Milk provides us with 9 essential nutrients that our bodies need each day, but the key nutrient is calcium, which is the foundation for strong bones. Your school meals must include non-fat plain or flavored milk—or 1% plain milk—and at least two varieties of milk must be offered every day.

### NUTRITION

Consuming foods in the dairy group provides you with 9 essential nutrients that your body must have to stay healthy, grow, and protect itself from injury and illness. Did you know that an 8 ounce glass of milk has 3 grams of high quality protein? That’s more protein than an egg!

### VITAMINS

- **Vitamin A:** Helps the body absorb fat-soluble vitamins and maintain healthy skin and vision. 1 pint of milk contains 20% DV.
- **Vitamin D:** Helps regulate the balance of fluids in the body and plays a vital role in maintaining normal blood pressure. 1 cup of milk contains 10% DV.
- **Vitamin B-12:** Helps the body absorb protein and maintain healthy nerve and blood cells. 1 cup of milk contains 100% DV.
- **Calcium:** Helps build and maintain strong bones and teeth, and reduces the risk of bone fractures and osteoporosis later in life. It also promotes healthy blood pressure. 1 cup of milk contains 10% DV.
- **Potassium:** Maintains fluids in the body and plays a role in supporting the central nervous system. 1 cup of milk contains 370 mg, or 11% DV.
- **Phosphorus:** Helps maintain the body’s muscle function and bone health. 1 cup of milk contains 2.4 mg, or 10% DV. Helps the body absorb calcium and maintain healthy bones.
- **Niacin:** Helps build and maintain lean muscle. 1 cup of milk contains 0.08 mg, or 1% DV. Helps build and maintain health cells.
- **Protein:** Helps the body build lean muscle. 1 cup of milk contains 8 g, or 16% DV. Each day, you should get the recommended daily amount of protein by eating a variety of foods, including dairy products.
- **Lactose:** A sugar found in milk and some milk products. 1 cup of milk contains 24.8 g, or 10% DV. Helps the body absorb calcium and maintain healthy bones.
- **Whey:** The liquid remaining after milk has been separated. It is a protein, and contains about half of milk’s nutrients. It is also an important food source for many people.

### WHAT COMES FROM A COW?

- Milk
- Cheese
- Yogurt
- Cottage cheese
- Ice cream
- Buttermilk
- Sour cream
- Skim milk or 1% milk

### Activity Time!

1. Circle the foods made from milk or that include ingredients made from milk.

### COW CALCULATIONS

1) Imagine that so far today you’ve eaten:
   - cereal for breakfast, A mini-pizza for lunch that contained 1/4 cup of shredded mozzarella cheese, and a 12oz sports drink.
   - How much milk do you have today?
   - How much more should you have today?

### NVAD’S SCHOOL MEAL PATTERN

Nevada’s School Meal Pattern has a number of benefits. It is designed to improve the health of Nevada’s children. It encourages:

- **Healthy eating habits**
- **Increased consumption of fruits, vegetables and whole grains**
- **Right-sized meal portions**
- **Healthier eating habits**

### Vitamin D

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CAREER CORNER

ISTIO ALVES, OWNER AND DAIRY FARMER AT SAND HILL DAIRY

Describe Sand Hill Dairy and your job there.

We’re a dairy farm in Fallon. We milk about 500 cows every day, twice a day. We sell to the dry milk plant here in Fallon, and we sell bottled milk around Reno and Carson City. A few years ago, we started making cheese, too. We make queso fresco, which is known here as farmer’s cheese; it has a fresh, crumbly texture. The Spanish eat it all the time crumbled on tacos and salads. We also make some fresh mozzarella.

My job is to manage the employees, all aspects of management to ensure that the cows are fed on time, care for any sick cows, oversee the processing of all milk and cheese, and ensure that sanitation policies are followed. We have seven employees: five on the dairy farm and two in processing. I also do milk and cheese deliveries to stores, mostly in Reno, two or three times a week.

What's your favorite part of your job?

Being on the dairy, caring for cows. It’s enjoyable and it’s the reason I got into this business in the first place. It’s peaceful. All the processing is great, but it takes me away from the farm, which is what I like best.

WES CLARK, FACILITY MANAGER, DAIRY FARMERS OF AMERICA (DFA) FALLON DRY MILK PROCESSING PLANT

Describe your job.

My responsibilities are managing plant operations at the DFA plant in Fallon, dealing with production, shipping and receiving, maintenance, and sanitation. I oversee the production of powdered milk, fortified powders, evaporated milk, and skim milk powder. My job is to ensure we have enough milk volume daily and to manage the people who test the food safety and quality of our products.

What are dried and evaporated milk, and how do you make them?

