

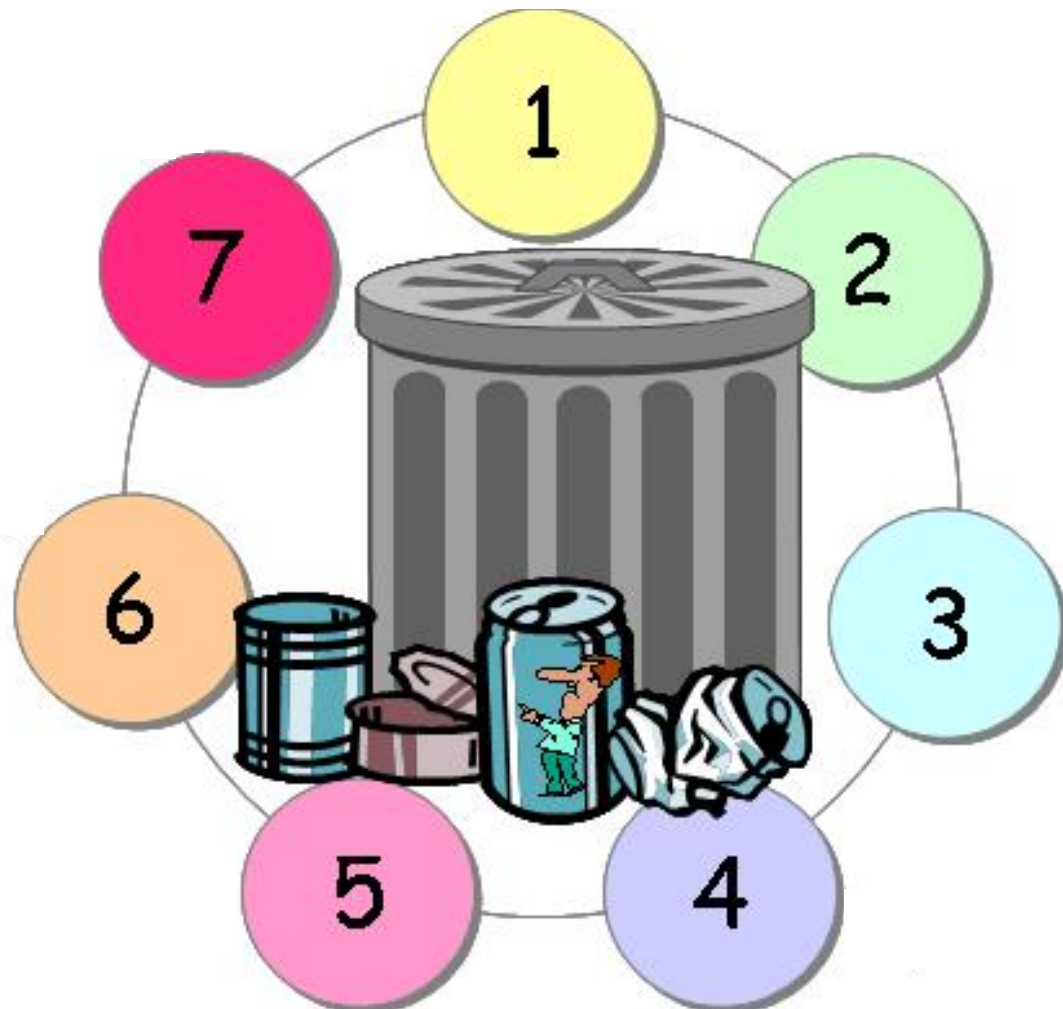


MUDA

Kaizen

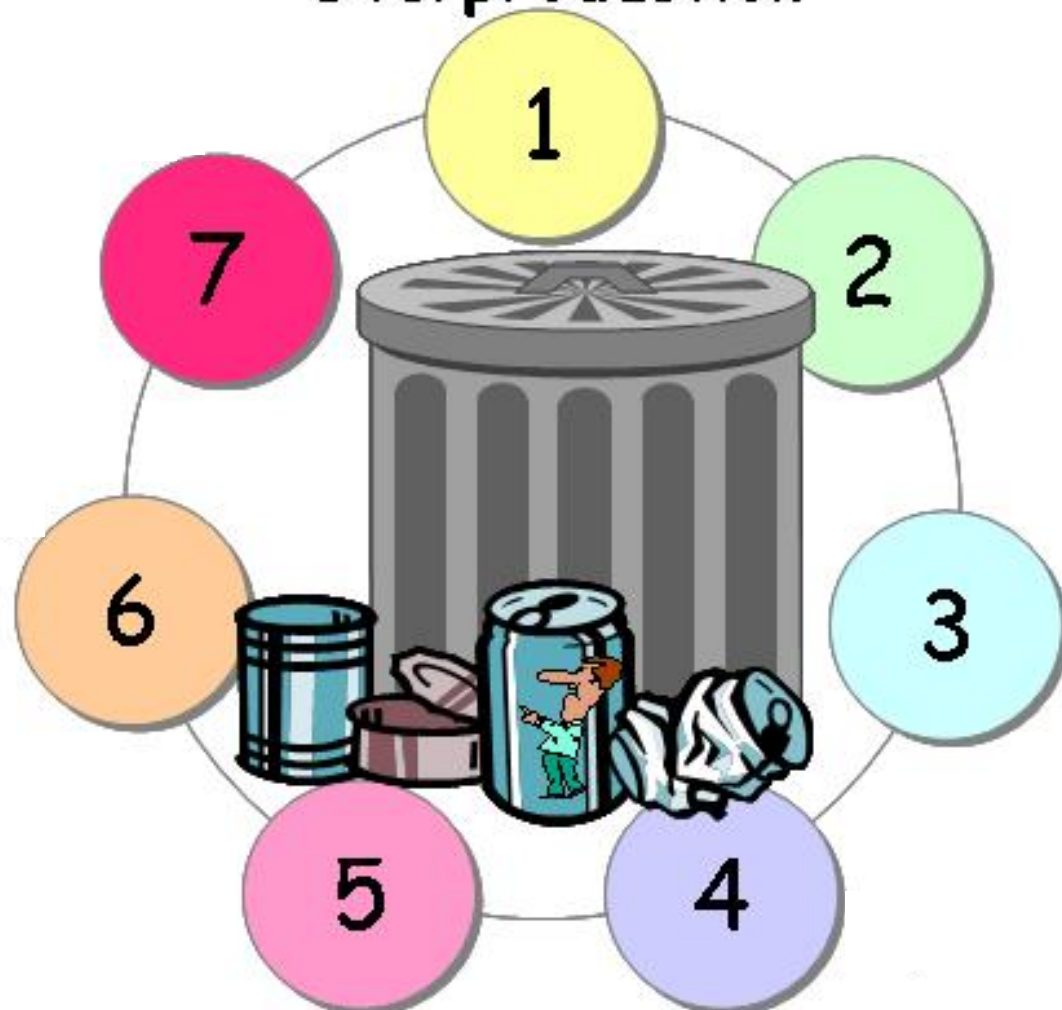
Do you
remember the
7 Wastes?

