



VOE-Network Lean White Belt Training Certification Series

Host: McGill University

Faculty:

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Lean White Belt Symposium

Module 6

“The 8 Wastes”

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McGill

The 8 Wastes



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Lean Six Sigma: 8 Wastes



Defects

Efforts caused by rework, scrap, and incorrect information.



Overproduction

Production that is more than needed or before it is needed.



Waiting

Wasted time waiting for the next step in a process.



Non-Utilized Talent

Underutilizing people's talents, skills, & knowledge.



Transportation

Unnecessary movements of products & materials.



Inventory

Excess products and materials not being processed.



Motion

Unnecessary movements by people (e.g., walking).



Extra-Processing

More work or higher quality than is required by the customer.

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Defects

Definition:

Errors, mistakes, products missing parts or having wrong parts.

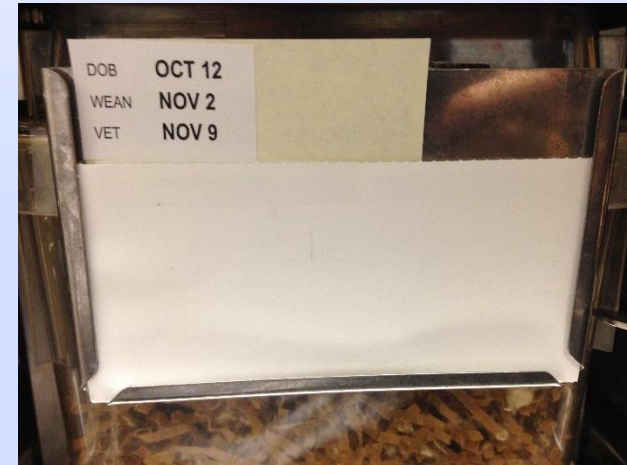
• **Examples:**

- unnecessary animal stress or euthanasia
- accidental cross-contamination
- cage missing food or water bottle
- flooded cage

• **Defects are caused by**

- bad processes
- lack of understanding
- human errors
- equipment breakdown

- Rework is required when processes or services are defective. Rework takes extra time and increases cost of product.



Defects (cont.)

- **Defects cause other wastes:**
 - **Over-production:** Additional materials may need to be purchased to compensate for defective parts. Animal care staff may need to assemble more parts or perform more tests to compensate for yield issues.
 - **Excess Inventory:** Additional material will be stored and maintained until rework is performed or the cause of waste is eliminated
 - **Transportation:** Defective material is typically stored in other locations. Moving material back and forth from these locations is waste.



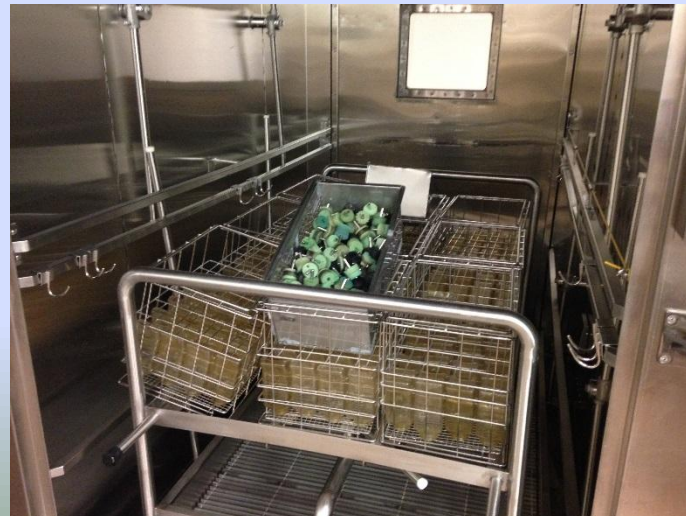
Defects (cont.)

- **Defects cause other wastes (cont.)**
 - **Non-Value-Added Processing:** Defects or non standard work requires additional inspection, paperwork, and personnel to dispose of material properly.
 - **Waiting:** Wait time is associated with disposal and re-work of defective material, which causes additional material to wait in line.
 - **Excess Motion:** Defective material is moved to storage locations; extra personnel time is used to find additional defective material.
 - **Underutilized People:** Personnel time associated with administering, disposing, reworking, transporting, and all other activities related to addressing defective material is *non-value added*.

