

# **Milk Protein Concentrate Imports: Implications for the North American Dairy Industry**

Kenneth W. Bailey

The Pennsylvania State University, 210-A Armsby Building, University Park, PA 16802  
Email: [baileyk@psu.edu](mailto:baileyk@psu.edu)

## **■ Take Home Messages:**

- ▶ The TRQ system under the World Trade Agreement has some flaws. Despite the agreement among trading partners to the WTO, the food industry in North America has found creative ways to circumvent tariffs under the TRQ system.
- ▶ The new WTO round should deal with this problem of circumvention by accounting for all trade in milkfat and nonfat solids, and should move away from a product-based TRQ system. In other words, tariffs and quotas should be based on milk components, not tons of finished dairy products.
- ▶ Both the U.S. and Canada need to look beyond the current problems with the WTO and find ways to become more competitive in world markets. For the U.S., this means producing those products, like MPC, that the domestic market wants. For Canada, it means living within the confines of their quota system.

## **■ Introduction and Objectives**

U.S. and Canadian dairy producers are increasingly alarmed about imports of dairy products that appear to circumvent WTO trade agreements and potentially threaten domestic dairy price support programs and prices. The objective of this paper is two fold. First, to examine dairy trade in both countries. Second, to postulate reasons for increased trade in certain dairy products, notably Milk Protein Concentrates and skim milk powder. Possible methods for dealing with these increased imports will be discussed.

## ■ U.S. and Canadian Dairy Policies

The U.S. and Canada are major producers of milk and dairy products in the world. Both use domestic and trade policies to support their respective dairy industries. And both countries are also major importers and exporters of milk and dairy products and are subject to the Uruguay Round Agreement on trade (the WTO) and the North American Free Trade Agreement (NAFTA).

### **Domestic Policies: United States**

Farm-gate milk prices in the United States are supported by a combination of federal or state milk marketing orders, the dairy price support program, and other direct federal payment programs (Bailey, July 2002). Federal orders regulate milk by setting minimum prices for various classes of milk. The manufacturing grade classes of milk (Class III and IV) are also indirectly supported by the dairy price support program. This federal program places a floor on the wholesale value for cheese, butter and nonfat dry milk. All four federal order prices are pooled on the basis of sales in 11 different federal orders. Those pooled values are then returned to dairy farmers. In many cases, dairy producers also receive over-order premiums that are in excess of federal order minimum prices. The size of these premiums depends on market conditions.

Under the 2002 Farm Bill, the U.S. is now providing a direct payment to dairy producers called the Milk Income Loss Contract Program, or MILC. Payments are made to dairy producers in any month in which the Class I price of fluid milk in Boston falls below \$16.94 per 45.4 kg (100 pounds of milk). Farmers receive 45 percent of this difference on up to 1,089 metric ton (2.4 million pounds) of annual milk production.

A major problem with the dairy price support program is that support for a butter/powder plant involves a support price for butter and another for skim milk powder (nonfat dry milk). When the support price for one is adjusted, the price for the other is adjusted in the opposite direction. Government inventories of skim milk powder have been growing in recent years. As of January 10, 2003, uncommitted inventories of skim milk powder totaled 484,018 metric tons (1.067 billion pounds). As a result, the USDA lower the domestic support price for skim milk powder from \$US 1,984 per metric ton (\$0.90 per pound) to \$US 1,764 per metric ton (\$0.80 per pound). This will likely reduce dairy farm income in those federal and state orders that depend on sales of skim milk powder.

### **Domestic Policies: Canada**

Canadian domestic dairy policies consist of a system of provincial quotas, a classified pricing system, and provincial and federal pooling arrangements. Under girding this pricing system are minimum support prices for butter and skim milk powder (Bailey, April 2002).

### **Export Policies**

Both Canada and the U.S. were signatories to the Uruguay Round Trade Agreement (WTO) that committed both countries to 1) greater market access, 2) conversion of all import quotas to new tariff rate quotas, or TRQ's, and 3) reduction in export subsidies.