The 7 Wastes

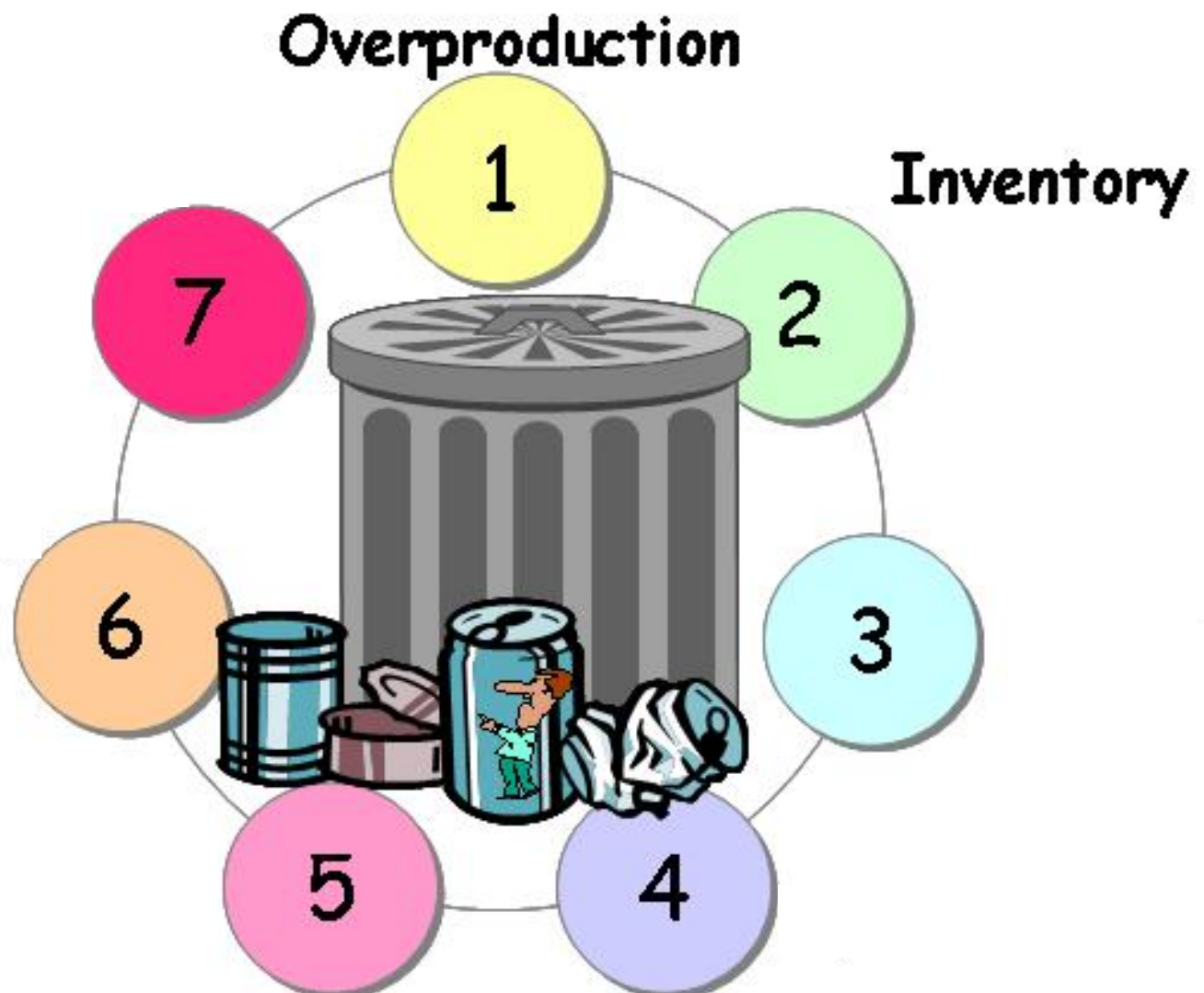


The 7 Wastes

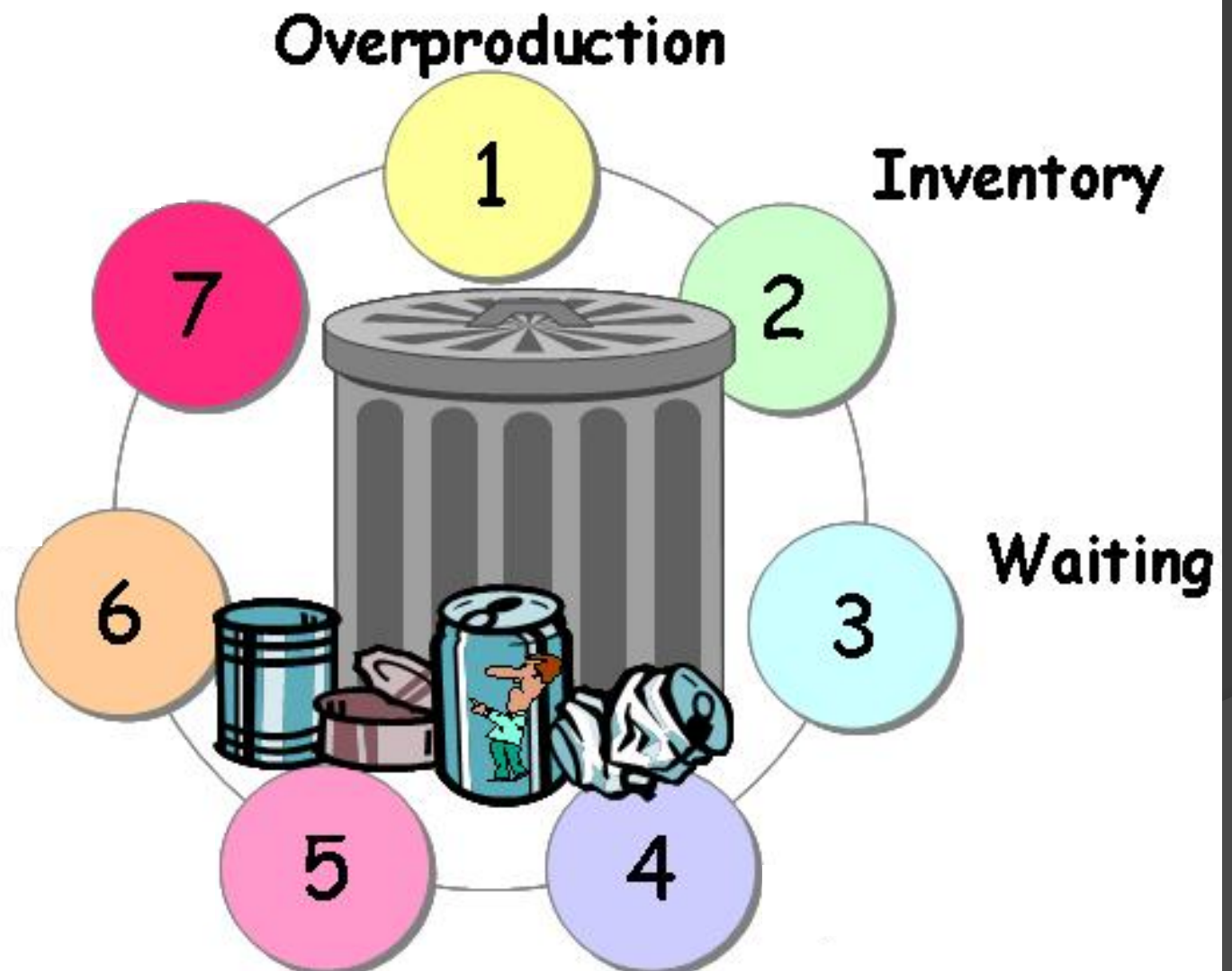
Overproduction



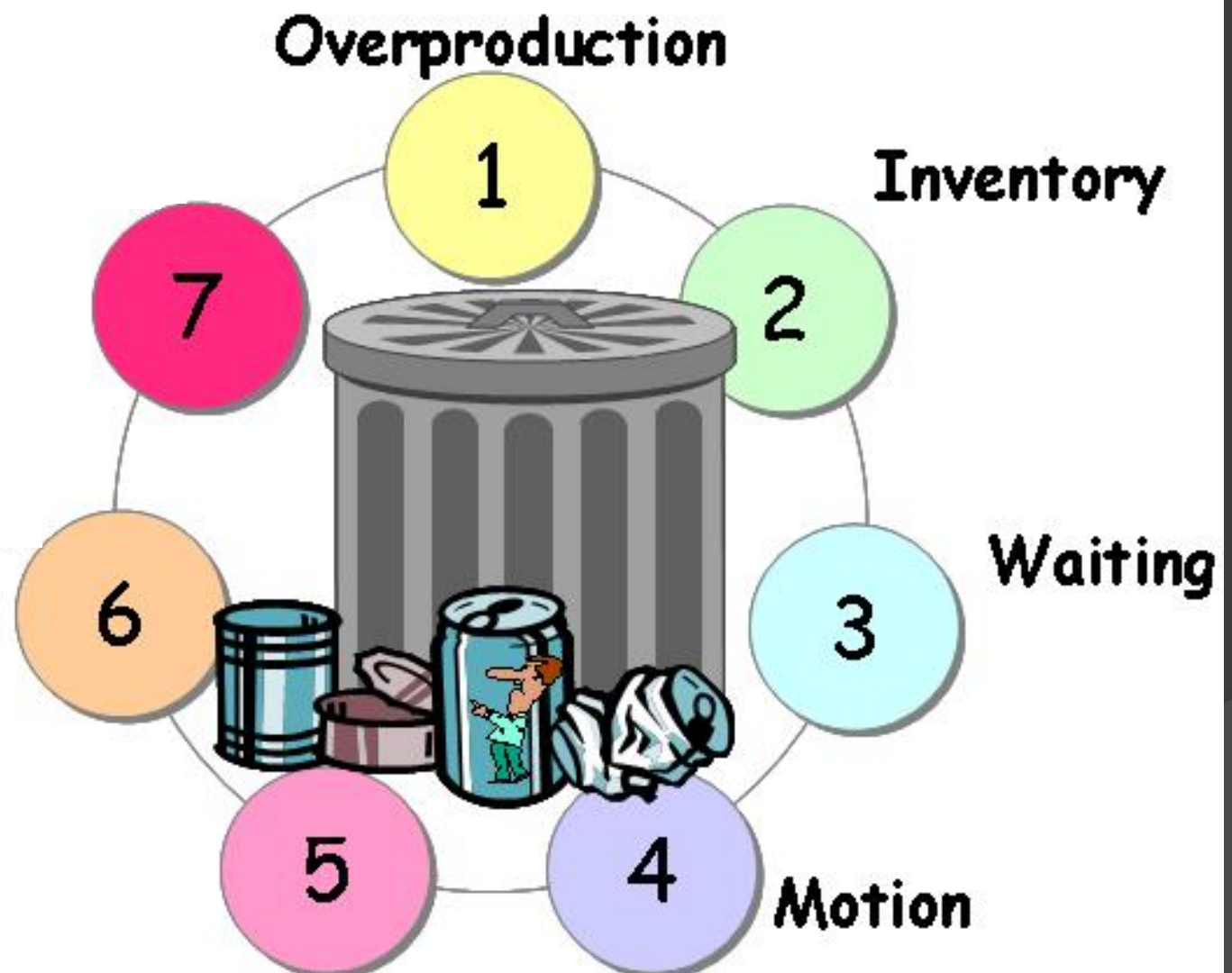
The 7 Wastes



