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Food Manufacturer Shrinks Chemical Use

Cape Cod Potato Chips Changes Oil Testing Process to Eliminate Use of Two Chemicals

CAPE COD POTATO CHIPS

"The site team works hard to consistently deliver exceptional customer service and the highest quality snacks into every bag."

Beth Rueschhoff,
Plant Manager,
Cape Cod Potato Chips,
Hyannis, MA

The Cape Cod Potato Chips facility is located at 100 Breeds Hill Road in Hyannis, MA. The facility is owned by the snack company Snyder's-Lance, Inc., headquartered in Charlotte, NC. The Cape Cod facility began operations in 1980 and now employs 110 people.

Overview

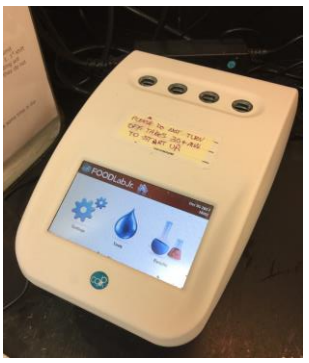
Two chemicals have historically been used at Cape Cod Potato Chips to test for free fatty acids (FFA) in the canola oil that is used for frying: phenolphthalein and sodium hydroxide. The testing for FFA takes place in the quality control lab and uses a titration method. This method requires the use of fume hoods and hazardous waste disposal.

The titration method uses the following chemicals:

Titration Chemicals	
Chemical	***Annual Amount Used***
Phenolphthalein	576 liters
Sodium hydroxide	48 liters
Total	**624 liters**

To reduce the use of chemicals in the lab, and simplify the testing process, alternatives were investigated. Photometric technology was identified to replace the chemical-based titration method. The new instrument, called FoodLab Tester, uses a small amount of isopropyl alcohol with a coloring agent. In April 2017 the facility analyzed the effectiveness and cost efficiency of the new photometric equipment. The FoodLab Tester uses prefilled cuvettes that contain only a few milliliters of solution (isopropyl alcohol with a coloring agent). The results showed that the FoodLab Tester accurately evaluated the FFA of oil samples. The company determined the switch would be financially advantageous.

In June 2017, the facility purchased the new equipment and changed their quality control testing procedure for FFA.



FoodLab equipment in Cape Cod Hyannis facility

Labor

An additional benefit to using the new equipment is that there are fewer labor hours used to perform the photometric tests. This time is instead spent performing other audits, inspections and testing to improve quality and to ensure good food safety practices on the floor. With the new equipment and process, the company redirected an estimated 24.8 labor hours per month.

Financial Analysis

The new equipment has led to financial savings for the facility. The setup costs for the new equipment are noted here:

FoodLab Startup Costs	
Item	***Cost***
FoodLab Tester	$4,041
New reagents	$800
Taxes & freight	$200
Total	**$5,041**

The monthly operating costs after initial start-up (replenishing of reagents) are estimated to be $1,100. Compared to the cost of the chemicals (purchase, handling, and disposal) used with the old method, the facility has estimated an annual cost savings of $1,536.

Annual Operating Costs		
Item	***Titration Method***	***FoodLab System***
Replenishing agents		$13,200
Chemical purchase, handling, disposal	$14,736	
Annual Savings		**$1,536**

Cape Cod Chips received a grant from the Massachusetts Toxics Use Reduction Institute to cover the cost of the new equipment. However, if no grant assistance was received, the investment would have paid for itself in just over three years, not taking into account the labor savings also achieved.

Results

By changing methodologies from titration to photometric methods for free fatty acids, the quality control lab at Cape Cod Potato Chips realized the following reductions:

- Amount of hazardous chemicals purchased, stored, and used in the lab
- Time employees are exposed to these chemicals
- Testing time overall
- Cost associated with disposing of hazardous waste