

# How Much of That “Stuff” is Really Cheddar? Dairy

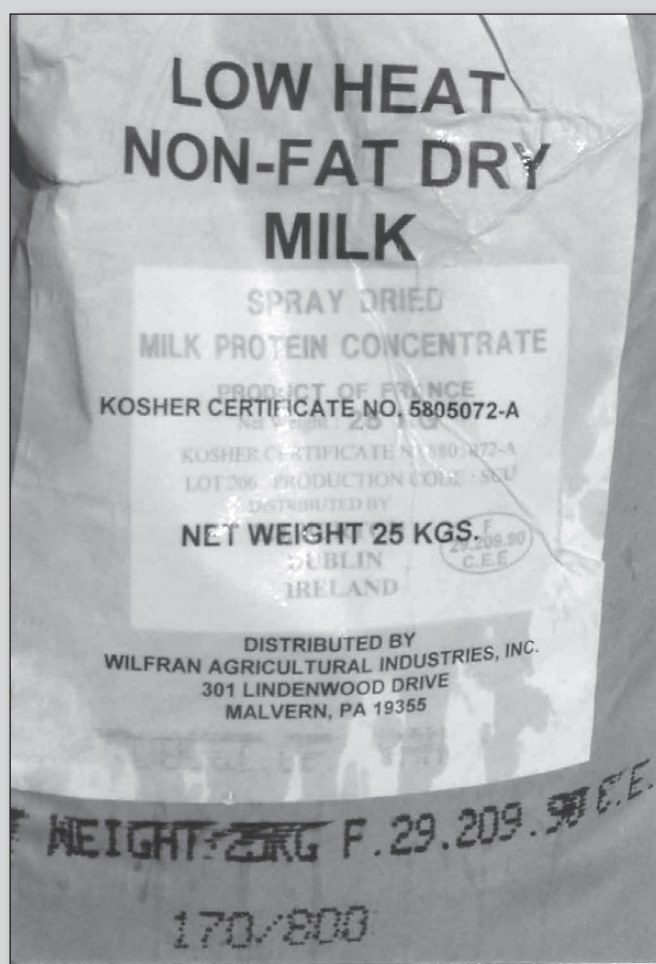
by Pete Hardin

The single most important issue facing U.S. dairy farmers is the diminished integrity of numerous dairy products sold to consumers our nation. Most of our dairy products are honest, quality foods. BUT ...

The practices of certain dairy manufacturers and food processors focus on a “cheap, cheaper, cheapest” approach to end products. The public – dairy farmers, consumers and honest processors – are being defrauded. Dairy farmers lose income and normal “supply-demand” balances. Consumers may receive “dumbed-down” dairy products containing unapproved ingredients. Honest dairy processors face inequitable competition in a narrow-margin industry. By “dumbed down,” *The Milkweed* refers to inferior quality, taste ... and even clear-cut illegality.

## From MPCs to Sodium Gluconate

U.S. warehouses are stocked with one billion pounds of “American style” cheese – according to recent months’ Cold Storage inventory reports issued by USDA. That astronomical inventory figure is used as a crowbar at every opportunity to beat down and talk down U.S. dairy farmers’ milk prices. Massive cheese inventories are cited behind the recent collapse of commodity Cheddar cash prices at the Chicago Mercantile Exchange. Those billion pounds of “American style” cheeses held in warehouses are THE prime factor why “Class III futures” stretch out as far as the speculators will wager in sub-profitable price ranges for dairy farmers. [Clarification: “Class III” futures are based upon future months’ cheese milk (Class III) price values as calculated by USDA’s federal milk marketing order program.]



## “Low Heat Nonfat Dry Milk” – Really Milk Protein Concentrate in Disguise

In the late 1990s, an unscrupulous dairy brokerage – Wilfran Agricultural Industries (Malvern, Pennsylvania) – started selling an illegally misbranded product labeled “Low Heat Non-Fat Dry Milk.” At least that’s what the white label on the 25 kilogram bag claimed to be the ingredients. But under that white label, the bag’s original label claimed: “Spray Dried Milk Protein Concentrate – Product of France.”