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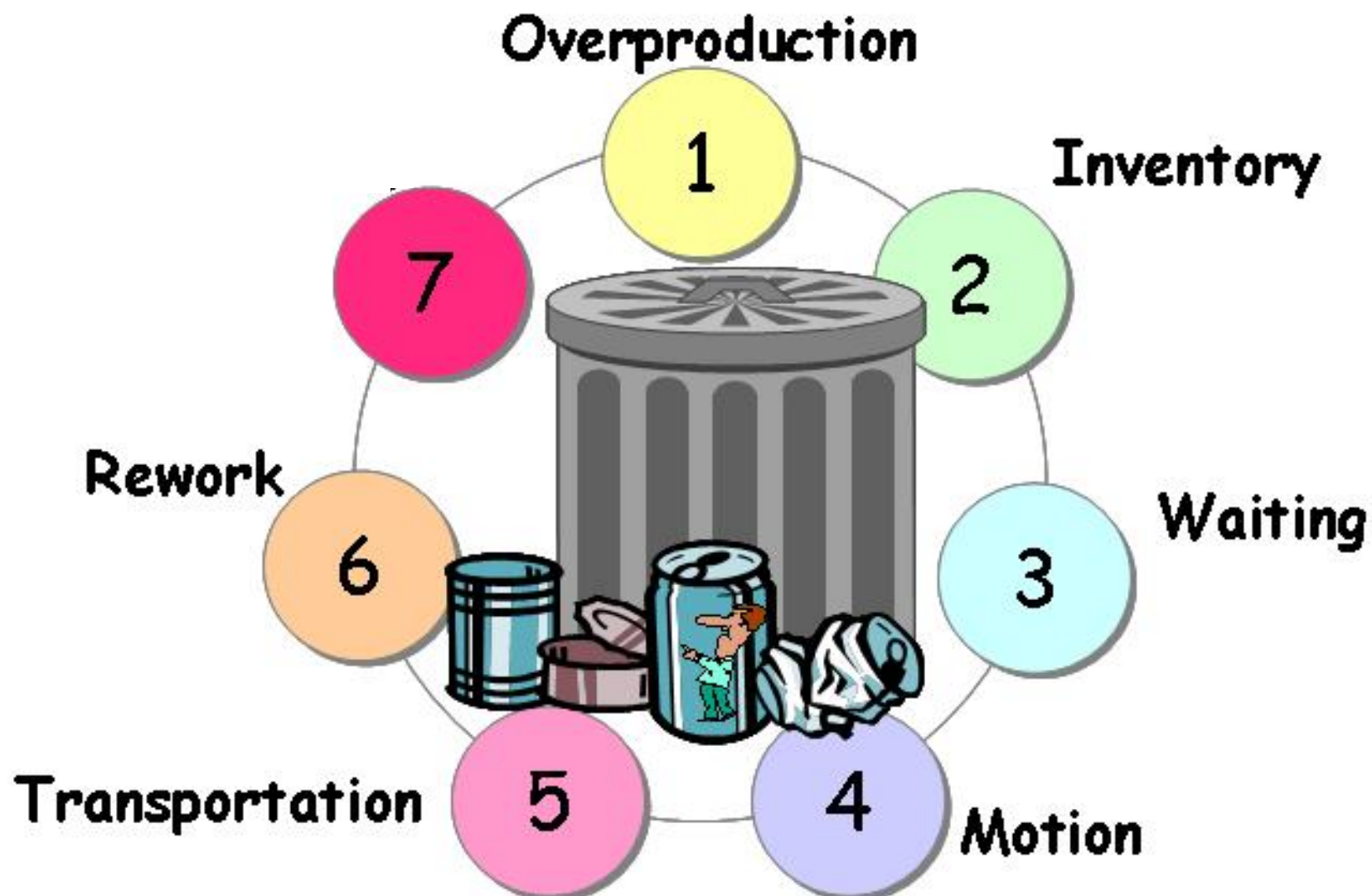
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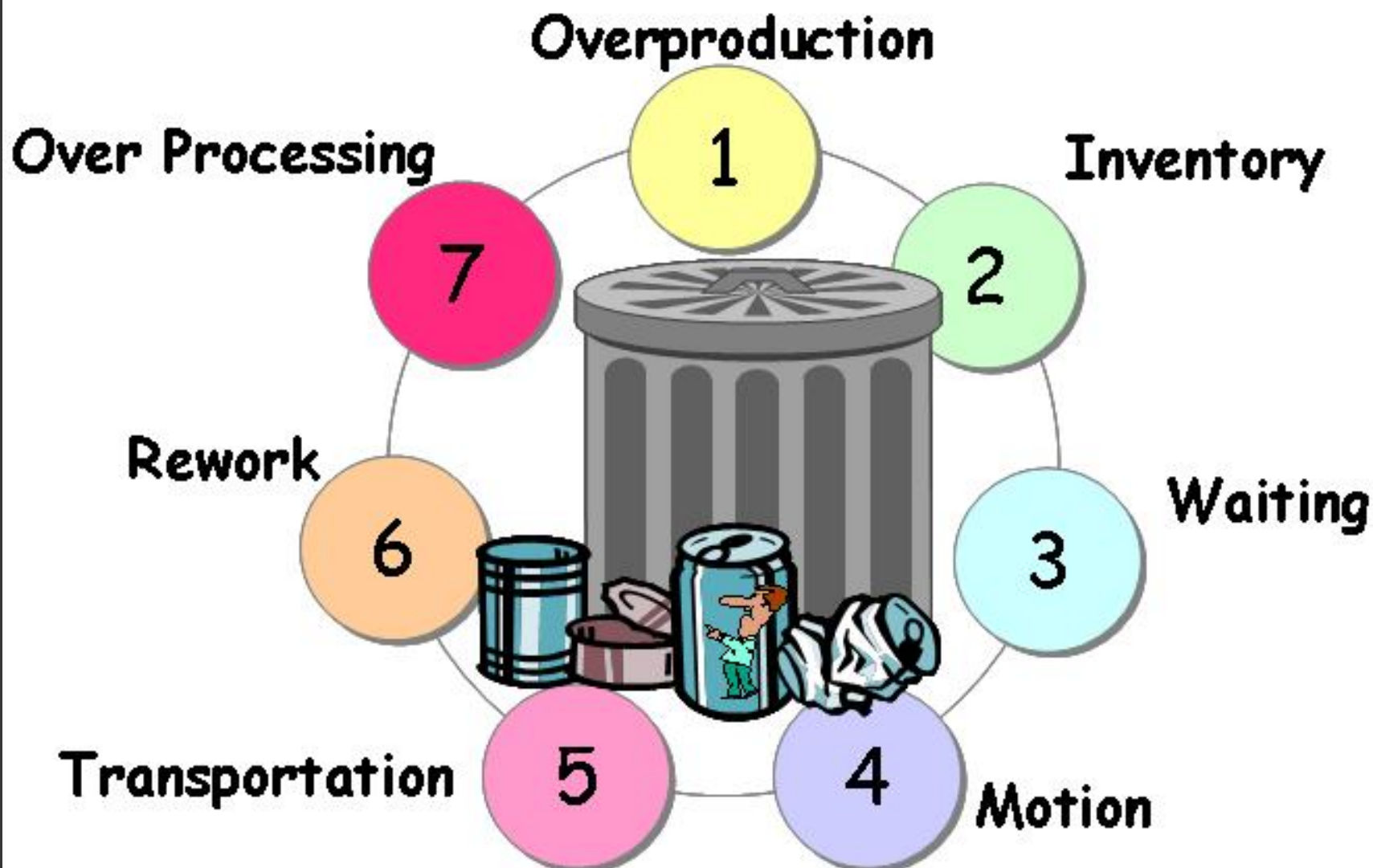
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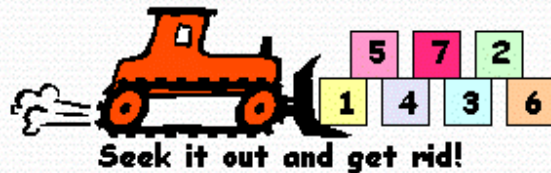


The 7 Wastes



The 7 Wastes

MUDA is the Japanese word for WASTE.



