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# Milk Gone Wrong

Nerissa Baldemor was the newly appointed Quality Assurance and R&D Manager at Hacienda Macalauan, Incorporated. One morning as she was making her rounds in the plant, the dispatch personnel demanded that she look into the items for delivery that day. To her surprise, she saw that the batches of milk pasteurized yesterday were already spoiled. The milk cartons were bloated, which was most likely due to microbial gas production. Appalled by the sight, Baldemor asked the dispatch personnel to just deliver another batch from their inventory. Baldemor talked to the plant supervisor, but he didn't have any idea of what had happened. As the Quality Assurance manager, Baldemor knew that the product and product line that produced the pasteurized milk were HACCP<sup>i</sup> certified. She dashed into her office and pulled out the HACCP records. She needed to re-identify the critical control points (CCPs) in order to be assured. She was convinced that she had to trace the breach in the HACCP system and recommend steps in order to avoid such problems in the future. As she sipped a cup of freshly brewed coffee, she had a feeling that this September of 2016 will not be like the other Septembers she had had before.

## Background on Hacienda Macalauan, Inc. (HMI)

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Hacienda Macalauan (HMI) was a Philippine corporation that started in 1995. The President and CEO of the company, Eduardo Soriano, had been in the dairy industry since his family operated San Miguel

<sup>i</sup> HACCP stands for "hazard analysis and critical control points" and is a management system in which food safety is addressed through the analysis and control of biological, chemical, and physical hazards from raw material production, procurement and handling, to manufacturing, distribution and consumption of the finished product. (US FDA, "Hazard Analysis Critical Control Point (HACCP)" 09/03/2015 Retrieved from [www.fda.gov/Food/GuidanceRegulation/HACCP/](http://www.fda.gov/Food/GuidanceRegulation/HACCP/) on November 17, 2016.

Corporation and Magnolia dairy. HMI's primary purpose was to operate a dairy farm and manufacture milk products and related dairy products. The farm started with few head of Magnolia cattle but eventually expanded upon the importation of Freshian Sahiwals from Australia. As of September 2016, the farm boasted several hectares of pasture land for its dairy herd, an automated milking parlor, and a technologically advanced dairy processing plant.<sup>1</sup>

The farm started with the processed milk business, with its products being delivered daily by reefer vans<sup>ii</sup> to Manila's exclusive subdivisions. Today, HMI clientele was composed of hotels, restaurants, and the catering (HORECA) industry. In addition, in 2012 HMI expanded its market when it rolled out its products to major supermarkets. Of all its product lines, the Pure and Best Fresh Milk was the most popular and contributed about 50% of HMI's overall profit. To date, HMI's milk products only served the local market.<sup>2</sup>

### Exhibit 1

Pure and Best Fresh Milk



Source: Hacienda Macalauan, Inc., "Milk" <http://hmi.net.ph/dairy/milk>

## The Quality Assurance Role

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Baldemor's role at HMI covered two positions. One, as R&D Manager, she oversaw the product development activities of the company. She was in charge of the innovations that the company would invest into. In that light, when the company had laboratory results for a new product, it will be scheduled for scale up. In the scale-up phase, a bigger volume would be used in order to emulate the production process and to check if the experimental variables still held true. Adjustments were made in order to get the ideal process parameters. Ultimately, as the R&D Manager, Baldemor was tasked to come up with new process parameters for new products that would eventually be rolled out into the market. Once the management approved a product, Baldemor stepped into her QA Manager role.<sup>3</sup>