*The Milkweed* obtained a bag of Wilfran’s “stuff” (for lack of a four-letter word) and had a grand time in print and at farm meetings. When the outside label was gently sprayed with water, the underlying original label’s ink dramatically became clearly visible – a miraculous transformation.

Wilfran got in hot water with USDA, when this product showed up in the school meals programs. However, USDA let off the firm with virtually no penalties. Wilfran’s “justice” came from *The Milkweed*, when the editor made about 1,000 color copies of the picture above and sent a dozen or more copies of that picture to every known subscriber in the dairy protein powder trade. Wilfran and its owner, Bill Franks, were universally scorned in the milk protein trade ... and competitors gleefully circulated those pictures around the industry. After Franks’ firm financially failed a few years later, he blamed “those &^%\$# pictures” as the source of his financial demise. But don’t underestimate a crook. Just prior to Wilfran’s financial demise, the company went on a milk powder buying binge – buying up a few hundred thousands of dollars of product from numerous companies. And then ... pffft! Bill Franks was gone ... sticking the milk powder trade with a couple million dollars in worthless accounts receivable.

“American style” cheeses include Cheddar, Colby, Muenster and Monterey Jack. But basically, “American-style” cheese boils down to Cheddar. One billion pounds of American-style cheeses in inventory equals about two and a half months’ production of American-style varieties. That’s a marketing problem, as long as FDA and other government agencies fail to properly oversee the quality and integrity of standardized cheeses produced in the U.S.

Truth be known ... a significant percentage of all those “American style” cheese inventories are probably illegally misbranded – not made in conformity with FDA’s standards of identity for specific cheeses such as Cheddar, Muenster, etc. That’s the “Great American Cheese Scandal” -- widespread use of questionable practices in dairy processing and marketing has eroded with integrity of dairy products in supermarket dairy cases across the country. And now, dairy farmers see no hope in coming months, because cold storage warehouses are bulging with that “American” cheese inventory. Dairy’s modern technologies (and dirty practices) threaten to financially kill off many dairy farmers – where all the value in dairy originates. The parasites threaten to kill their hosts.

The “bag of tricks” used by some processors may include: use of imported dairy proteins; high-acid yogurt starters in cheese production; “fillers” (like plant-based starches); added salt and water; and illegal ingredients in cheese vats. Over time, these shortcuts have combined to leave U.S. consumers facing “dumbed-down” dairy products. Plant-based starches are particularly popular with food processors. Such starches absorb an amount of water equal to ten times their own weight in water! That equation goes like this: 1# Plant Starch + 10# Water = Big Profits.

By “dumbed-down,” *The Milkweed* refers to inferior quality, taste ... and even clear-cut illegality. Small wonder, that a few years ago when food scientists at the University of Wisconsin-Madison conducted a taste-survey of Cheddar cheeses purchased at retail in the Madison, Wisconsin area, more than 60 percent of the samples did not score favorably for taste!

## Farm Milk Cost/Price Squeeze Looks Deadly

Cheddar cash prices at the Chicago Mercantile Exchange (CME) are THE prime price signal that moves U.S. dairy farmers’ milk prices. Recent weeks’ collapse of Cheddar cash prices – from \$1.77 per pound in mid-October down to as low as \$1.39 per pound by early December – has drawn a sudden black cloud over the spirits and fortunes U.S. dairy farmers.

This recent Cheddar price collapse – in tandem with similar (but seasonally predictable) price declines for Grade AA butter at CME – promises to cut about \$3.50 to \$4.00 per hundredweight off dairy farmers’ milk prices (from the October 2010 peak). Since mid-August 2010, grain prices -- mainly corn and soybeans -- have skyrocketed, driving up milk production costs.

The Cheddar/Grade AA price declines – along with recent months’ grain price increases – smack dairy farmers’ fortunes just after cash flows finally started to improve following the disastrous run extending from late 2008 until mid-2010. In 2009, *The Milkweed* estimates that U.S. dairy farmers suffered combined cash flow losses and declining dairy animal values equal to the entire value of the nation’s nine million dairy cows. Years of accumulated equities – milk producers’ net results of investments, savvy and hard work – were wiped out in that recent, prolonged down-cycle. But in the past several weeks, it’s clear that another severe, evolving cash-flow squeeze lies ahead, particularly for dairy producers who buy significant amounts of grain. Grain costs represent the single biggest expense for most of the milk produced on U.S. dairy farms.

