

# Quality Assurance Program

## QAP 123

Or >>>>

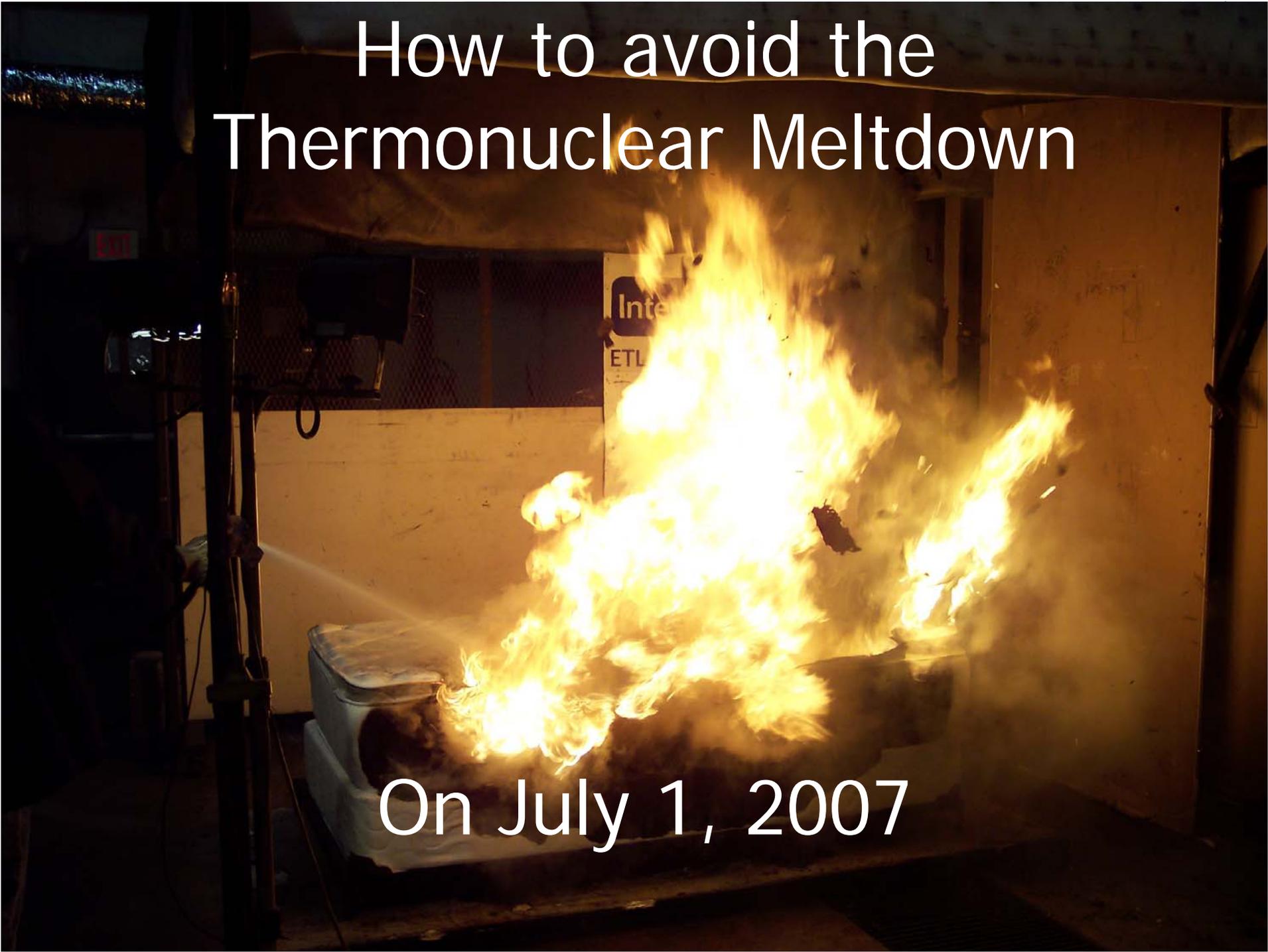
*These presentations were not prepared by the Commission or Commission staff and are not official documents of the CPSC, have not been reviewed by, and may not necessarily reflect the views of, the Commission.*

