

**Expanding Business Value Through Pollution Prevention  
& Sustainable Practices**

**Lean Manufacturing  
&  
Pollution Prevention**

Presented by

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**Lean Manufacturing & Pollution Prevention**

**EPA “Lean & Environment” Project**

- Create **Pollution Prevention Program** and **Manufacturing Extension Partnership** teams in Massachusetts, Maine and New Hampshire.
- Conduct combined Lean & P2 Assessments in two facilities in each state

## Lean Manufacturing & Pollution Prevention

### New Hampshire project objectives:

- Determine if it's possible and practical to integrate Lean Manufacturing and P2 methodologies.
- Develop a working relationship between two mutually-unfamiliar programs (NH Pollution Prevention Program & NH Manufacturing Extension Partnership).

## Lean Manufacturing & Pollution Prevention

### How did Lean Manufacturing start?



From B-24's...

...to Corollas



## Lean Manufacturing & Pollution Prevention

How did Pollution Prevention start?



From disaster...



...to sustainability



## Lean Manufacturing & Pollution Prevention

Two very different systems...

Developed by two very different entities...

Under very different circumstances...

For very different reasons.

Is it any wonder the two never mingled?

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### Lean Manufacturing & Pollution Prevention

Integrating Lean Mfg. and P2 methods – differences:

<b><u>MEP (Lean Programs)</u></b>	<b>≠</b>	<b><u>NHPPP (P2 Programs)</u></b>
<b>Paid consultants</b>		<b>Free Services</b>
<b>Private business program</b>		<b>“State” program</b>
<b>Subcontracted specialists</b>		<b>1 to 2 day process</b>
<b>3 to 5 day process</b>		<b>Services generally</b>
<b>Strategies implemented &amp; measured</b>		<b>end with report</b>

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### Lean Manufacturing & Pollution Prevention

Integrating Lean Mfg. and P2 methods – differences:

<b><u>Traditional Lean variables</u></b>	<b>≠</b>	<b><u>Traditional P2 variables</u></b>
<b>Cycle Time</b>		<b>Hazardous matls.</b>
<b>Distances</b>		<b>Equipment losses</b>
<b>Lead Time</b>		<b>Operating flaws</b>
<b>Changeover</b>		<b>Spills, Leaks</b>
<b>Takt Time</b>		<b>Hazardous Wastes</b>

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## Lean Manufacturing & Pollution Prevention

***Lean Manufacturing***  
is activities or strategies that:

- Eliminate or reduce the expenditure of resources for anything other than what is of value to the customer
- Make better use of production time, raw materials or energy
- (Thereby reducing waste)

***Pollution Prevention***  
is activities or strategies that:

- Eliminate or reduce the volume or toxicity of wastes
- Conserve water or energy
- Reuse materials & wastes
- (Thereby increasing efficiency)