Here in late 2010, U.S. dairy farmers had finally started to emerge from a dark period during which they cannibalized assets, equities, and (in many cases) still face stacks of unpaid bills, deferred maintenance on equipment, buildings and personal needs. A sizeable percentage of the surviving U.S. dairy farmers lack the financial and emotional reserves to endure another red-ink, cash-flow bloodbath. Lenders and service providers are also scared.

The precarious financial situation now facing U.S. dairy farmers threatens the adequacy of this nation’s milk supply. Further, rural economies that depend on milk income for their cash flow face financial atrophy, if dairy farmers’ margins turn dark red again. Veterinarians, feed mills, consultants, milk haulers ... all those vital professions serving dairy country, face declining profits and volumes if another big slug of dairy farmers fail financially.

*The Milkweed* details in this Special Report the dirty dealings that go on in the production and marketing of dairy products. USDA’s estimates of one billion pounds of “American style” cheese in warehouses across the U.S. are valid, in terms of sheer mass of product. How much of that billion pounds of inventories is really cheese that conforms to the Federal Food and Drug Administration’s mandatory quality and ingredient specifications for natural cheeses with standard identities such as “Cheddar,” “Muenster,” “Colby,” and “Monterey Jack?”

## If Prof. Van Slyke were alive today ...

One century ago, Lucius Lincoln Van Slyke – the pioneer dairy scientist at the New York Agricultural Experiment station – calculated the basic equations for determining how much cheese would be yield from farm milk. For farm milk or “normal” composition, Van Slyke calculated Cheddar yields would be about 9.6 pounds of Cheddar per hundredweight of quality farm milk. Cheese yields are a simple function of the levels of casein (milk proteins) and butter fat. In the cheese vat, when inspired by “starter cultures,” the proteins and milk fat globules contained in raw milk combine to form curds. Curds are the initial product in the transformation of raw milk into cheese.

But Van Slyke’s cheese yield formulae look like a distant third cousin to modern-day calculations occurring in some cheese plants’ vats today. A variety of high-yield starter cultures, highly-questionable additives (like Milk Protein Concentrates, or MPCs), and highly illegal ingredients (Sodium Gluconate) have combined to create cheese vat results that Van Slyke never dreamed pos-

# ry's Biggest Scandal: Consumer Product Integrity

sible. Example: The California Department of Food and Agriculture (CDFA) recently reported that for 2008, the average Cheddar yields in the biggest plants in that state averaged 14.2 pounds per hundred pounds of milk going into the vat! That's a whopping 48% higher cheese yield than the Van Slake standard! The protein and butterfat from highest-testing Jersey dairy herd in California couldn't yield that much Cheddar, under normal circumstances!

California's state milk regulatory system provides detailed data on cheese yields. Annual cheese plant Cheddar yields are one such statistic. In 2006, "Golden State" Cheddar yield averages (per hundredweight of farm milk) were 12.6 pounds. The very next year, a "miracle" occurred in the state's Cheddar-making vats: yields jumped one whole pound – up to 13.6 pounds of Cheddar for each 100 pounds of farm milk directed into the Cheddar vat. Curiously, California's farm milk supply registered slightly less protein content for 2007 vs. 2006 (-0.01%). A slightly smaller "miracle" (a modest 0.6 pound Cheddar gain per cwt.) occurred in California's largest Cheddar-producing plants in 2008 (compared to 2007 statewide Cheddar yields of 13.6 pounds). What in Sam Hill is going on? What's causing California's largest plants' documented Cheddar yields to jump from 12.6 lbs. (2006) to 14.2 lbs. (2008)?

Quick answer(s): These Cheddar vat gains stem from a variety of illegal materials added to the cheese vat. Such additions include the ultra-modern yield-booster: a tandem of technologies that includes high-acid yogurt starters followed by a liberal dose (up to ten percent by weight) of sodium gluconate.