Over Processing



Processing beyond the standard required by the customer.

Rework

Non right first time. Repetition or correction of a process.



Transportation



Unnecessary movement of people or parts between processes.

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Overproduction



To produce sooner, faster or in greater quantities than customer demand.

Inventory



Raw material, work in progress or finished goods which is not having value added to it.

Waiting

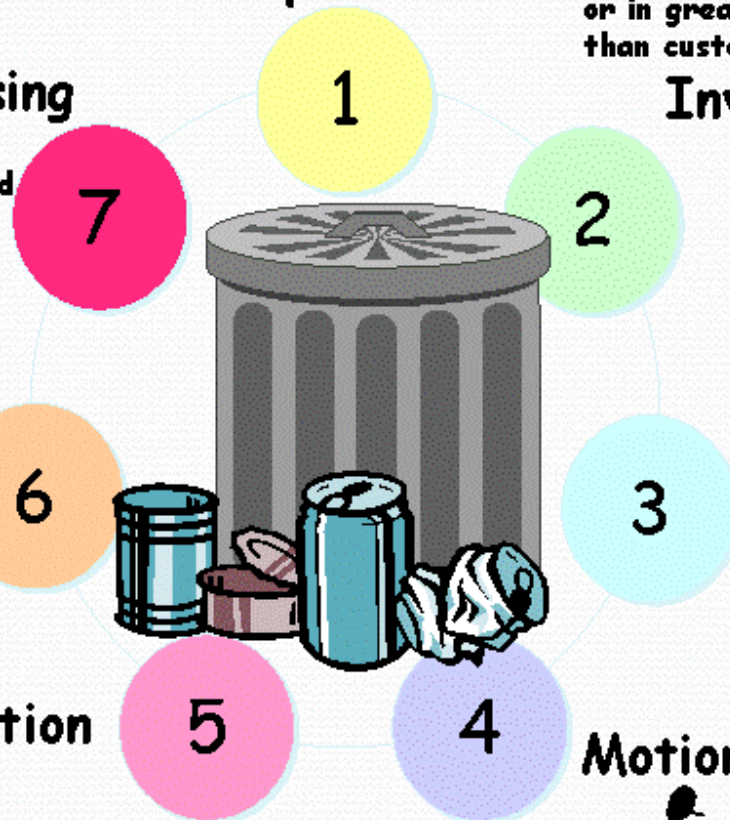


People or parts that wait for a work cycle to be completed.

Motion



Unnecessary movement of people, parts or machines within a process.



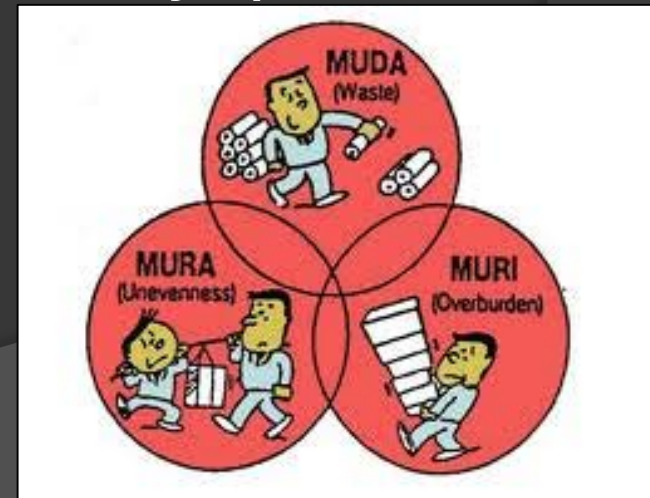
Introduction



- ❑ MUDA- any activity in your process that does not add value. MUDA is not creating value for the customer. In short: **WASTE**
- ❑ MURA - Any variation leading to unbalanced situations. In short: **UNEVENNESS**, inconsistent, irregular.
- ❑ MURI - Any activity asking unreasonable stress or effort from personnel, material or equipment. In short: **OVERBURDEN**

Why Muda? Not Mura and Muri

- ✓ Usually the three of them can not be seen as separate. When a process is not balanced (mura), this leads to an overburden on equipment, facilities and people (muri) which will cause all kinds of non value adding activities (Waiting is also an activity!!) thus leads to muda.



What is MUDA?

- ⦿ a Japanese term which means “WASTE”
- ⦿ Any activity that adds costs or time but does not add value
- ⦿ Consuming more resources (time, money, space, etc) than are necessary to produce the goods, or services, that the customer wants
- ⦿ Pure Waste: Actions that could be stopped without affecting the customer
- ⦿ Incidental Waste: Actions that need to be done based on how the current system operates but do not add value

The 8 Types of Waste



The 8 Types of Waste



Talent

Underutilizing
people's talents,
skills, & knowledge.

The 8 Types of Waste



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Inventory

Excess products
and materials not
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The 8 Types of Waste



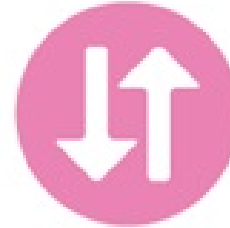
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Motion

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

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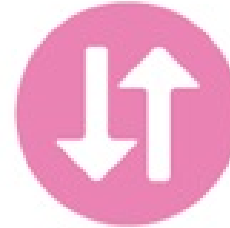
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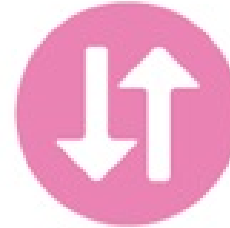
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Unnecessary movements of products & materials.

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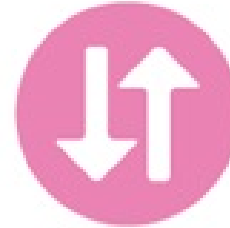
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Defects

Efforts caused by rework, scrap, and incorrect information.