Defects (cont.)

- **Key Questions:**

- How often do **you** find mistakes?
- Are the same mistakes made on a **regular basis**?
- Does your institution use **standards of work**?
- What are the purposes of standards of work?



Overproduction

Definition:

Creating any product or service in greater quantities than needed or faster than required

• **Examples:**

- stockpiling clean cages in excess of needs
- sterilizing more instrument packs than used before expiration
- ordering surplus of drugs that expire before used

• **What drives overproduction?**

- Inaccurate or unpredictable information about actual demand
- Unreliable or unpredictable processes or schedules
- Unreliable or unpredictable supply of raw materials
- Filling up available time with unnecessary work

• **Overproduction causes additional waste!**



Overproduction (cont.)

- **Key Questions:**
 - Are more **products generated** than needed?
 - Are more **cages washed** than needed?
 - Are cages **changed more frequently** than necessary?
 - Are more **supplies ordered** than needed?



Waiting

Definition:

Time associated with a transaction, service, material, or product that is not being actively processed.

• **Examples:**

- Technicians **waiting** for results or information
 - Technicians **waiting** to use a hood, machine or room
 - **Wait time** associated with set-up, changeovers, or delivery of material or special husbandry services
 - Technicians **waiting** for the freight elevator
 - Husbandry personnel **waiting** for computer transactions
 - **Wait time** for approval of people, material, transaction, or money
- Wait time results in longer cycle times, underutilized people, excess inventory, and overproduction.

Common areas of waiting in the animal facility:



Waiting (cont.)

- **Key Questions:**

- Do your animal technicians need to **wait for information, supplies, or machines** to do their work?
- Do you spend **time waiting for data**, or information from other sources before you can start your work?
- Have you identified **sources** of unnecessary wait time?
- Can you find wait times that can be **eliminated** or **reduced**?



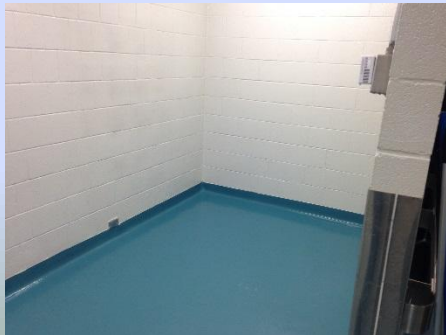
Non-Utilized Talent (knowledge, skills, abilities)



Definition: Organization does not make good use of the ideas and creativity of the personnel who are actually engaged in processes that could remove waste.

•Examples:

- Personnel who perform rework, transport inventory, search for tools, etc. should be involved in removing wasteful steps.
- Continuous performance improvement activities should involve those doing the work.
- Organizations should continually train personnel and keep them engaged to meet the demands and challenges of continuous performance improvement activities.



Staff should be engaged in the process of problem solving....



MUSINGS FROM A LEAN THINKER



The Optimist



The Pessimist



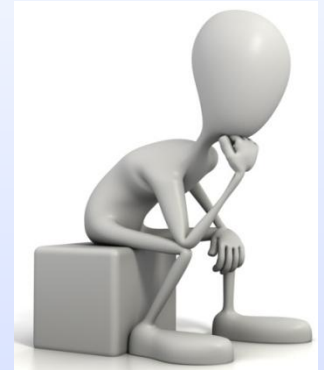
The Lean Thinker

lean.org/leanpost

Not Utilizing Employees (cont.) (knowledge, skills, abilities)

- **Key Questions:**

- Are the staff identifying and recommending **process improvements** on a daily basis?
- Do you have **smart staff who are not engaged** and seem robotic?
- Do you and your staff **use time wisely** in activities that are **value-added**?
- Do you and your staff spend time doing activities that are **high priority** to the customer?



Transport

Definition: Movement of material, work, products, or personnel from one location to another, due to excess inventory in different locations.

Examples:

- Unnecessary movement of samples or cages
- Suppliers, storage locations, and businesses are in different geographical locations, requiring transport of supplies.
- Business information transport, including fax, mail services, and internet access.
- Personnel are needed to maintain transportation services, which costs time and money.