## The Great American Cheese Scandal

### Sodium Gluconate: "Son of MPC"

In the past decade-plus, advanced technologies – legal and otherwise – have contributed to increased cheese yields (per hundredweight of farm milk). For more than a decade, *The Milkweed* exposed and railed against the use of Milk Protein Concentrates (MPCs) in cheese production food processing. MPCs – dry dairy proteins – have been widely used in cheese and food production.

MPCs – concentrated dry dairy protein powders, often imported virtually duty-free but also manufactured domestically – have never been approved for use as a food ingredient under FDA's mandatory GRAS (Generally Recognized as Safe) rules. For more than a decade, FDA officials have ignored MPC use in a wide variety of human foods by food manufacturers and processors. That decade-plus of failed ingredient oversight by FDA on the MPC furor, unfortunately, has set the stage for the "next generation" of illegal cheese vat alchemy: sodium gluconate.

MPCs are the earlier generation of "monkey business" in cheese production/processing. More recently, the "hot" ingredient finding a home in the cheese vat is Sodium Gluconate, aka "Son of MPC." Sodium Gluconate is not approved as an ingredient by FDA in the production of standardized natural cheeses (Cheddar, Colby, Mozzarella, etc.). No problem: FDA is asleep at the switch on the Sodium Gluconate matter, just as government food safety regulators snoozed through the whole MPC debacle.

Unlike MPCs, Sodium Gluconate is a legal food ingredient. Problem is: Sodium Gluconate is not allowed by FDA in production of cheeses that have a defined standard of identity. In other words, "Cheddar" cheese produced using Sodium Gluconate in the make-process is technically (and legally) NOT Cheddar. Such "miracles" performed by white-coated food scientists (often public hirelings at Land Grant universities) have both developed and commercialized clearly illegal practices creating more "Cheddar" (and other cheeses). When such technologies become widespread, the result is more cheese than commercial demand can bear; thus, more cheese in warehouses.

According to FDA's rules for ingredients in manufacture of standardized cheeses (Cheddar, Mozzarella, Muenster, etc.), Sodium Gluconate is not listed as an approved ingredient. Simply stated: any product labeled "Cheddar" that's made using Sodium Gluconate is ILLEGAL. How is Sodium Gluconate used? What's the problem with Sodium Gluconate?

### High-acid starters + Sodium Gluconate = *Mucho Caso*

Ultra-modern cheese plant technologies incorporate the use of high-acid, yogurt-type "starter cultures" AND a follow-up liberal dose of Sodium Gluconate atop the curds in the vat to achieve optimum cheese yields. The high-acid, yogurt-type starters offer two advantages to cheese plants:

- 1) More pounds of curd are formed, and
- 2) Curd formation takes place much more quickly, allowing some plants to run three batches of milk through the vats in a single day, compared to the normal two batches in a 24-hour manufacturing cycle (allowing for clean-up).

The high-acid, yogurt starters include large volumes of added milk proteins. Since cheese curds are formed by the "marriage" of protein molecules and butterfat globules, supplemental milk fat is necessary for the expanded "ceremony" joining proteins and milk fat. In the past few years, cheese plants have become net buyers of supplemental milk fat, to boost yields. Oftentimes, that additional milk fat is imported – anhydrous milk fat, for example.

As used, some ingredients used to boost cheese yields, which in turn bust milk prices, are clearly illegal. Let's give a specific example: the tandem of high-acid yogurt-type starters used in certain plants cheese vats, with a "chaser" of Sodium Gluconate added to the curds to dissipate undesirable formation of lactic acid crystals. What's particularly beautiful about the Sodium Gluconate scandal is that the University of Minnesota is a co-holder of U.S. Patent #7,625,589

(issued December 1, 2009) – the patent for a Sodium Gluconate product called "CrystalBan." CrystalBan is marketed by Nutricepts, Inc. (Burnsville, Minnesota). That firm's Web site cites advantages in aging, slicing, shredding and taste characteristics for Cheddar and Colby made with its product. Both those varieties are standardized cheeses, according to FDA food regulations. As co-holder of the CrystalBan patent, the University of Minnesota profits from sales of that product.

Nutraceuticals, Inc. states that cheese produced in this manner will have from 2.6% to 2.8% Sodium Gluconate in the finished product.

