5th International Workshop - Advances in Cleaner Production

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Process Management to Obtain a Cleaner Production in Discrete Manufacturing

Organizational Report

Team

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Introduction

- Lack of natural resources
- Prolongation of Availability of Resources
- Cleaner Production in Discrete Manufacturing
- Availability of water

Theoretical framework

- The industrial supply is the third largest water use in the country in terms of water withdrawals and the fourth in terms of consumption, according to the ANA (Agencia Nacional de águas);

- Among the sectors of industry, the manufacture of chemicals is the fourth largest consumer of water sector (ANA, 2013);

- Environmental concerns have changed their focus as the scientific and technological knowledge has evolved, as well as the way of life on them and the consequences of human production for excellence was developed. (BACHELET, 1995; Moreira, 2001).

Theoretical framework

According to the Brundtland report - Our Common Future (1991): ***governments and multilateral institutions are becoming increasingly aware of the impossibility of separating the issues relating to economic development issues relating to the environment; many forms of development erode the environmental resources on which it should support, and the deterioration of the environment can harm economic development.***

Theoretical framework

Cleaner Production according to UNEP TIE (Division of Technology, Industry and Environment) which coined the term in 1989, Cleaner Production is the continuous application of an integrated preventive environmental strategy to processes, products and services to increase production efficiency and reduce risks to humans and the environment.