Transport (cont.)

- **Key Questions:**

- Is the movement of material truly **necessary**?
- Is material being **moved multiple times**?
- Does work **flow smoothly** through the operation?
- Does your staff spend time gathering **missing supplies**?
- Can some deliveries be **combined** or moved faster?

Inventory

Definition: Inventory Waste is excess materials or products on hand; more than are needed now or required to do the work.

Examples:

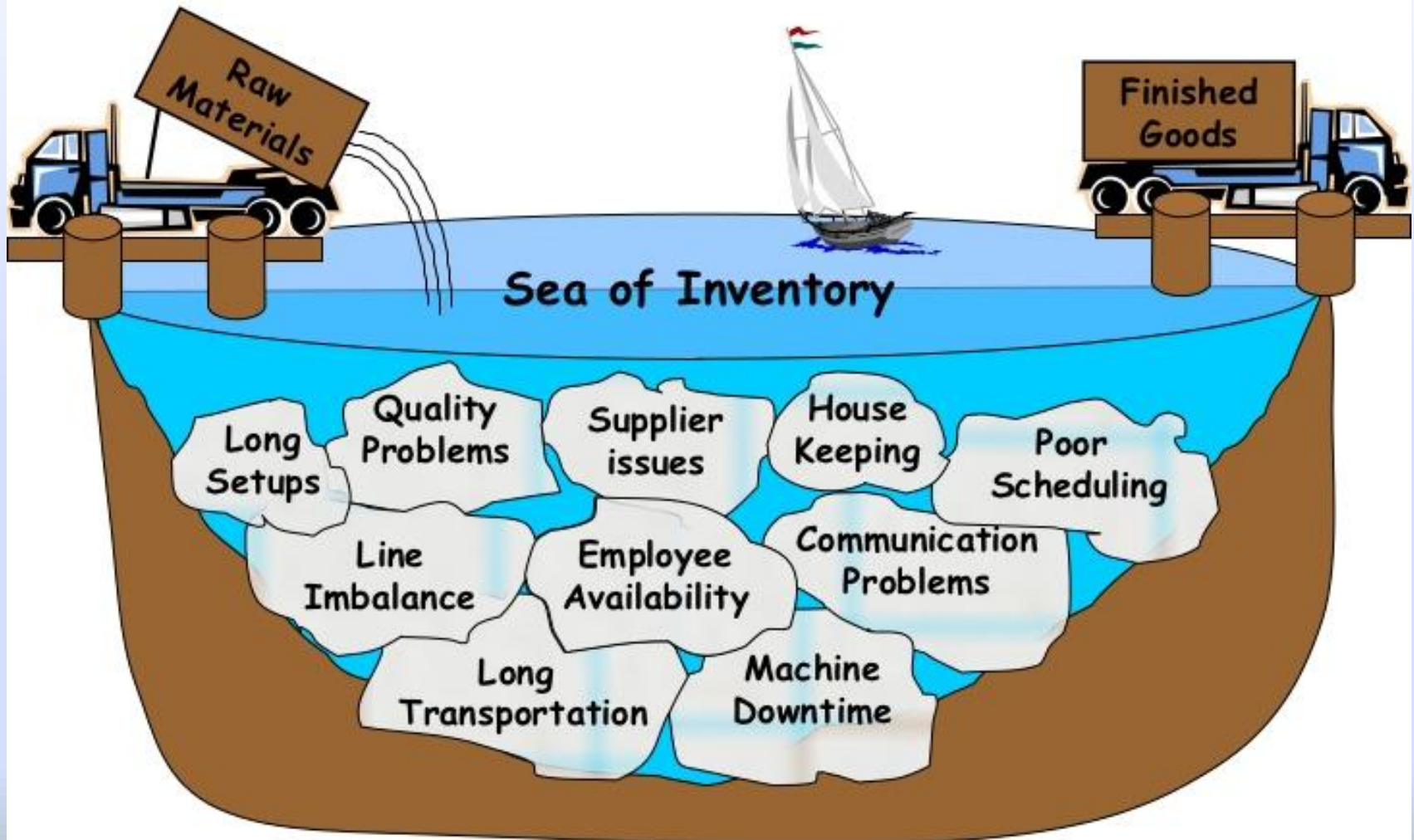
- Large number of cages in storage
- Unnecessary purchase of cages or other supplies.
- Stockpiling of autoclaved instruments.