### Sodium gluconate needed to block lactate crystallization

High-acid yogurt starters used in cheese production have a downside: rapid formation of lactic acid crystals on the curds in the cheese vat, once the whey has been drained off. sodium gluconate to the rescue!

Sodium gluconate, according to a manufacturer's Web site recommendation, may be used at a rate of up to 10% (by weight) of cheese curds in the vat. (Sodium gluconate partially replaces salt atop curds.) Sodium gluconate inhibits formation of lactic acid crystals on cheese curds. Sodium gluconate is approved by FDA as a food additive. However, FDA's standards of identity for Cheddar and many other natural cheeses do not allow use of sodium gluconate. Cagily, one manufacturer (Nutraceuticals, Inc. of Burnsville, Minnesota) refers to adding up to ten percent (by weight of curds) sodium gluconate as a "process aid" – technical verbiage that dances around of what's really going on: incorporating an unapproved additive to cheeses of standard varieties. "CrystalBan™ is Nutricepts' specific sodium gluconate product. Without adding sodium gluconate, the widespread formation of lactate crystals in the finished cheese would be a severe quality defect.

Tremendous efficiencies! Unfortunately, in the case of standard cheeses sold in the U.S., it's all highly illegal.

In light of solid cheese sales for much of the past two years, the build-up of U.S. cheese inventories is far more related to "creep" of cheese yields, rather to higher farm milk volumes, in the analysis of *The Milkweed*.

Nutraceuticals, Inc. carefully poses its product as a "processing aid," not an ingredient or additive. This process yields up to three pounds more cheese, per hundredweight of milk processed, including, we presume, the added mass of the Sodium Gluconate. Yet the marketer categorizes such use as a "processing aid," not an ingredient, despite the fact that 2.6% to 2.8% of the final product may contain Sodium Gluconate.

At a cost of approximately \$800 per ton (or \$.40 per pound), Sodium Gluconate is, at the very least, a "cost-efficient" material to dump in cheese vats, expanding saleable volume.

Hilariously, Nutricepts, Inc. features the following statement on its Web site:

"Intellectual property protection program

"To protect current customers we have begun sampling cheese at the retail level." In other words: detectable levels of Sodium Gluconate are found in cheeses sold at retail. If cheese products from firms other than Nutricepts, Inc.'s customer base are detected with Sodium Gluconate, presumably Nutricepts will bring legal action. The notion of that firm suing cheese makers for using Sodium Gluconate (other than CrystalBan) in standardized manufacture is hilarious when you think about it: using patent laws to protect an illegality!

An added benefit for manufacturers using the high-acid starter/Sodium Gluconate tandem: the rapid curd formation permits cheese plants to run an extra shift every 24 hours – filling the cheese vats three times daily instead of the usual two in a 24 hour period. Trouble is: if the cheeses are marketed as standard varieties (Cheddar, Colby, Muenster, etc.), such products are all illegal.

### Industrial cleaner & concrete additive ... often "Made in China"

As noted, Sodium Gluconate has passed FDA's mandatory "GRAS" (Generally Recognized as Safe) food ingredient safety protocols. But Sodium Gluconate has far more attributes, albeit not in the food sector. According to a report on price-fixing by the European Union in 2002, "... sodium gluconate [is] a chemical mainly used to clean metal and glass, with applications such as bottle washing, utensil cleaning and paint removal."

Another feature about Sodium Gluconate that's less than thrilling for persons concerned about food safety: much of this material sold in the U.S. is made in ... you guessed it ... China, that bastion of safe food ingredients. (Think melamine.) Note: Nutricepts, Inc. vigorously claims CrystalBan™ is produced in the U.S.

Amid all the "food safety" noise from Washington, D.C., it's a shame that FDA cannot muster the political will and financial resources to find out what practices are spurring all that extra volume from the cheese vats. As noted elsewhere, California's state agriculture department reports that in 2008, Cheddar yields of 14.2 pounds per hundredweight of farm milk were achieved in the large Cheddar-producing plants that state regulates. Sodium gluconate: so many attributes ... and made in China!

The Great American Cheese Scandal story  
is available for readers to read and download  
on our Web site:  
[www.themilkweed.com](http://www.themilkweed.com)