Idea

Inovation

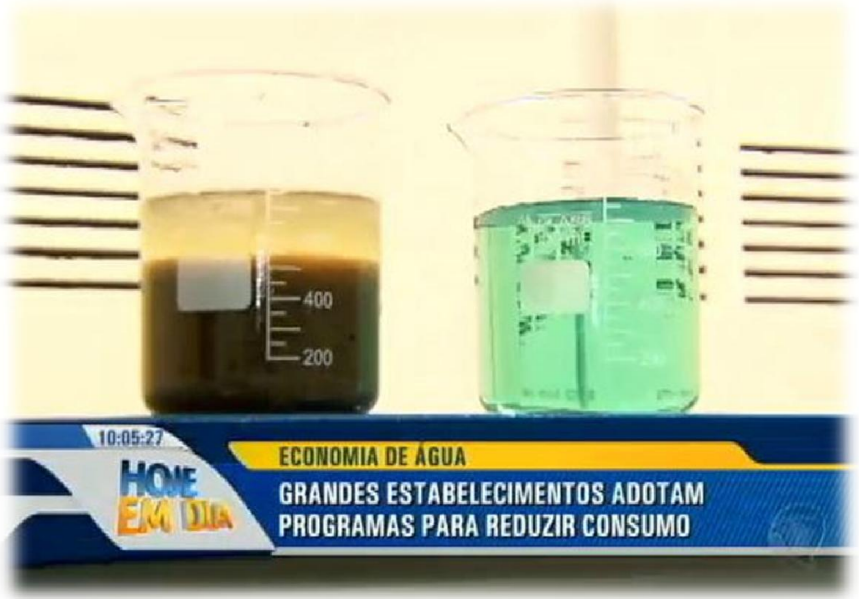
Methodology

1° Step - Knowledge of the file on the spot

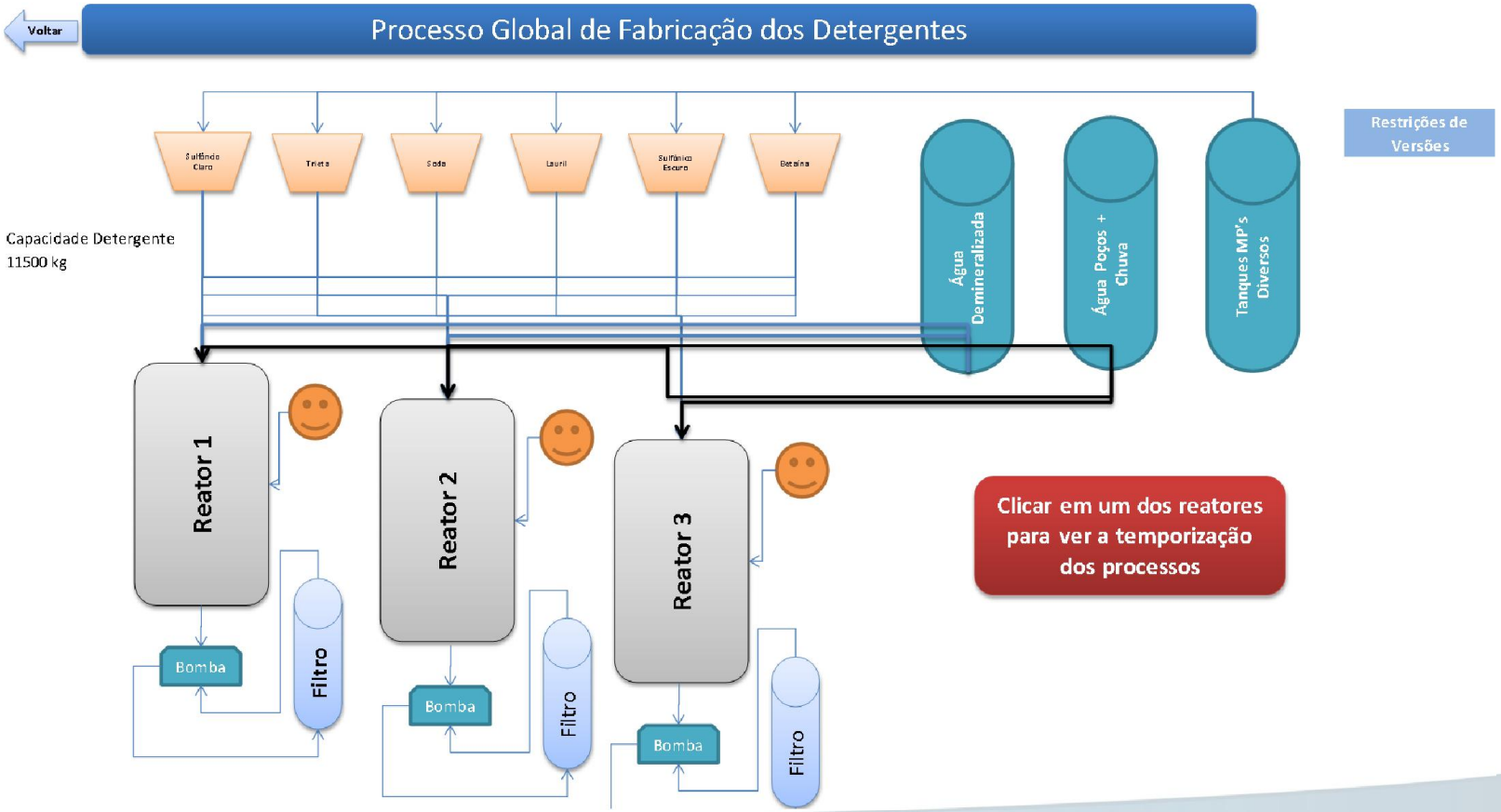
2° Step - Division of ECO Time

3° Step - Defining the new value stream

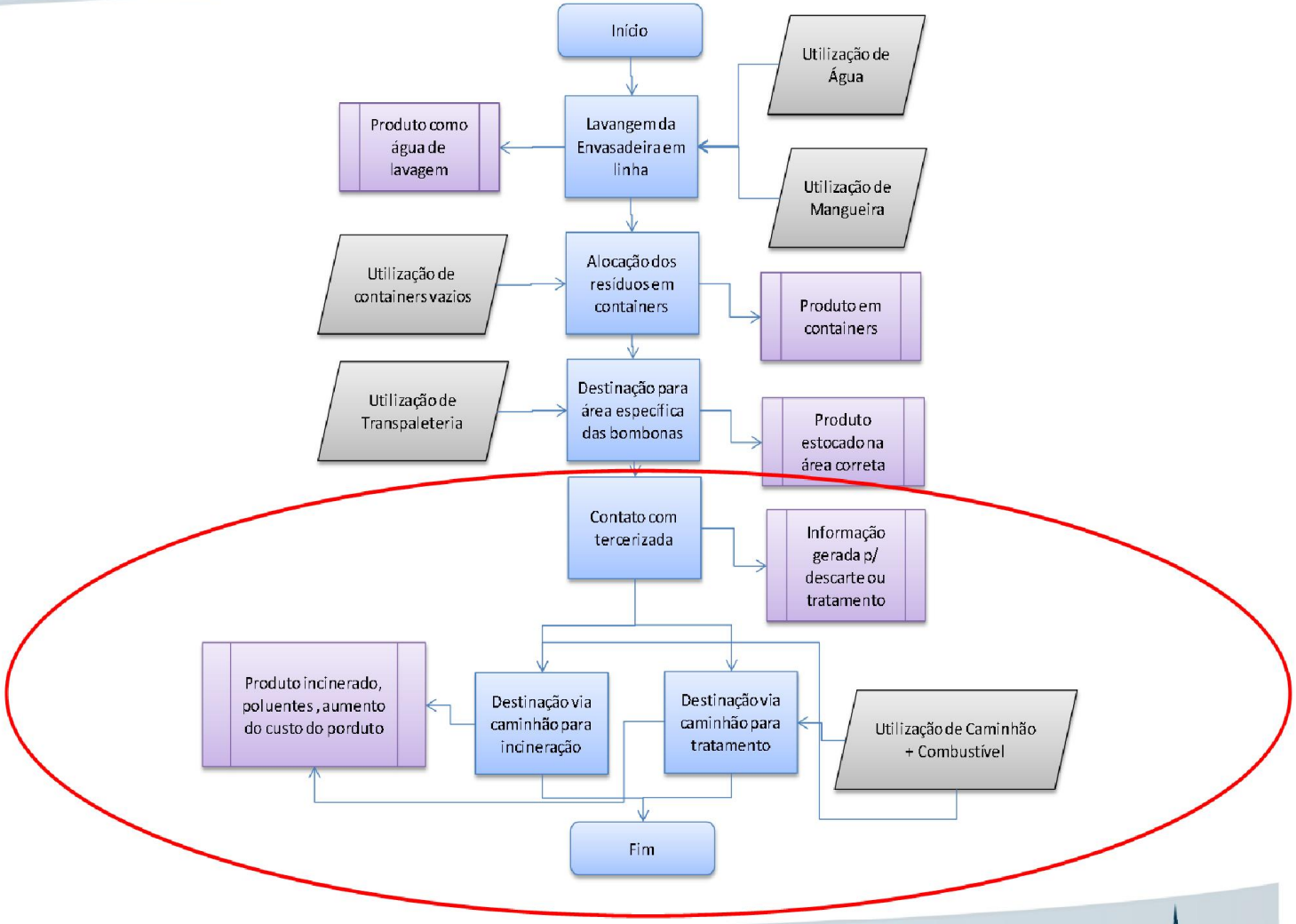