ITE	QTY		
1	1	T21216-53	Norman Pleated
2	1	T21216-54	O-ring AS568-0
3	1	T21216-54	O-ring AS568-222
4	1	T21216-56	Pleated Disk holder : 1/4" NPT port
5	1	T21216-57	Filter retaining cap
6	1	T21216-59	Pleated Disk Filter Inlet : 1/4" NPT Port
7	2	T21216-60 : M6 x 16 Cap screw	Stainless steel
8	4	T21216-61 : M3x10 low hd Cap screw	Stainless Steel : McMaster 92855A310

<b>Tietex International Ltd.</b> © 3010 North Blackstock Road, Spartanburg, SC 29301	<i>Kenny Parrish</i> 803.579.0000	mm dimensions 04/Jan/2007
FR Mattress - Ticking and Filler		<b>T21216-A45</b>

# How to avoid the Thermonuclear Meltdown

On July 1, 2007



A-A (2:1)

# What can Quality Assurance Programs do for you???

## What are they doing now?



They make sure that the plane you are flying in is safe....



# Again??????



◆ They make sure that the food you are eating is edible and safe to consume

# ?????Again

A-A (2:1)



◆ They make sure that the toys your children and grandchildren play with won't harm them under any condition

Actual size (1:1)

3	1	T21216-54	O-ring ASS68-222
4	1	T21216-56	Pleated Disk holder : 1/4" NPT port
5	1	T21216-57	Filter retaining cap
6	1	T21216-59	Pleated Disk Filter Inlet : 1/4" NPT Port
7	2	T21216-60 : M6 x 16 Cap screw	Stainless steel
8	4	T21216-61 : M3x10 low hd Cap screw	Stainless Steel : McMaster 92855A310

<b>Tietex International Ltd.</b> © <small>3010 North Blackstock Road, Spartanburg, SC 29301</small>	<i>Kenneth Powell</i> <small>803.574.0000</small>	mm dimensions
		04/Jan/2007
FR Mattress - Ticking and Filler		<b>T21216-A45</b>

# And yet again????

A-A (2:1)



- ◆ They work for you to make sure that the products you purchase and use meet certain expectations of quality

Actual size (1:1)

6	1	T21216-59	Pleated Disk Filter Inlet : 1/4" NPT Port
7	2	T21216-60 : M6 x 16 Cap screw	Stainless steel
8	4	T21216-61 : M3x10 low hd Cap screw	Stainless Steel : McMaster 92855A310

Tietex International Ltd. ©  
3010 North Blackstock Road, Spartanburg, SC 29301

*Kenneth Parvath*  
REV 074-0000

mm dimensions  
04/Jan/2007

FR Mattress - Ticking and Filler

T21216-A45

# Quality Assurance Programs in conjunction with Safety Regulations provide "Safety Assurance"



# Mattresses

## Why oh Why Mattresses?

- ◆ Every house, hospital, hotel, camper trailer, sleeper cabs, etc...have at least one, and on average for houses..3..
- ◆ The average person spends 1/3 of their life on or around a mattress
- ◆ Children spend more time in their bedrooms and they play under their beds

In every home our beds are against a wall with all types of hazards around them



# Mattresses

## Why oh Why Mattresses??

- ◆ Almost every mattress in a home is located against a wall with an electrical outlet and multiple items plugged in
- ◆ When we get totally worn out we go to bed; sometimes not thinking clearly
- ◆ When we are trying to get warm we will move heaters close to where we are sleeping
- ◆ We put candles around our beds to enhance our evenings

So what's the question again??

Why do we need to transform  
mattresses into safer products??

Mattresses are an  
**"Essential"**  
component in all our lives.

# So, let's get on with making them safer.....

- ◆ Regulation

- ◆ Prototypes / Testing

- ◆ Record keeping

Who's the point person / backup

- ◆ **Quality Assurance Programs**

# Compliance

1. Point person..understanding and leading the program.
2. Product line analysis
3. FR systems review
4. FR systems test and solution
5. Build / (pool )/ qualify prototypes
6. Preparing for production
7. Maintaining compliance     IE...