Causes:

- Supply and demand not well understood.
- Concern for equipment failure, need for stockpiling.
- Personal preferences are catered to, over-bought.



Inventory Hides Waste



Inventory (cont.)

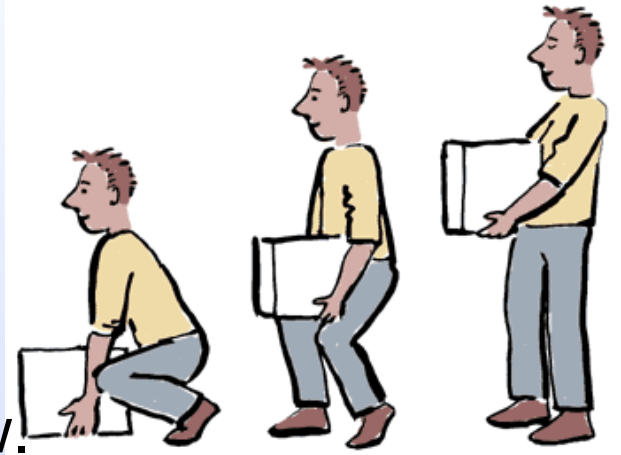
- **Key Questions:**

- Do you have supplies in **storage** or a rented warehouse?
- Do you have **surplus cages** in corridors or in storage rooms?
- Do you have **extra PPE** taking up storage space?
- How many **days of feed & bedding** do you have on hand?
- Do you have any **expired inventory** or obsolete equipment?



Motion

Definition: Unnecessary movements, including stretching, bending, walking, lifting, or climbing. Usually caused by poorly laid out work stations or work flow.



- **Examples:**

- **Moving excess inventory** to store additional inventory
- **Disassembling** dirty cages in a husbandry room, **re-assembling**, then **disassembling** for cage-wash.
- Employees **walking between buildings** or to meeting rooms
- Employees **removing PPE** to gather supplies, materials or information and then **re-donning PPE** to perform the work
- Employees **searching for materials**, information, tools or parts

Motion (cont.)

- **Result of wasted motion:**
 - Excess motion can be **ergonomically unsafe**.
 - Excess motion causes **additional work time**.



Motion (cont.)

- **Key Questions:**
 - Do people, material, equipment, and tasks **move freely** within your team?
 - Do your staff know what **steps** are required for each task?
 - Are there **standard work documents** or work instructions for each step?



Extra Processing

Definition: Effort that adds no value from the customer's perspective.

- **Causes:**

- Miscommunication to staff
- Customer requirements are not well defined
- Overzealous employees

- **Examples:**

- **Re-autoclaving instruments** that were in packs too long.
- **Disassembling** dirty cages in a husbandry room, **re-assembling** them, then **disassembling** them for cage-wash.
- Sweeping a mouse room before cage change, then **re-sweeping** after.
- **Re-organizing** PPE cart so shoe covers are on the bottom.
- **Re-printing** internal forms on a different color paper.

Extra Processing (cont.)

- **Key questions:**
 - Do staff understand the meaning of **non-value added**?
 - Are staff activities monitored and evaluated for **value**?
 - Are **customer requirements** clearly defined?



Review of 8 Wastes



The *first* challenge....

Finding the Waste



The *next* challenge....