Imports under TRQ's are subject to two levels of tariffs. One level, called "within quota," is subject to the lower tariff level. The other level, called the "over-quota level," face the higher tariff levels. Over time, both countries agreed to lower tariff levels and increase the size of the import quota. The objectives of these changes were to improve market access, phase out trade distorting practices, and hopefully increase trade. Thus the U.S. and Canada now have greater market access to trade in other countries. Of course the opposite is also true!

The WTO commits both countries to reduce their level of export subsidies. The U.S. has been restricted in their use of the Dairy Export Incentive Program, or DEIP. This program provides U.S. dairy exporters with a subsidized bonus program to help them bridge the gap between high U.S. market prices and lower world market prices. Again, because of the WTO, the DEIP program is limited to maximum permitted quantities and maximum budgetary expenditures (USDA, FAS, January 2001).

The WTO almost immediately created an unfortunate dispute between the United States and New Zealand on the one hand, and Canada on the other. In 1997 the United States and New Zealand argued before the WTO that Canada unfairly priced milk used for export markets (Le Roy, 2001). They argued that Canada in effect used a two-tier pricing system (domestic and international) that indirectly subsidized exports, thus violating Article 10 of the Uruguay Round Agreement which committed members to export subsidy reductions. The WTO Appellate Body eventually ruled against Canada on December 20, 2002. Exports of Canadian dairy products under the supply management system must now comply with Canada's WTO export subsidy commitment levels (Agriculture and Agri-Food Canada, 2002).

Both countries are also bound by the North American Free Trade Agreement (NAFTA). That said, when it comes to dairy, the WTO apparently takes precedent over NAFTA. That is not the case, however, with some dairy trade.

Le Roy has observed that the U.S. and New Zealand are exporting a liquid butterfat/sugar blend to Canada in increasing quantities. This blend is no longer subject to a quota under NAFTA and can be used as a substitute to raw milk in the production of ice cream. Thus it appears to be circumventing the WTO.

## ■ Overview of U.S. and Canadian Trade in Dairy Products

The U.S. has been a net importer of dairy products in recent years. In 2001, the value of U.S. exports were \$US 1,066 million compared to an import value of \$US 1,655.7.

The most current trade data available for 2002 is during the period January through September. For this period, the top three export products for the United States (by volume) were skim milk powder, cheese and curd, and ice cream (Table 1). For skim milk powder, exports declined 35.3 percent during the first nine months of the year compared to the same period a year ago. This was due mostly to declining exports under the DEIP program.

**Table 1. U.S. Exports of Dairy Products**

Commodity	Unit	2000	2001	Jan-Sept 2001	Jan-Sept 2002	% change Jan-Sept
Skim milk powder	MT	84,300	96,200	69,700	45,100	-35.3%
Condensed & evap	MT	5,200	10,700	6,000	7,200	20.0%
Dry whole milk & cream	MT	25,400	46,000	15,000	16,200	8.0%
Fluid milk & cream	1,000 liter	23,300	25,800	18,700	16,700	-10.7%
Yogurt & other ferm prods	Mixed	NA	NA	NA	NA	
Butter & milkfat	MT	8,200	38,000	3,000	2,900	-3.3%
Ice cream	MT	39,400	40,100	32,400	31,100	-4.0%
Cheese & curd	MT	47,800	52,500	38,600	40,800	5.7%
Casein	MT	4,900	3,400	2,600	1,800	-30.8%
Whey <sup>1</sup>	MT	188,142	170,504	NA	NA	NA
Other dairy products	Mixed	NA	NA	NA	NA	NA

Source: USDA, FAS.

<sup>1</sup>U.S. Dairy Export Council.

U.S. imports (Table 2) for the first nine months of 2002 indicate that the top three import items were cheese, casein and Milk Protein Concentrates, or MPC's. Cheese is the number one imported product into the U.S. with a volume of 156,700 metric tons for the period January through September 2002. Casein is also a major imported product at 75,000 metric tons. MPC imports, which have had a lot of attention in the press in recent years, was 26,100 mt, up 24.3 percent over a year ago. Butter and milkfat imports were down 63.6 percent from the year before. A likely reason for the reduction in butter imports is that U.S. butterfat production rebounded significantly in 2002 over depressed levels from the year before.