**Quality Assurance Program**

# Your Point Persons

- ◆ Program Leader      ◆ \_
- ◆ Production Manager      ◆ \_
- ◆ Development Manager      ◆ \_
- ◆ Quality Assurance Program      ◆ \_
- ◆ Success of Program      ◆ Depends on everyone

# What type system does the Standard require?

- ◆ It requires a written QAP outlining how you will maintain the production of your units to the prototypes they are based on
- ◆ You will need to be able to show what materials were used when the beds were built and a production lot system

# Quality Assurance Program

The Program, Forms, Audits, Sign off sheets, other documents and Video's represented here are designed to help the Mattress Manufacturer in their effort to be compliant under the 16 C. F. R. Part 1633 Standard.

Components of the program:

Point Person Designation

Written Program

Employee Training  
Record Keeping  
Production Lot Assignment  
Shop Floor Controls  
Audits  
Problem Solving System  
Incoming Material Checks  
Outside testing and verification

Using:

Video Presentations  
Employee Training Sessions  
Sign Off Sheets  
Work In Process procedures  
Audits  
Material Checks

◆ Quality  
◆ Assurance  
◆ Program

Training >>>>>

# 16 C.F.R. Part 1633

## Standard for the Flammability (Open flame) of Mattress Sets

- ◆ **Purpose:** Reduce deaths and injuries associated with mattress fires by limiting the size of the fire generated by a mattress set during a 30 minute test
- ◆ The standard establishes flammability requirements that all mattress sets must meet before sale or introduction into commerce

# Findings by CPSC as to the benefit of Standard

- ◆ Reduction of 240 to 270 deaths per year
- ◆ Reduction of 1150 to 1330 Injuries per year
- ◆ Lifetime \$ benefit from 1<sup>st</sup> year implementation of mattresses in range of \$514 million to \$1,132 million

# This is the old way...



- ◆ Actual picture of burn made with FR materials, but constructed poorly
- ◆ Remember....Just because you have FR materials in the build does not mean it will pass
- ◆ There must be a strict Quality Assurance Program in place

# Now a Video of a Failure...



# What we want.....



- ◆ This is an actual picture of one of the prototypes
- ◆ The ticking can burn and continue with low flame
- ◆ It cannot be allowed to combust

# Video of Passing Test...



Terminology >>>>>

# What are Qualified Prototypes?

- ◆ Qualified Prototype: a representative sample of a mattress or mattress set introduced for sale in the U.S. that has passed the “burn test” criteria....passing with 3 consecutive burn tests
- ◆ Built with FR materials, FR thread, materials in certain order, and using the correct techniques in quilting, sewing, closing, etc...so that the mattress or set passes the testing

# Subordinate Prototype

- ◆ A mattress or mattress set for sale in the U.S. that is based on a Qualified Prototype and differs only in size, ticking, or components or materials not to degrade flammability performance
- ◆ Each must have its own record as to manufacturing specification and variation from Qualified Prototype.
- ◆ Each must have supporting documentation “based on reasonable criteria” that the changes will not cause failure.



# Placement of FR fiber.....



- ◆ The placement of the FR fiber is critical
- ◆ It must be directly under the ticking for these prototypes
- ◆ When quilting the panels or quilting the border it must be directly under the ticking

# Production Spread Sheets to pull materials by...



- ◆ The materials to use spread sheets must be followed
- ◆ You cannot substitute materials on your own
- ◆ These all match to Prototypes and you cannot change them

Repairs like this are not allowed...





# What must I have to be compliant with Paperwork and Record Keeping?

1. Prototypes, confirmed tests, subordinate prototypes, and their testing, criteria, and build sheets
2. Production lot numbers and how many beds produced per prototype
3. Quality Assurance Program incorporating procedures and policies

# How do the records I am using now tie in with what I need to do?

- ◆ My orders
- ◆ My production sent to the floor
- ◆ My Shipping Forms...
- ◆ Do I number my trucks shipped?
- ◆ Do I keep up with orders by customer, or by date?
- ◆ Do I have my records on computer?

# How are your model numbers assigned and how does your production go to the floor?

- ◆ There needs to be flow so that as changes are needed they can be made easily
- ◆ Will you do daily, weekly, or monthly tallies on beds built to prototypes?
- ◆ How is that information going to get to the person putting it in the records?