4° Step - Deployment of new technology



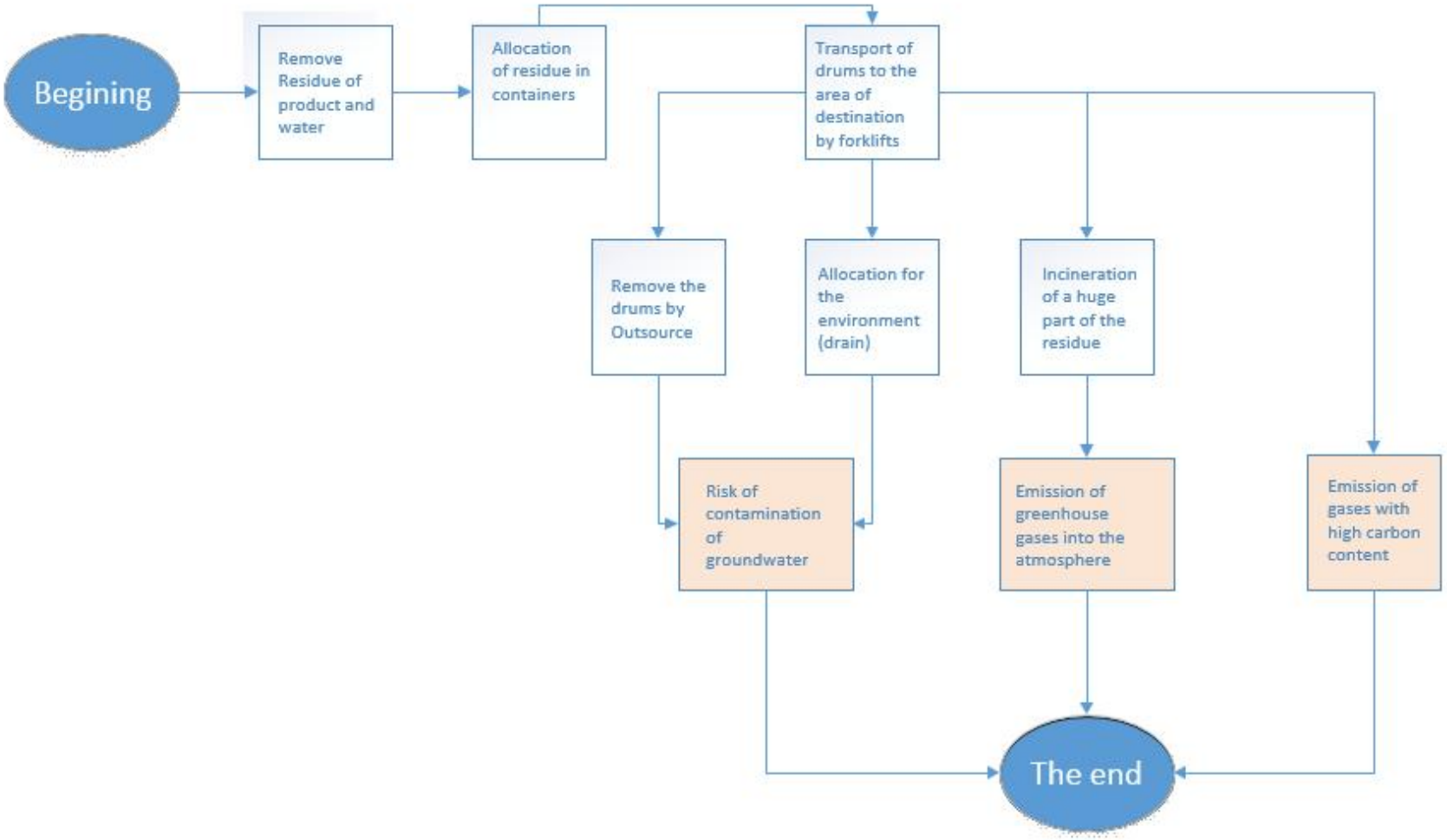
Process Reator



Old Process Resume



Old Process


Begining
Remove Residue of product and water
Allocation of residue in containers
Transport of drums to the area of destination by forklifts
Remove the drums by Outsource
Allocation for the environment (drain)
Incineration of a huge part of the residue
Risk of contamination of groundwater
Emission of greenhouse gases into the atmosphere
Emission of gases with high carbon content
The end