The U.S. is both a major exporter and importer of cheese. The WTO provides the U.S. with market access in other countries. Thus the U.S. exports some cheese varieties to the European Union, and then imports specialized cheeses from the European Union. Most of this trade is within quota levels established under the WTO (although the U.S. had imported a lot of out of quota American type cheeses in 2002).

**Table 2. U.S. Imports of Dairy Products**

Commodity	Unit	2000	2001	Jan-Sept 2001	Jan-Sept 2002	% change Jan-Sept
Milk and cream	1,000 liter	8,300	12,900	1,900	1,600	-15.8%
Ice cream	MT	1,600	2,200	0	0	NA
Dry milk	MT	8,500	8,100	5,400	9,000	66.7%
Dry whey	MT	15,600	19,900	15,400	14,900	-3.2%
Cheese	MT	188,700	201,800	137,000	156,700	14.4%
Butter and milkfat	MT	13,700	34,600	30,500	11,100	-63.6%
Casein	MT	120,000	106,800	79,500	75,000	-5.7%
Milk Protein Concentrate	MT	52,900	28,500	21,000	26,100	24.3%
Other dairy products	Mixed	NA	NA	NA	NA	NA

Source: USDA, FAS.

For Canada, major dairy exports for the first nine months of 2002 were skim milk powder and evaporated milk (Table 3). Skim milk powder exports were up 28.1 percent for the first nine months of 2002. Most of these powder exports likely ended up in Mexico, although some may have been sent to the U.S. (see date for 2001).

**Table 3. Canadian Exports of Dairy Products**

<b>Commodity</b>	<b>Unit</b>	<b>2000</b>	<b>2001</b>	<b>Jan-Sept 2001</b>	<b>Jan-Sept 2002</b>	<b>% change Jan-Sept</b>
<b>Milk</b>	MT	4,892	4,553	3,571	4,796	34.3%
<b>Cream</b>	MT	817	2,699	2,550	774	-69.6%
<b>Cheese</b>	MT	18,414	19,111	13,319	9,447	-29.1%
<b>Ice cream</b>	MT	7,917	6,799	5,267	5,263	-0.1%
<b>Yogurt</b>	MT	47	132	61	114	87.1%
<b>Butter &amp; other fats</b>	MT	1,253	744	517	1,233	138.6%
<b>Evaporated milk</b>	MT	23,428	32,991	26,978	24,532	-9.1%
<b>Condensed milk</b>	MT	1,968	1,576	1,243	1,056	-15.0%
<b>Skim milk powder</b>	MT	32,431	45,810	33,492	42,908	28.1%
<b>Whole milk powder</b>	MT	1,124	5,666	4,335	6,262	44.4%
<b>Whey products</b>	MT	30,538	24,217	17,927	13,308	-25.8%
<b>Casein and products</b>	MT	19	21	21	16	-23.9%
<b>Dairy spreads</b>	MT	5,339	14,968	10,860	13,504	24.3%
<b>Natural milk constituents</b>	MT	10,507	14,504	11,977	10,152	-15.2%
<b>Other</b>	MT	6,976	11,364	8,731	9,013	3.2%

Source: Canadian Dairy Information Centre.

Canada is also a major importer of dairy products. For the first nine months of 2002 the top import categories (by volume) were whey products, cheese, whole milk powder, and butter and other fat products. Imports of MPC's, which are reported to have increased in Canada in recent years, have not been singled out in the available trade data as a specific category. That said, imports of skim milk powder during the first nine months of 2002 were down 58.8 percent relative to a year ago, but imports of whole milk powder were up 37.7 percent. Imports of butter and other fat products were relatively stable over the past few years, down just 4.4 percent during the first nine months of 2002 relative to a year ago.