Prototype Mattress Sample

Property of

Tietex International  
3010 N. Blackstock Rd  
Spartanburg, SC 29301

Qualified Prototype Sleepfree MS1109A

\*\*\*\*\*Sample\*\*\*\*\*

Mattress Only

\*\*\*\*\*Only\*\*\*\*\*

Mattress and Box

X

\*\*\*\*\*Sample\*\*\*\*\*

\*\*\*\*\*Record\*\*\*\*\*

Mattress Description Tape with Gusset 19" (Super PillowTop)

	Material Used / In order of Build	Material Height or Thickness	Vendor
<b>Mattress Core</b>	312 Bonnel FE	5.5	Leggett & Platt
	Polyethylene Cups (Every other Coil)		Flex-O-Lators
<b>Top Panel Build</b>	Tickling	NA	Tietex
	1.35 oz. Fiber	0.5	Milliken
	.8 oz. Paladin FR high loft	0.5	Milliken
	1" quilting foam	1	Future Foam
	1" quilting foam	1	Future Foam
	1.0 oz. Backing	NA	Tietex
<b>Top Upholstery</b>	1.5 oz. Insulator	0.25	Leggett & Platt
	3" foam	3	Future Foam
	1.5" convolute	1.5	Future Foam
	Innerpanel	NA	ABC
	3" foam	3	Future Foam
<b>Bottom Upholstery</b>	1.5 oz. Insulator	0.25	Leggett & Platt
	3" foam	3	Future Foam
	1" foam	1	Future Foam
	C237 FR	NA	Tietex
<b>Border Build</b>	Tickling	NA	Tietex
	.8 oz Paladin FR High loft	0.5	Milliken
	.5 oz backing	NA	Tietex
<b>Gusset Build</b>	Tickling	NA	Tietex
	.8 oz Paladin FR high loft	0.5	Milliken
	.5 oz backing	NA	Tietex

- ◆ Build Record
- ◆ Showing build of mattress
- ◆ Items listed in order and exactly as defined



# Production lots...How to designate??

- ◆ What is the size of an incoming FR material lot?
- ◆ How many units produced in a week?
- ◆ How do you keep up with units produced now? Invoices, production records?
- ◆ How do I designate lots to prototype numbers?
- ◆ What exactly does the Std require?

# How are you going to keep up with your records?

		Production Lot Designation				
		All supporting records in Production Files by Week				
		WE Date				
Prototype ID		5/5/2007	5/12/2007	5/19/2007	5/26/2007	Totals
	Lot Number	Pieces Built				
CMT010	0001	40	26	89	30	185
CTT018	0002	125	40	86	42	293
CMT008	0003	10	5	40	38	93
CTT016	0004	80	70	28	45	223
CMT005	0005	32	18	40	2	92

These records go back to Production Records kept by week.  
 Depending on size of production the lot numbers would change as needed.  
 The main purpose is to have lot numbers with corresponding FR products

Lot numbers.....

	Name	Lot number
High Loft	.8 Paladin	987980
High Loft		

# Not only FR products???



Lot Tracking  
Work Sheet

Form LTWS01

Production Lot tracking / Example

Lot #'s	Prototype#	FR Materials					Date Started
		Sleepfree FR Thread Lot #	Paladin .8 oz High loft	Tietex C237 Filler	Treated Cotton	Tietex Knit sock	
0001	CMT010	806459	456790	802345	450987	5/1/2007	
0002	CTT018	806459		802345		5/1/2007	
0003	CMT008	806459	456790	802345	450987	5/1/2007	
0004	CTT016	806459		802345		5/1/2007	
0005	CMT005	806459	456790	802345	450987	5/1/2007	
0006	CMT001	806459	456790	802345	450987		
0007	CTT009	806459		802345 x		678909	
0008	CMT017	806459	456790	802345	450987		
0009	CTT004	806459		802345			
0010							
0011							
0012							
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# Shop Floor Controls

- ◆ Visual references on the floor
- ◆ Proper identification of materials stored
- ◆ Correct material use sheets matching the prototype builds

# FR Barrier High loft feeding into the Border Quilter



- ◆ Must have correct tension; too tight and thin places will occur
- ◆ Correct alignment needed
- ◆ Keep ticket at machine to verify fiber being used