The 8 Types of Waste



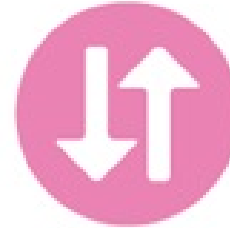
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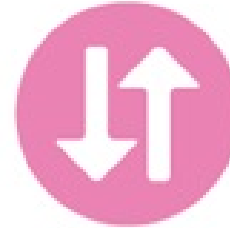
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Overproduction

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

The 8 Types of Waste



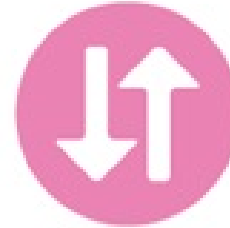
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Overproduction

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



Overprocessing

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

Overproduction

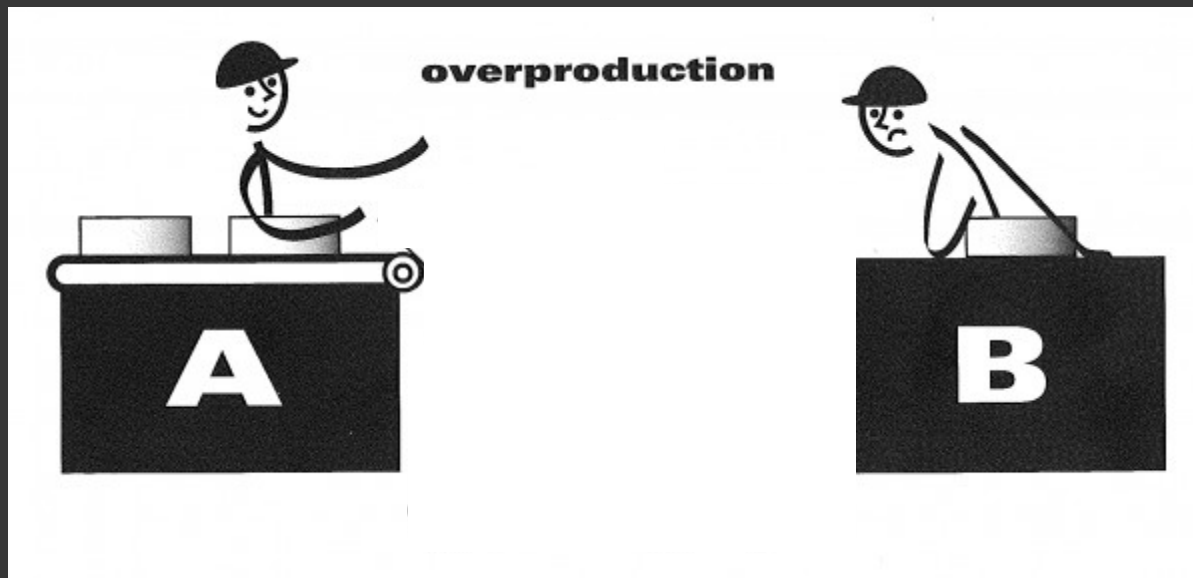
- Supplying the process with more than is needed to meet order requirements, sooner and faster than it is needed, causes almost all other types of waste
- This is the worst waste of all, because it helps cause all the others



- Common causes:
 - Producing more than is required to make up for yield loss
 - Scheduling production to forecasted demand
 - Why do we overproduce? Often the answer is as simple as because “this is how we have always done it!”

How to eliminate Overproduction?

- ❑ The first step is to realize that we are doing it; understand that we are often planning our own delays



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Inventory

- Requires people, equipment and space to count, transport, store and maintain it
- If we do not get orders the material may become obsolete, and be thrown away
- Inventory is often used to help hide other wastes

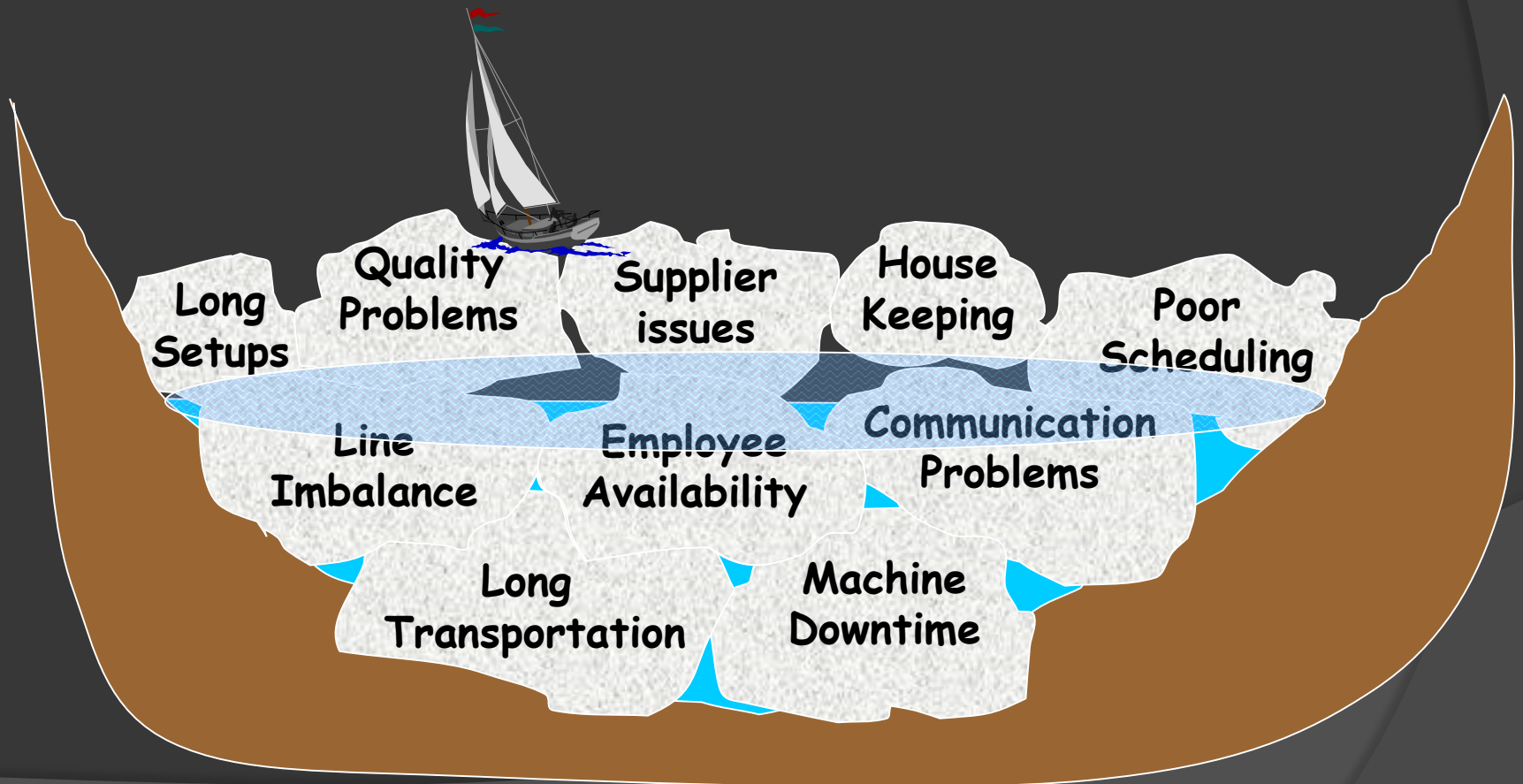


- Common causes:
 - Overproduction
 - Poor equipment layout
 - Long changeover times
 - Defective, or questionable, parts
 - Mismatched production speeds

