Introduction to Managing Risk
Three quotes to consider

• “Risk is like fire: If controlled it will help you; if uncontrolled it will rise up and destroy you.”
  
  *Theodore Roosevelt*

“Risk Management is about people and processes and not about models and technology.”

  *Trevor Levine*
“The first step in the risk management process is to acknowledge the reality of risk. Denial is a common tactic that substitutes deliberate ignorance for thoughtful planning.”

Charles Tremper
Signals of Quality Drift

- Significant audit findings
2015 Top Observations

- 211.22(d): Quality Unit responsibilities
- 211.160(b): Laboratory controls
- 211.192: Investigation failures
- 211.113(b): Microbiological controls
- 211.100(a): Production process
- 211.42(c)(10)(iv): Environmental monitoring
- 211.68(a): Electronic equipment controls
Risk Reduction is Hard Work

• Are you really using risk management effectively?

• Let's look at three examples
  – “The major difference between a thing that might go wrong and a thing that cannot possibly go wrong is that when a thing that cannot possibly go wrong goes wrong it usually turns out to be impossible to get at or repair.”

  Douglas Adams
Tablet Blend Uniformity Example

- Formulation
- Process technology
Example of continuous process

API feeder → Excipient feeder → Lubricant feeder → Mixer → Hopper → Tablet Press

Table - Tablet Hardness at Various Lubricant Concentrations:
- 1.5 wt.%
- 0.75 wt.%
- 0.5 wt.%

Graph:
- X-axis: Time
- Y-axis: Hardness (Pa)
- Time range: 0 to 2000
- Hardness range: 0 to 200
These are typical results
Results from our process changes

Direct Blend

Wet Granulation Process

Representative of actual test data
Results from our process changes

Continuous Process
Sterile Process Risk Example

• Look at microbiological risk
• Look at personnel intrusion risks
Higher Risk to Moderate Risk
Lowest risk
Batch Record example

• Paper Batch Records
• Electronic Batch Record (EBR)
  – Bad EBR example
  – Good EBR example
Risk Factors:
• Hard to follow
• Errors in data entry
• Mistakes by people
• Missing pages
• Missing documents
Much like Paper Batch Records
Work activity based system
Major change in human interaction
Error checking

System built-in self checking if batch number does not exist.

The Batch No is not valid.
Logical process control
Act.: 67.6 g  67.8 g
Effective real time management
Impact of Effectively Managing Risk

• Reduces process errors
• Reduces employee errors
• Reduces rejects and scrap
• Reduces need for investigations
• Reduces FDA 483 observations
• Reduces recalls
• Improves drug product quality
“Risk comes from not knowing what you’re doing.”

*Warren Buffett*
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