an eyelet



Prepared by A/Prof David Eager



## Failure above a spring

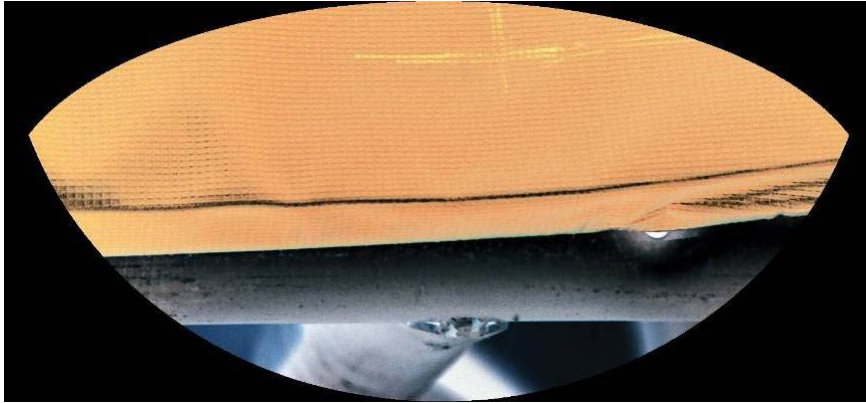


Prepared by A/Prof David Eager





*Failure – Sharp metal edge leg/frame joint*



*Failure – Tube deformation above leg*





## Discussion

The AS 4989:2006 Trampoline Standard safety management system has two intervention strategies, namely:

- Define the minimum performance requirements for all trampolines sold into the domestic market
- Specify the minimum product marking and documentation for sale, assembly, maintenance and safe use of domestic trampolines



## Discussion

Unfortunately we presently have a **non-mandatory** children's toy Standard that is a ***paper tiger***, namely:

- The retailers do not enforce it and continue to purchase trampolines that do not comply with the minimum safety performance requirements
- The retailers purchase trampolines that do not include correct and adequate safety labeling at point of sale
- The retailers are not made to comply with the Standard







Discussion (cont.)

- The manufactures do not manufacture their products to meet the minimum performance requirements
- The suppliers purchase inferior product and flood the market with accidents waiting to happen



Discussion (cont.)

- We now have a negative feedback loop
- The manufacturers and suppliers that developed products that could comply with the Standard can not sell them because the cost of manufacture exceeds that of the non-complying trampolines
- To survive they have withdrawn the safer, but more expensive products and replaced them with cheaper and hazardous non-compliant trampolines





## Discussion (cont.)

- This in turn puts greater pressure on the remaining manufacturers, suppliers and retailers to do likewise
- One by one they succumb to this pressure
- At the time of publication the author was aware of only one product sold into the Australian market that still complies with the intent of the Trampoline safety Standard
- It is the **SpringFree Trampoline** that was designed by a A/Prof Keith Alexander from Christchurch, NZ



## Conclusions

- A trampoline is a potential dangerous **toy** that has in the past and will in the future cause severe injury to our children
- We have a duty of care to protect our children from dangerous and unsafe consumer products
- AS 4989:2006 Trampoline Standard must be legislated as a mandatory safety Standard
- The Departments of Fair Trading in each State and Territory of Australia must be prepared to enforce this safety Standard