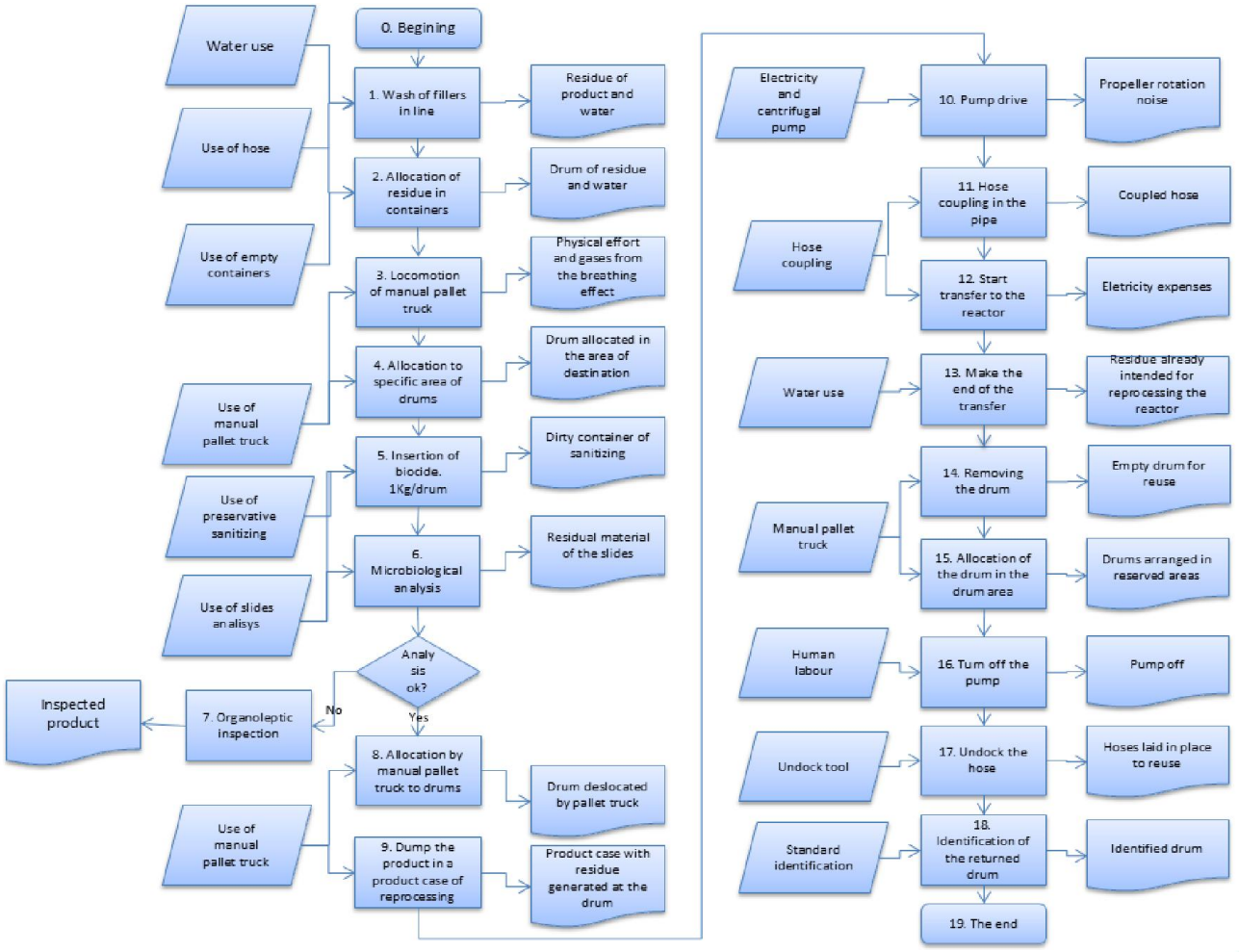
Cleaner Production Opportunities

Company area	Oportunities and/or problems	Action plan, strategy and options	Barriers and needs
1 Production	Risk of contamination among drums	Identification of drums by versions	1.1 Alignment among production areas and Environment 1.2. Training accomplishment with the operation
2 Production	Risk of destination to incinerate	Training of those involved and alignment with areas	1.1. And 1.2.
3 Production	Deposition of drums outside the correct area and contaminate the outside area	Training of those involved and deposition in a right place.	1.1. And 1.2.
4 Production	Noise pollution by centrifugal pump	Exchange centrifugal pump by air (less produced sound)	Company budget
5 Production	Automation missing in reprocessing	Evaluate the benefit cost for the company, focusing on minimizing losses	Company budget
6 Production	Lack of focus of operators on the implementation of service	Make specific training with only one operator	1.1. And 1.2.
7 Quality and environment	Overuse of microbiological slides	Make a specific training with a chemical analyst for collection of two drums in a single analysis	7.1. Alignment among the areas of Environment, Quality and Production
8 Production	Excessive use of Biocide	Analyze with the laboratory and reduce the use of biocide	7.1.
9 Production	Risk great use of water in washing fillers	Application of water meters for effective control of the water used	Company budget
10 PPC	High market demand, with large fluctuations as the versions produced	Make alignment in Production Planning meeting for reduction of setups	Effective Operational Planning
11 Production	Pallet truck used is small, requiring great effort and greater runtime	Make quotation and better provision of pallet truck, in order to meet the designated need	Company budget
12 Production and PPC	Lack of programming for versions to be reprocessed	Study program of d + 1 to direct future reprocesses	12.1 Training with operator 12.2 daily Alignment with the area of PPC