Evaporated milk is milk that has had large portions of water removed. The milk is pumped through a heated vessel under a low level of vacuum. This pressure causes the liquid to evaporate at a lower temperature than normal. As the water is being removed, the milk solids increase. Then we can fortify the milk with certain nutrients to meet the needs of customers’ various recipes.

Dry milk is made simply by removing more water. We pump the milk into a drying chamber at 425 degrees F, and remove 97 percent of the water remaining in the overall solids. Dry milk can be stored up to two years before being used, while a gallon of raw milk may go bad very quickly.

FOOD SAFETY

Why is pasteurization important?

Pasteurization is a process that kills harmful bacteria by heating milk to a specific temperature for a set period of time. First developed by Louis Pasteur in 1865, pasteurization kills harmful organisms responsible for such diseases as listeriosis, typhoid fever, tuberculosis, diphtheria, and brucellosis.

Research shows no meaningful difference in the nutritional values of pasteurized and unpasteurized milk. Pasteurized milk contains low levels of the type of nonpathogenic bacteria that can cause food spoilage, so storing pasteurized milk in the refrigerator is still important.

(Recipe: U.S. Food & Drug Administration)

Did you know?

NEVADA'S COW POWER*

There are approximately 28 dairies in Nevada raising 45,000 cows. Most of these dairies are in the northwestern part of Nevada, near Reno, but the largest dairies are in southern Nevada.

Nevada dairy cows produce nearly 666 million pounds of milk per year. There are 5 major breeds or types of dairy cows: Holstein, Jersey, Ayrshire, Guernsey, and Brown Swiss. Holsteins (the black-and-white cows) are the most common type of cow found in Nevada and produce the most milk. Jersey cows, which are smaller than Holsteins, are very light brown in color. Jersey cows are prized for their milk’s high butterfat content.

In northern Nevada, milk produced on dairy farms either goes to milk processing plants, such as Model Dairy, to be turned into drinkable milk, or it goes to the Dairy Cooperative of America (DFA) dry milk processing plant in Fallon, where it is turned into milk powder or condensed milk. Milk produced by southern Nevada dairy farms is largely used in Las Vegas or shipped to California, where it is processed to become drinking milk or cheese.

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Each dairy cow eats 90 pounds of alfalfa hay, silage (fermented corn, wheat, or hay with stalks and leaves), corn, and grain. Also, they drink 25-50 gallons of water—that’s about a bathtub full of water!

Each dairy cow in Nevada produces an average of 22,143 pounds of milk per year, and 10 gallons per day!

THAT'S A-MOO-ZING!

THE MAKEUP OF MILK

Milk is 85 percent water. The rest is comprised of fat, protein, and other solids, including ash, calcium, and other minerals. The solids are used to make cheese.

NATURE’S SPORTS DRINK

After your next soccer game or bike ride, reach for a nice tall glass of chocolate milk. Researchers have discovered that chocolate milk is the best drink for refueling after exercise.

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Your bones are like calcium banks. As you grow, the body absorbs calcium and stores it in your bones, depositing it in your “bone bank.” That’s why you need to eat lots of calcium when you’re still growing. It’s important to “fill up the bank” as much as possible, because when you are older, your bones lose the ability to absorb calcium. If your bones have too many holes, they become weak. This is a condition called osteoporosis. As you get older, your body will withdraw from this calcium bank to keep your bones strong during adulthood.

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NEVADA CONNECTION: ANDERSON DAIRY

Anderson Dairy enjoys a rich tradition and heritage that dates to 1907, when Harry Anderson first began his dairy operation in Las Vegas. That tradition continues today.

For more than 100 years Anderson Dairy has been dedicated to doing one thing the best: produce fresh, great tasting milk and other dairy products. Anderson Dairy serves its milk to many Nevada schools and has been a principle dairy supplier for southern Nevada -- it’s the way Harry Anderson would have wanted it to be.

1) Cow gets milked at an automated milk milking pasteurization plant.
2) Milk gets stored in a temperature controlled tank between 37˚F - 39˚F.
3) Milk gets transported to the milk plant in an insulated truck.
4) Milk gets pasteurized, homogenized and bottled at a processing plant.
5) Milk gets delivered to grocery stores, schools and customers.

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Dairy Process Manager, Dairy Farmers of America (DFA)

Wes Clark, Facility Manager, Dairy Farmers of America (DFA)
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What is your favorite part of your job?

What is your favorite part of your job?

There are so many that it’s hard to list just one! I would start with working in a brand-new facility, working with a great staff, and working with state-of-the-art technology. Also, it’s being proud of what we’ve done here as a team, from the operators on the floor to the dairy farmers who ship the milk to the plant.