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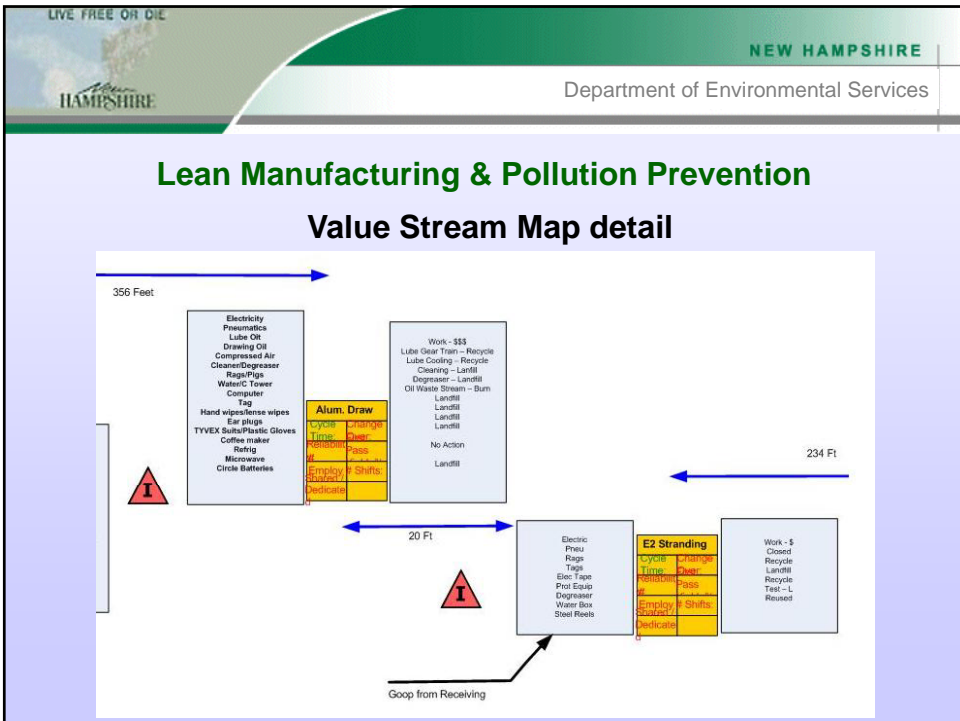
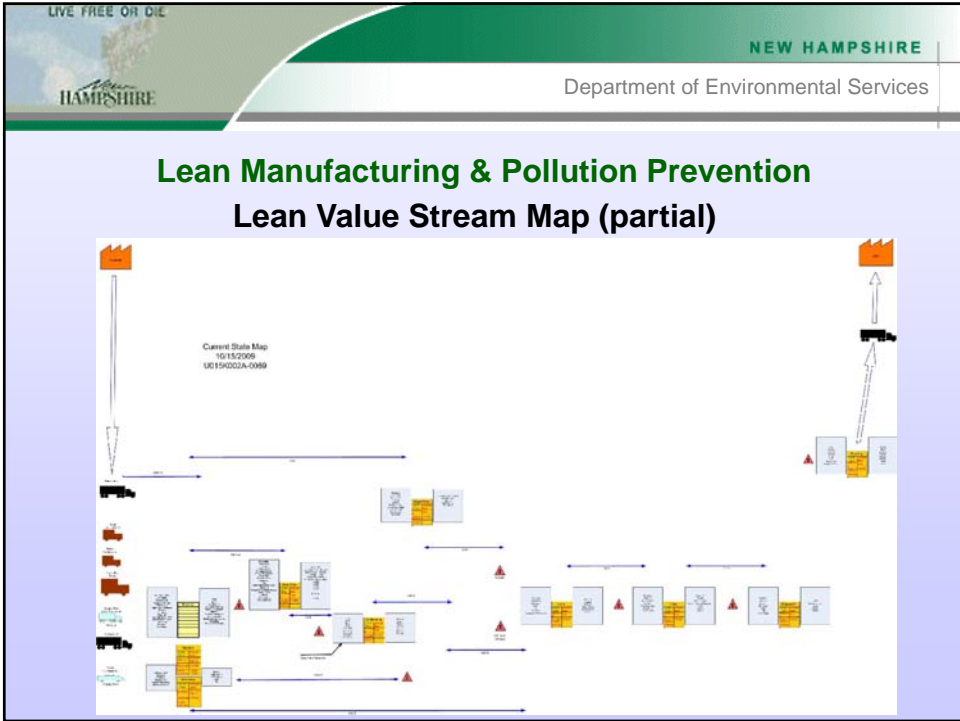
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## Lean Manufacturing & Pollution Prevention

**Integrating Lean Mfg. and P2 methods – overlap:**

- Lean Mfg. now looks at all inputs including energy, water and hazardous & non-hazardous raw materials.
- Pollution Prevention now looks at “non hazardous” raw materials such as energy and water.
- Both programs look at inefficient practices and equipment that create waste.





## Lean Manufacturing & Pollution Prevention

### The New Hampshire experience:

- CIL, Inc. – What is Lean? Who are the players?
- BAE Systems – Can we work together?
- High Liner Foods – Where does P2 fit in?
- Hendrix Wire – It all comes together.

## Lean Manufacturing & Pollution Prevention

### The New Hampshire experience:

#### Lessons Learned:

- Lean and P2 methods are compatible.
- Building a relationship is crucial.
- Lean and P2 usually develop the same strategies.
- Unexpected environmental costs could have been incurred without environmental expertise.
- Each can serve as a resource to the other.



## Lean Manufacturing & Pollution Prevention

### The New Hampshire experience:

#### Next Steps:

- More combined assessments?
- Mutual program promotion
- Other combined activities

## Lean Manufacturing & Pollution Prevention

### The New Hampshire experience:

- The project was a success in that the objectives were achieved.
- Each program developed an understanding and respect for each other.
- NHPPP and NH MEP aren't getting married, maybe just dating, occasionally.

## Lean Manufacturing & Pollution Prevention

# Questions?



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