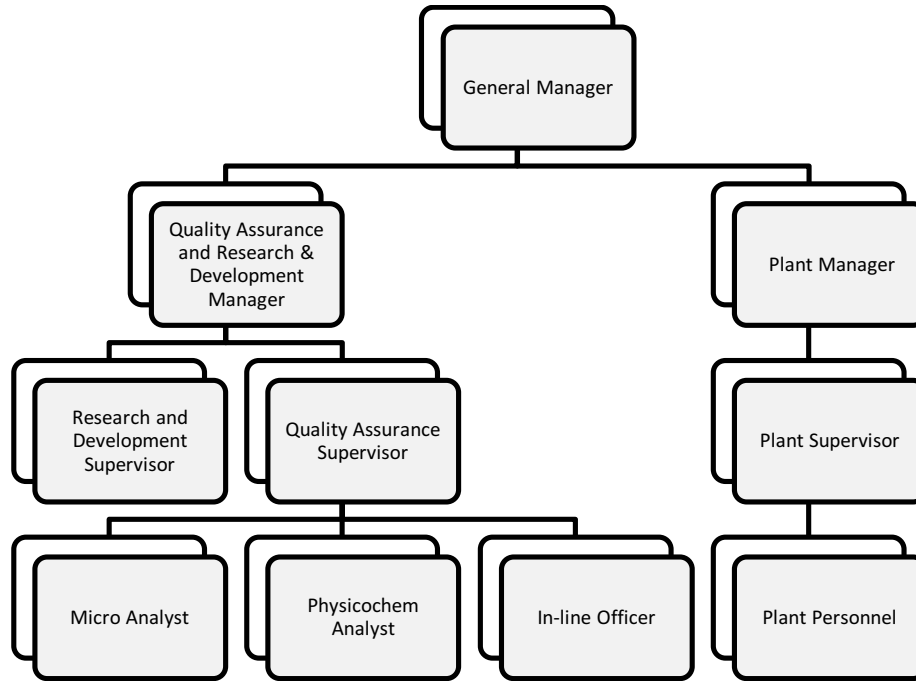
*Quality assurance* was the activity of providing the evidence needed to establish confidence that the quality function was being performed adequately.<sup>4</sup> As a QA manager, Baldemor handed over the process parameters to the production line and explained it to them. In addition, she handled the

<sup>ii</sup> Refrigerated trucks

regulatory affairs work for every product being developed. She acquired certificates of registration (CFR) from the Food and Drug Administration (FDA). But even before she went to that level, she made sure that the product was good manufacturing practices (GMP) compliant and HACCP-certified.<sup>5</sup> See the Exhibit 2 for Baldemor's job among other important positions in the company and Exhibit 3 for a process flow diagram for Pure and Best Fresh Milk.

**Exhibit 2**

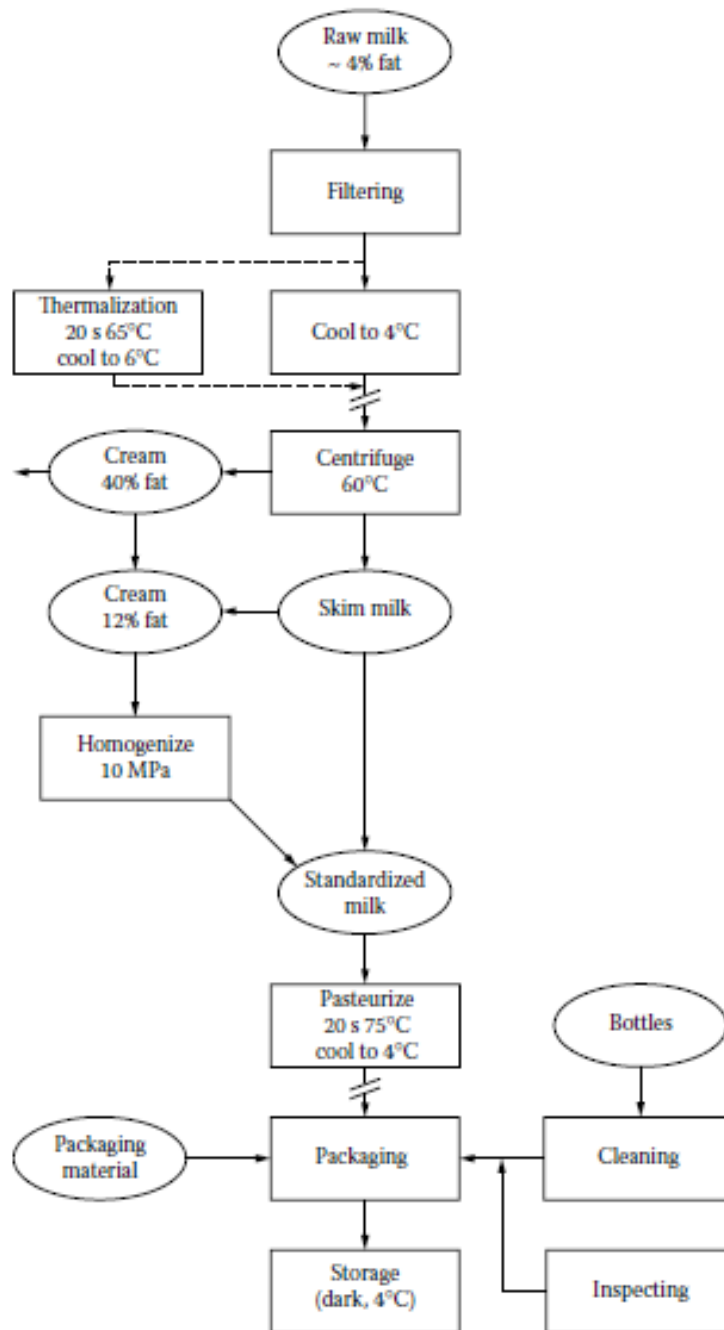
Organizational set-up in HMI.<sup>6</sup>