Inventory Hides Waste



Reducing Inventory Uncovers Opportunities to Improve, Opportunities That Must Be Addressed!



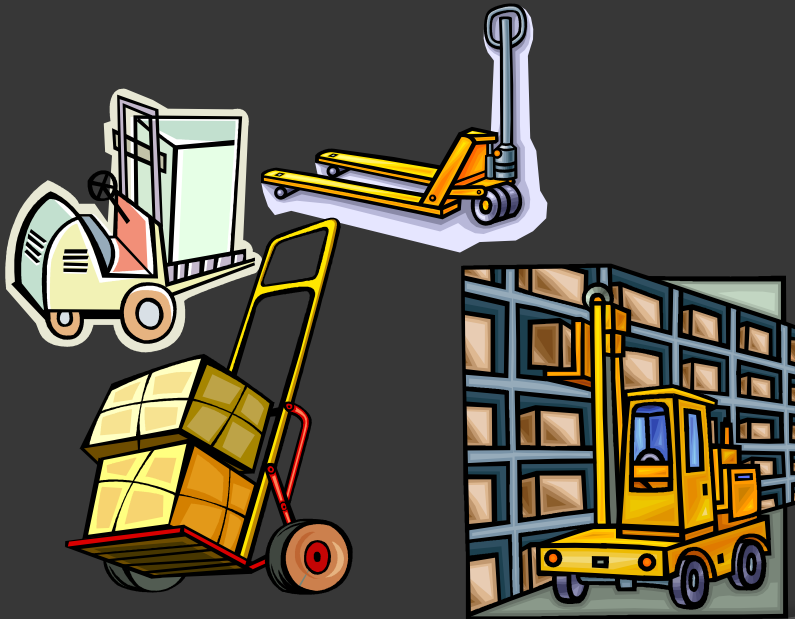
How to eliminate waste in inventory?

- making value flow at the pull of the customer, the idea of Just in Time (JIT) production.



Transportation

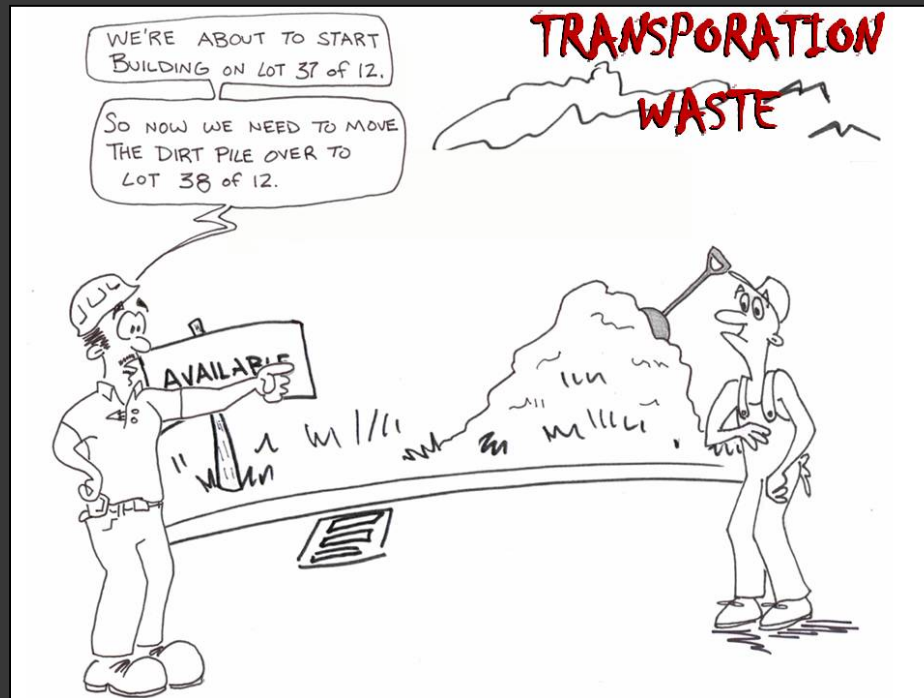
- Double or triple handling, moving in and out of storage areas and warehouses
- Material can get damaged if it's moved too much
- It adds no value and is often used to get the extra inventory out of the way



- Common causes:
 - Retention points before and after operations
 - Excessive distance between operations (layout)
 - Single skill focused operations

How to eliminate Transportation Waste?

- reducing the spaces between those operations
- Use of Toyota Production System concept



Motion (Operators)

- Walking without working (away from workstation)
- Searching for tools, materials or information
- Reaching, bending or unnecessary motion due to poor housekeeping or workplace layout
- Process is not designed with employees in mind



- Common causes:
 - Poor workstation layout
 - Isolated operations
 - Shared tools
 - Fatigue
 - Workstation congestion

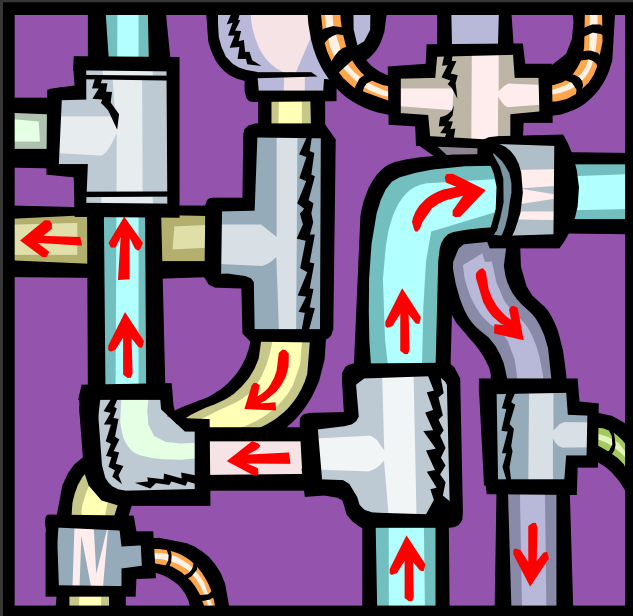
How to eliminate Motion Waste?

