Beating Murphy’s Law
WHILE INTRODUCING NEW TECHNOLOGY

Presented by:
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“If something can go wrong, it will.”

Including excerpts from *Beating Murphy’s Law* by:

W. Bruce Chew  
*Harvard Business School*

Dorothy Leonard-Barton  
*Harvard Business School*

Roger E. Bohn  
*Massachusetts Institute of Technology*

Developed through studies of over sixty plants in various industries.
Other’s Pain

50 – 75% of US firms that implement advanced technology experienced failure

Expect the Unexpected
- Implementation *always* involves the unexpected

Information Failure
- New equipment doesn’t behave exactly as expected
- Changes ripple through departments
- Technical information is documented and communicates well
- Organizational information is seldom documented and not communicated
- Most projects have technical expert PMs, but don’t have Organizational/Process PMs
Murphy’s Law CAN be mitigated by using 7 rules.
Setting CORRECT Expectations

**Murphy’s Well**

- **Performance**
  - Historic Performance
  - Expected Performance
  - Actual Performance
  - Adjustment Costs

- **Time**
  - Start Up
  - Action Commences
  - Ramp up

**Time Spent Planning**
**Time/resources to move materials**
**Accommodate installation**
**Costs Associated to Cut Over**
**Training Time**
**Loading Materials**
**Learning Curve**
**Changes in the business model**
**Missing processes**
The Well **WILL** Exist!!!

*What is controllable is the depth & duration*

![Diagram showing performance over time with well depth and duration highlighted.]
Caused by unforeseen mismatches between management’s expectations, reality, the new technology’s capabilities, business changes, learning curves, missing & existing process and organization...

• New equipment is an integral part of a larger ongoing system.
• New processes and unforeseen issues can be time consuming – requires patience.
• Problem solving is iterative. Solutions cause a second wave of problems that continue until performance is significantly improved – requires patience.
• Managers cannot perfectly anticipate problems because they, and their subordinates, have limited knowledge of both the new technology and their existing processes.
• Beware current processes may not work in the new system.
• Upper management expects immediate results without any degradation to existing operations.
• Failure to capture data and information created by changes instituted in the past.
• Time and effort required to transition to a new system – requires patience.
How to minimize Murphy’s Well

- **Follow** the 7 rules
- **Remove** departmental barriers
- Strategically **plan** the “change over” to occur during slow times
- **Anticipate** changes to:
  - Operations processes
  - Existing control systems
  - The facility(s) (e.g., safety, fire protection)
  - Personnel assignment – strengths and weaknesses
- **Identify / Create / Train** personnel on new processes
- **Include** the people in the change – let them have ownership and be part of the solution
- **Testing** without impacting existing business
- **Start up** sequence of new system
- **Positive Associate Awareness Program**
How to minimize Murphy’s Well

7 Rules

Rule #1
Think of Implementation as R&D

- It’s okay to redesign processes & procedures

Rule #2
Ask “What Makes it Hard?” Not “How Well is it Working?”

- Peel back the onion on stumbling blocks
- It is easier to learn how to operate equipment than it is to learn how to best use it.
How to minimize Murphy’s Well

Rule #3

*Learn in Many Ways at Once*

- Try different procedures at different stations
  - **Vicariously** -- previous experiences
  - **Simulation** – mathematical or artificial model simulating
  - **Prototyping** -- small controlled environment
  - **Observational Learning** -- observing actual operation
How to minimize Murphy’s Well

Rule #4
Simulate and Prototype **Everything**

- Set up a mock station and let operators try/tweak it
- Simulations can range from a simple walk through of the system design to a complete mockup using dummy data
- Prototype human interaction points
- Designate a **System Owner / Cheerleader** to raise the excitement level
- **KPIs:** Pick Rates, label rates, etc...
Rule #5
“Everything” Includes the Organization

- You will now have people from different areas working as one
- Define and try out new relationships
- Come together in one room and go through the information flows precipitated by the change
- Educate the various functions about the coming system
- Supervisors need to get to know each other and the process interdependencies
How to minimize Murphy’s Well

Rule #6
Follow Lewis and Clark

- Don’t attempt to specify, in advance, an exact trail and how to cope with each expected contingency
- Get a general sense of the route
- Familiarize everyone with the plan

Planning is not a set of actions with a checklist for repairing the system if something goes awry.

Planning is a guideline structure for discovering and solving problems.
How to minimize Murphy’s Well

Rule #7

*Produce Two Outputs: Process Steps and Knowledge*

- Watch the operation, notice problems, develop countermeasures and re-evaluate solutions
- Solutions are never-ending, not just once around the loop

The goal of experimentation is not to just make a problem go away but to understand the causes so that it can be fixed at its roots.
How to minimize Murphy’s Well

• Review this presentation again, and again, and during installation
• It’s easy to forget these principals; there will be a lot going on
• Expect a little chaos

CHAOS will become ORDER
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