Source: Quinones, PMR. 2016. Food Science and Technology Practicum at Hacienda Macalauan, Inc., Brgy. Mabacan, Calauan, Laguna. Unpublished manuscript

Exhibit 3

Process flow diagram for Pure and Best Fresh Milk.<sup>7</sup>



Source: Walstra, P., Wouters, J. T. M., Geurts, T. J. (2006). *Milk Components: Lactose*. In *Dairy Science And Technology*. Boca Raton, FL: Taylor & Francis.

## The Incident

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The pasteurized milk was spoiled overnight. The spoilage was obviously caused by unwanted microorganisms that came in contact with the final product. Baldemor pulled out her HACCP records and tried to trace the source of contamination by inspecting each critical control point.

Baldemor reviewed the tasks associated with each CCP to ensure that the critical limits (CLs) were met. To do this, she had to pull out the monitoring records. She went to the first CCP and inspected the CL records. After that, she reviewed one monitoring record after another until she had covered all the CCPs.

## What Went Wrong? (or Avoiding Future Problems)

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HMI's inventory would soon run low. If the company could not deliver the needed milk to its clients, it would be replaced by another supplier. Baldemor sipped her coffee and focused on the target; she was determined to trace the breach in the HACCP system. She was on the move to review the existing CCPs and if the CLs were properly met.

## Endnotes

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<sup>1</sup> Hacienda Macalauan, Inc., "About Us" hmi.net.ph Retrieved on November 17, 2016

<sup>2</sup> Interview with Nerissa Baldemor, Quality Assurance and R&D Manager at Hacienda Macalauan, Incorporated conducted on 06 May 2016

<sup>3</sup> Ibid.

<sup>4</sup> AO 153 s 2004 current Good Manufacturing Practices (cGMP)

<sup>5</sup> Interview with Nerissa Baldemor, Quality Assurance and R&D Manager at Hacienda Macalauan, Incorporated conducted on 06 May 2016

<sup>6</sup> Quinones, PMR. 2016. Food Science and Technology Practicum at Hacienda Macalauan, Inc., Brgy. Mabacan, Calauan, Laguna. Unpublished manuscript

<sup>7</sup> Walstra, P., Wouters, J. T. M., Geurts, T. J. (2006). Milk Components: Lactose. In *Dairy Science And Technology*. Boca Raton, Fl: Taylor & Francis