# Entry to Quilter / FR High loft



- ◆ High loft must be directly under ticking
- ◆ Tension must be correct here. Too much and the high loft stretches
- ◆ Proper alignment needed to make sure High loft is completely encased as it is processed. No narrow places

# FR thread??How Important



- ❖ Critical at all closing points
- ❖ Borders sewn together.
- ❖ Top to border
- ❖ Bottom to border
- ❖ Foundation border to FR Filler
- ❖ Cannot use regular thread

# Damaged FR Barrier high loft quilted. Caused by tension..



- ◆ The spot highlighted shows what happened when the roll of high loft had too much tension
- ◆ It pulled and formed a weak spot
- ◆ This piece is not usable

# On the build table...



- ◆ This is a point for audits
- ◆ At this point you can see actual build up of internal materials before borders and panel attached
- ◆ After closing is another critical point to check

# Audits on the floor...

- ◆ Audits need to be performed on the floor at critical areas after training
- ◆ Schedules can be set up for audits with more at beginning and then fewer as everyone becomes better
- ◆ Failures of audits call attention to further training needed for certain employees

# Documentation / Quality Checks / Production

		Prototype #	
		Material Audit at Closing Table	
		Date	
Audit performed at Assembly table just before closing and then after closing.			
		Yes	No
<b>Before Closing</b>			
1.	Materials on table match build record for prototype	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2.	Build record is in proper area for employee to use.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2.	FR materials are in correct place to specification.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3.	Border is in good shape without pulls or thin spots of FR fiber.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4.	Border is closed with FR Thread.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5.	FR thread (yellow) is in the sewing machine.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>After Closing</b>			
6.	Closing sewn without skips and consistent with requirements.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7.	All seams in tact and without skips.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Comments:		<b>**Note corrective actions to items found incorrect**</b>	
Auditor			
Closer			

- ◆ What kind of Quality checks are needed?
- ◆ Where should they be performed?
- ◆ How are people trained?
- ◆ How do I keep up with this?

# Build Table / Check



- ◆ Check for grin or mattress pulling up tight from table
- ◆ Check all closings
- ◆ Audits to be performed here at intervals

# Border Prep Area...



- ◆ Correct Size
- ◆ FR thread used at closing
- ◆ Labels attached
- ◆ Make sure no thin spots noticed

# Non FR material size is important...



- ❖ The wrong size materials cause the borders to pull tight and cause a grin between mattress and foundation
- ❖ It also puts excessive stress on all closings

# Work In Process Sheets



Work In Process  
 Work Sheet  
 Filled out Daily  
 Date

WIP Inspection Closing/Building Table  
 Inspections set up in intervals of-----

	Product name	Machine	Operator	Yellow FR Thread	# of Skips
1	ID #				
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					

# Incoming checks

- ◆ Certificates of Analysis...Critical for FR components
- ◆ Systems to check FR Barrier and FR Filler with Weight checks and fiber checks.
- ◆ Foam checks with weight checks.
- ◆ You are responsible to do business with reputable suppliers, and to check what you receive to a certain level.

# Storage of materials for proper identification



- ❖ Pulling the correct materials for each build is critical.
- ❖ Storage locations need to be marked clearly.
- ❖ Materials not in use need to be cleared and stored back in correct area.

# Outside checks

- ◆ Are there companies available to test samples sent to them?
- ◆ How many should I send?
- ◆ Where do I keep these records?

# Who's the person responsible for the maintaining of compliance in your company?

## ◆ YOU

- ◆ It is up to you to make this happen
- ◆ There are sources to help you....But it is up to you to do the major things outlined....

# What if I do not put in place a Quality Assurance Program

- ◆ You will not be in compliance
- ◆ You will not be able to show that you can make the mattresses day in and day out to the prototype.
- ◆ The penalties for knowingly violating the FFA are \$8,000 per violation and \$1.85 M maximum civil penalty.

# Ready to Go.....



- ◆ A Safer Product going into the marketplace.
- ◆ as a result of safety regulations and  
**Quality Assurance Programs**

# Critical Understanding Point..

- ◆ The only way to reach compliance and manufacture “safer” products for our customers is through the development of reliable relationships between the manufacturer and their vendors.
- ◆ Both must shoulder the task at hand and be willing to work closer together.