Managing the Shelf Life of Microorganisms through the Supply Chain

**BACKGROUND:**

Launched 2010:
- 9 Formulas
- 18 skus
- 2 Year Shelf Life
- FY11 Rework ~ $300k

Company Confidential

**CURRENT CONDITION:**

Problem Statement:

Product with a 2-year shelf life needs to be returned to the manufacturing facility to be reworked / reenergized at a substantial cost to the company. Currently managing product with an expiration date is not one of the company's core competencies. As part of company's long-term strategy the company is looking at multiple technologies that will produce commercial products that will have expiration dates. If this problem is not addressed it will be detrimental to these future growth platforms.

**Goals:**

- Improve forecasting to reduce inventory to 10% of next seasons forecast.

- Increase Shelf Life

1 Yr
2 Yr
3 Yr
ANALYSIS:

COUNTERMEASURE OPTIONS AND EVALUATION:

<table>
<thead>
<tr>
<th>Countermeasure</th>
<th>Effect</th>
<th>Cost</th>
<th>Feas.</th>
<th>Impact</th>
<th>Risk</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Analyze and re-label product at packaging or distribution.</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>13</td>
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<tr>
<td>2. Improve shelf life of the product.</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>18</td>
</tr>
<tr>
<td>3. Add microbes during packaging.</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>18</td>
</tr>
<tr>
<td>4. Implement Std. Work during forecasting process</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>5. Reduce run size by Manufacturer</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>13</td>
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<td>6. Remove microbes from formula.</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>7. Implement Just-In-Time Manufacturing</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>14</td>
</tr>
</tbody>
</table>

COUNTERMEASURE EVALUATION:

Evaluate Options with Sanctuary
- 4 notes
- L. Conley
- Thu 12/12
- Wed 1/6/12

Evaluate Options with Gary
- 4 notes
- C. Wills
- Thu 5/17/12
- Wed 6/20/12

Implement If/Then Grouping/Strategic
- 8 notes
- R. Radabaugh
- Thu 5/17/12
- Wed 6/20/12

Evaluate Stability of Microbes
- 2 notes
- R. Radabaugh
- Mon 12/5/12
- Fri 1/6/12

Temperature monitoring in facilities
- 6 notes
- P. Holby
- Mon 2/12/12
- Fri 3/2/12

Evaluate perfect storage conditions
- Time/Temp Monitoring
- 3 notes
- R. Radabaugh
- Thu 12/12
- Wed 2/12/12

Evaluate Testing Options - ATL
- 4 notes
- B. Lane
- Mon 2/6/12
- Fri 2/10/12

Evaluate Bacterial Testing Options
- 2 notes
- C. Wills
- Mon 2/6/12
- Fri 2/10/12

Conduct Cost Analysis for Film Pack Option
- 1 note
- C. Wills
- Mon 2/6/12
- Fri 2/10/12