

Lesson 2: Milk Quality & Safety: Keeping Milk Fresh

Lesson Introduction

Milk is one of the most regulated and safest foods available to consumers. It is also used to make a variety of dairy products such as cheese, yogurt, ice cream, and butter. Milk is tested for quality and safety at the farm level, in route to the dairy processing plant, and at several points during processing. It is tested to make sure it doesn't contain any harmful contaminants and is safe to drink.

In this lesson, students will learn about the various safety and sanitation procedures milk undergoes throughout the processing stages. They will also make butter from the cream of milk. Students will also learn about the career of a cheesemaker.

Lesson Objectives

- Students will explain various processes used to ensure milk quality and safety.
- Students will identify what parts of milk are used to produce certain dairy products.
- Students will calculate the experimental cream to butter ratio.
- Students will list the responsibilities and education of a cheesemaker.

Time: 60-75 minutes

Standards: See the [Discover Dairy website](#) for complete listing by grade level.

Vocabulary

- Dairy products, fortification, homogenization, pasteurization, processing plant, sanitation, and standardization

Materials Needed

- Computer
- Lesson Presentation: [PowerPoint](#), [Canva](#)
- Multimedia Projector and Screen
- Butter Lab Materials: jars, lids, rings, cream, measuring cups, bowls, and calculators
- Internet Access
- Pencils
- [Vocabulary sheet](#)
- [Discover Dairy and Milk Safety & Quality](#) Video
- [Artisan Cheesemaker](#) Video
- [Artisan Cheesemaker Career Spotlight](#)

Activities

- [Milk Safety & Quality Video Discussion Guide Fill in the Blank](#) and [Answer Key](#).
- [Milk Safety & Quality Video Discussion Guide Without Word Bank](#)
- [Artisan Cheesemaker Career Spotlight Video](#) and [Outline](#)
- [Butter Lab with Directions](#) and [Lab Sheet](#).
- [Kahoot! Game](#)

Procedure

Introduction (10 minutes)

- Go over the essential vocabulary terms and their meanings for this lesson. Use Lesson 2 PowerPoint slides 1-4 for the introduction and vocabulary.
- **Activating Strategy:** Let's discover how milk is tested to ensure its safety and quality by watching the video, [Discover Dairy and Milk Safety & Quality](#).

Keeping Milk Fresh (8-15 minutes)

- Introduction
- Discuss the processes to keep milk safe using slides 5-13.
- Visual Aides: Feel free to hand out or hang up the [NDC Milk Handout](#) or the [Farm to Table Infographic](#) as additional reading materials or support to the information discussed on these slides.
- Closure: We looked at the ways milk is kept safe during the production and processing of it. Explain to us one of these processes to keeping milk fresh.

Butter Lab (30-40 minutes)

- Do the Introduction and use slides 14-17 to guide the lab.
- Have the jars, lids, rings, cream, measuring cups, bowls, and calculator ready for students.
- Pass out the [Butter Lab Worksheet](#).
- Allow students class time to complete the Butter Lab with a partner.
- Walk around, offering help and answering questions as needed.
- Closure: Today you made butter from cream. During the lab, you compiled data to find the experimental ratio of cream to butter.
 - What was your experimental ratio of cream to butter?
 - What is the theoretical ratio of cream to butter?
 - How does your experimental ratio compare to the theoretical ratio.

Career Spotlight: Artisan Cheesemaker (8 minutes)

- Do the Introduction and use slides 18-22 to guide the discussion.
- Facilitate the Career Spotlight on Cheesemaker using the [Artisan Cheesemaker video](#) and discussion of responsibilities and education.
- Closure: Cheesemakers use science and creativity to produce high-quality cheeses for retail.
 - Tell us one responsibility of being a cheesemaker.
 - Are you interested in being a cheesemaker when you grow up?

Summative Activity (5 minutes)

- Do the Introduction and use the slides 23–24 to guide the activity.
- Facilitate the [Lesson 2 Kahoot Review](#) with students.
- Lesson Closure: Today you learned about the ways and procedures used to ensure milk is fresh and safe. Tell us one thing you learned today about “Keeping Milk Fresh”.

Career Spotlight

Artisan Cheesemaker

Summative Assessment

Students will complete the Butter Lab with a mastery level of 80% or higher.