- Following the 5s principle
- Discipline



Processing

- Doing more than is necessary to produce an effectively functioning product
- Extra setup steps, over-specification of the process, extra processing steps



- Common causes:
 - Lack of standard work or processes
 - Equipment over designed
 - Process not updated with technology changes
 - Lack of effective problem solving

How to eliminate Waste in Processing?

- ① Identify where delays occur in the process and quantify if the avoidable delays and unavoidable delays
- ① Eliminate avoidable delay in the process. This is a waste in processing



Defects / Quality

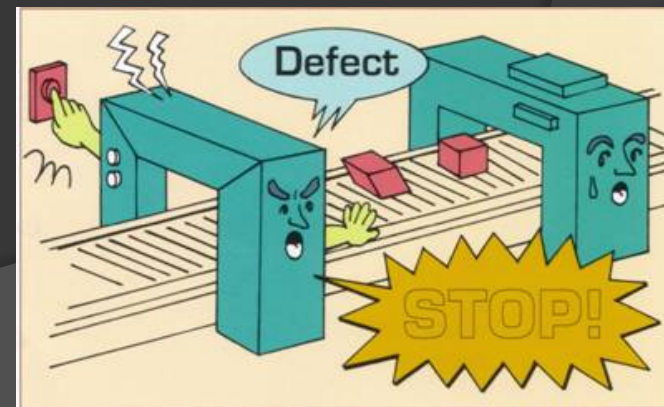
- Defective or scrap materials
- Cost of inspecting defects
- Responding to customer complaints
- Rework or re-inspection of questionable materials



- Common causes:
 - Emphasis on downstream inspection; questionable material passed on
 - Lack of standard work
 - Material handling (transportation)
 - Process design/equipment

How to eliminate Waste in Defects?

- ◉ Jidoka
- ◉ Implement standard operations procedures (SOP) and training to ensure that the correct methods are undertaken and standards achieved.
- ◉ The most important factor, however, is the empowerment of teams to solve and prevent their own problems. By harnessing the talents of your teams/employees you are able to quickly and efficiently prevent the occurrence of defects.



Waiting

- Operator waiting for machines to run or cycle
- Machine waiting for operator
- Waiting for parts, instructions, approval, information, maintenance, decisions...



- Common causes:
 - Mismatched production rates
 - Poor layout
 - Machine breakdowns
 - Ours or upstream
 - Insufficiently staffed

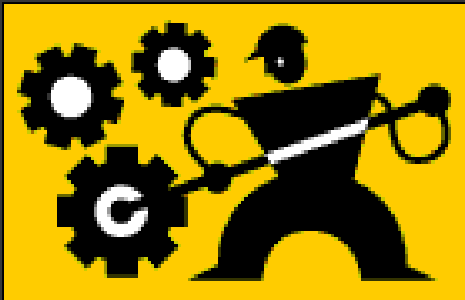
How to eliminate Waste in Waiting?

- Balance the workload by redistributing tasks in the process
- Establish a pull system
- Eliminate unnecessary approval processes
- Build other tasks into the daily work schedule so that employees are occupied during waiting periods
- Prevent delays by providing for backups



People's Skills

- Employees are seen as a source of labour only, not seen as true process experts
- People are often told what to do, and asked not to think
- Employees are not involved in finding solutions, opportunities to improve our process are missed



- Common causes:
 - Management does not involve employees in problem solving
 - Narrowly defined jobs and expectations
 - Old school management, worker relationships

How to eliminate Waste in People's Skills?

- Team working, training, and clear leadership are required to begin to involve all of your employees with a company's drive towards perfection, for continuous improvement it will need to involve each and every one of all employees
- People are the biggest asset, respect them, nurture them and involve them



In summary...How Does Waste Get There?

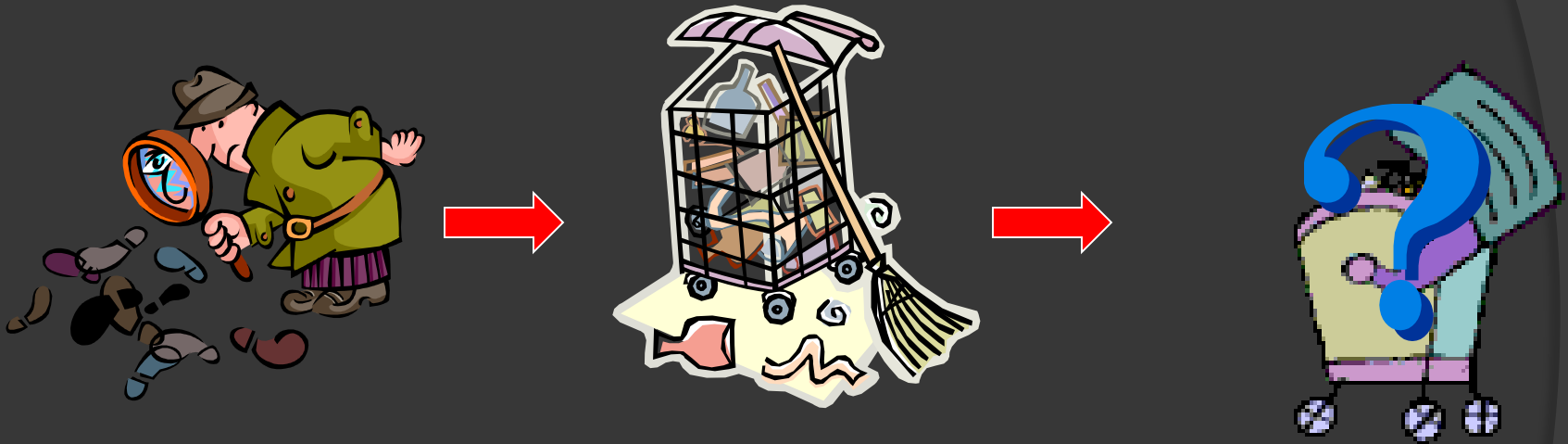
- Forget to change solutions when we change the process
- Fail to understand why we do something a certain way, so we continue doing that way even if the limitation has been removed
- Build it into our processes
- Root cause of problems is not addressed or a “band aid” solution is implemented



Waste – the simpler part...

Being able to see it!

(once we know what it is)



The Real Challenge ...

knowing how to properly
remove it!