Removing the Waste

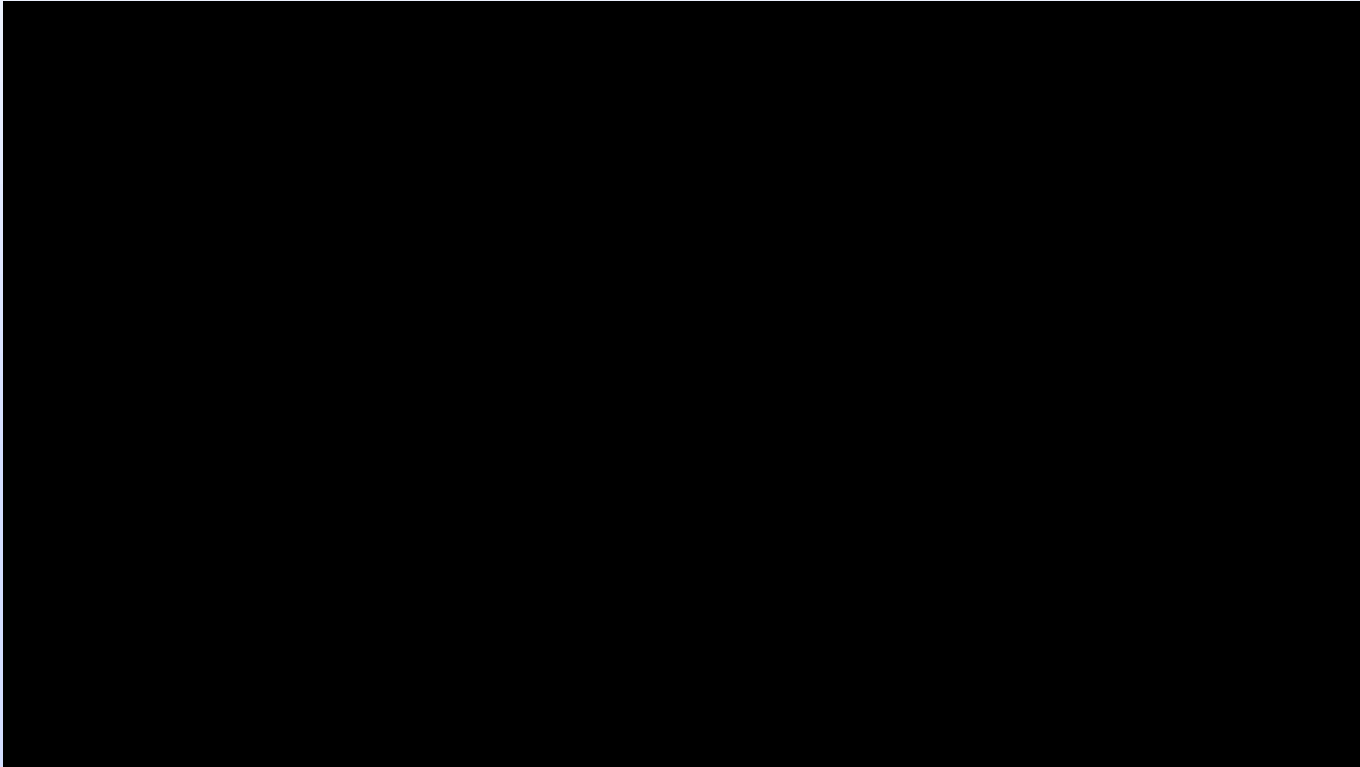


The 8 Wastes

= The Enemy



Video to Illustrate Waste



Question 1: How many examples of Waste can you find?

Question 2: Can you find areas of improvement?



Vivarium Operational Excellence Network

Sharing best practices for continuous improvement.



The Vivarium Operational Excellence Network (VOE-N) is a consortium of animal care facility experts who have agreed to share best practices for continuous improvement, with the ultimate goals of improving quality and efficiency and reducing operating costs.

Members participate in a free-flowing exchange of ideas, share the results of individual improvement efforts and provide feedback and support.

The VOE-N also provides educational opportunities designed to train the next generation of animal care facility leaders.

Our Mission

- To advance operational excellence among biomedical research organizations by providing opportunities for professional growth,
- To promote collaboration within the biomedical research community
- To recognize Vivarium operational excellence.

Proof of Concept

**we're all in this
together**



CERTIFICATE OF COMPLETION



Your name here

*Has completed the requirements for
Lean White Belt Certification
offered by the
Vivarium Operational Excellence Network
December 30, 2015*



*Gerard M. Cronin,
Notary Public*



START

Thank you all!
Good Luck!
More learning & sharing in 2016!