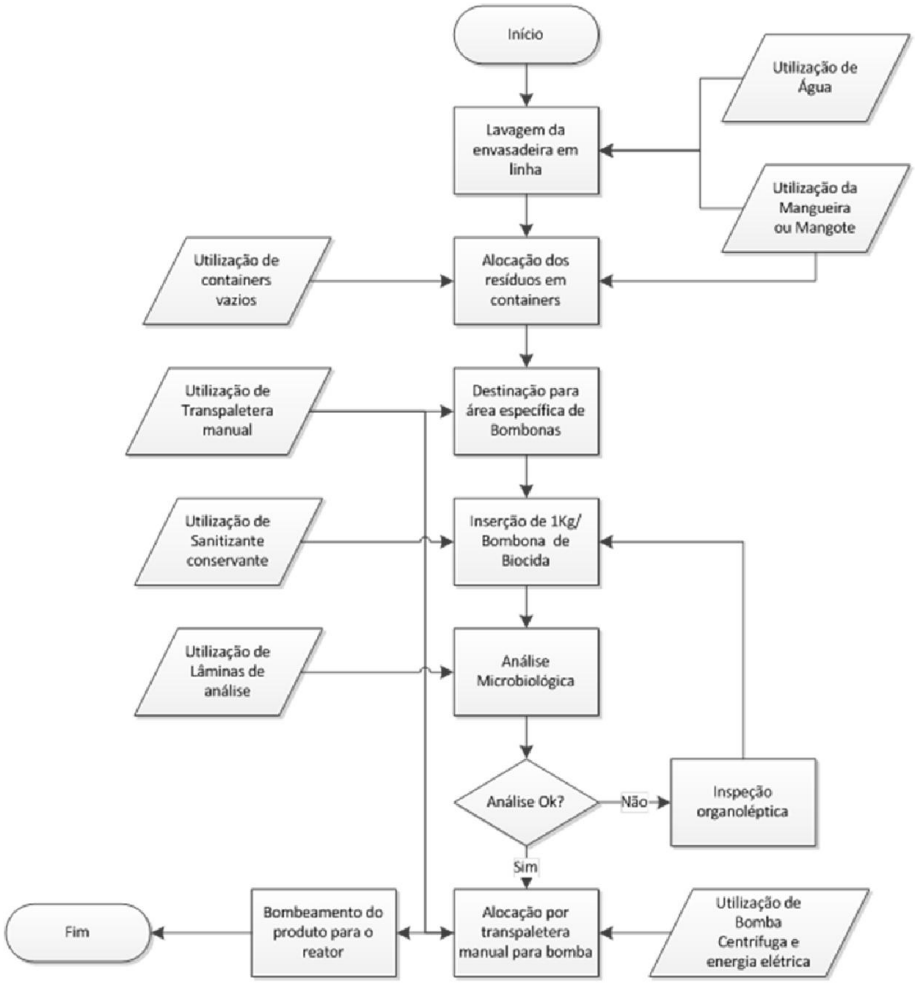
New process – Inputs and Outputs

ENTRADAS			PROCESSO	SAÍDAS		
Raw materials, supplies and auxiliary	**Water**	**Energy**	**Steps**	**Wastewater**	**Solid Waste**	**Atmospheric Emissions**
Water, hose, empty drum and labour force	15 L	Zero	1.	30L	zero	Zero
Manual pallet truck, labour force	Zero	Apparent zero	3.	Zero	Zero	Apparent zero *
Biocide, funnel	0,8 L	Zero	5.	Residual effluent at the drum (1000 liters added 1L sanitizer)	Disposable canister sanitizer after 1000 liters used – **60Kg**	Zero
Suab, microbiological slides	Zero	Zero	6.	Zero	Suab/ microbiological slides used - **0,09kg**	Zero
Manual pallet truck	Zero	Zero	9.	Zero	Zero	Apparent zero *
Hose, centrifugal pump, drum full of residue	Zero	30 KW	11.	Zero	Empty drum – 60Kg	Zero
Labour force	1 L	Zero	13.	Zero	Zero	Apparent zero
Manual pallet truck, labour force	Zero	Zero	14.	Zero	Zero	Apparent zero
Manual pallet truck, labour force	Zero	Zero	15.	Zero	Zero	Apparent zero
Labour force	Zero	Zero	16.	Zero	Zero	Zero
Labour force	Zero	Zero	17.	Zero	Zero	Zero
Labour force	Zero	Zero	18.	Zero	Identification – 0,001kg	Zero
			TOTAL			

New Process After the Cleaner Production



New Process Resume



New Process

1. After production of certain version of the product, cleaning is performed of the entire line, including the fillers.
2. In this cleaning, are stored in drums and waste are generated, including the diluted product.
3. It identifies the drums, with serial number, operator, version and date. This information is important in the traceability of production

New Process

New Process

1. After reprocessing, the empty drums will be sold or will be reused to collect more waste generated in the production line,
2. It is made weekly cleaning of reprocessing dam for no microbiological contamination of the product and colors of bulk.
3. The entire process is monitored through quality and production records to measure lines which generated more waste and the cost in the company paid for these reprocessing.

Any Questions?