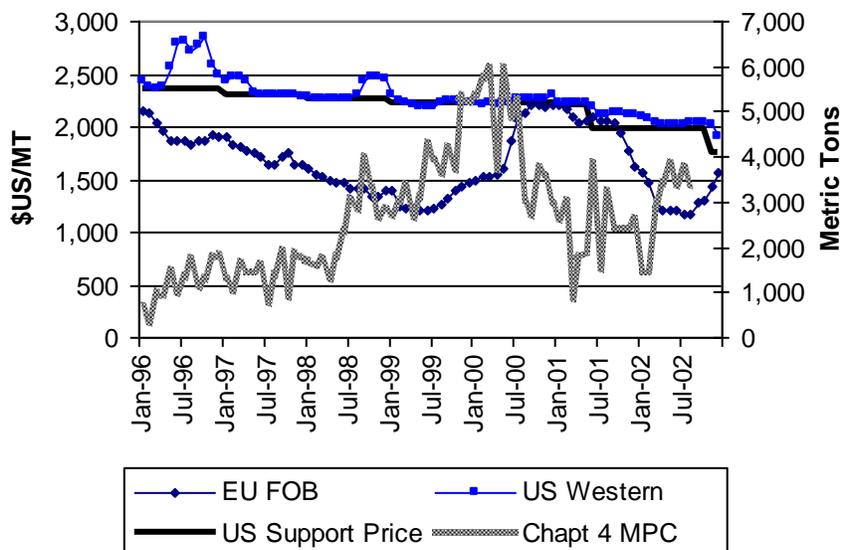
**Table 4. Canadian Imports of Dairy Products**

Commodity	Unit	2000	2001	Jan-Sept 2001	Jan-Sept 2002	% change Jan-Sept
Milk	MT	207	21	16	26	68.5%
Cream	MT	329	429	289	387	33.9%
Cheese	MT	29,400	26,633	19,381	19,395	0.1%
Ice cream & novelties	MT	830	776	655	505	-22.9%
Yogurt	MT	442	516	407	397	-2.3%
Butter and other fats	MT	14,508	25,830	14,137	13,516	-4.4%
Evaporated milk	MT	20	24	17	20	16.7%
Condensed milk	MT	255	227	184	263	42.8%
Skim milk powder	MT	1,736	2,662	2,354	971	-58.8%
Whole milk powder	MT	16,168	15,892	10,677	14,702	37.7%
Whey products	MT	62,514	59,339	45,972	40,578	-11.7%
Casein and products	MT	12,132	13,106	9,595	9,960	3.8%
Dairy spreads	MT	0	1	1	0	-79.5%
Natural milk constituents	MT	4,846	5,924	3,834	3,289	-14.2%
Other	MT	10,745	8,983	6,183	8,954	44.8%

Source: Canadian Dairy Information Centre.

After reviewing this data, which is only a partial year for 2002, there does not appear to be any major item which sticks out as showing a major increase in recent years. Clearly the U.S. and Canada have become concerned with growth in imports of MPC's. But those imports in the last two years have been below earlier years. For the U.S., MPC imports peaked in 2000 when support prices in the U.S. for skim milk powder greatly exceeded world prices (Figure 1). More recently, there have been concerns in both the U.S. and Canada about imports of products with alternative levels of butterfat components. Available data for 2002, however, does not show a major trend towards strong imports of butterfat products in either the U.S. or Canada.

**Figure 1. U.S. vs Northern EU Prices for Nonfat Dry Milk**



## ■ The MPC Loophole

Many U.S. dairy producers look at the imports of MPC's as being outside of the TRQ system that was agreed upon in the WTO. Simply put, they view this as a major loophole. Of course to many U.S. dairy producers, trade is generally bad, unless of course it involves exports (subsidized exports are even better!). The concern with MPC's is that this type of import, which faces very low import tariffs, could expand to other dairy products. More importantly, it could result in greater imports of dairy-type imports which may not strictly adhere to the definitions of dairy products subject to the TRQ system.

### What is MPC?

MPC is a general reference to a dried protein product derived from milk using a new membrane technology known as "ultra filtration." MPC is produced from skim milk, which is passed through a membrane with minute pores that retains larger molecules (such as protein) and allows smaller molecules, such as water, lactose and some minerals, to pass through. The resulting product,

called “retentate,” is mostly protein and is either used in liquid form to make cheese, or is spray dried. MPC’s are further defined according to their protein content. Lower valued MPC’s have a protein content similar to the U.S. definition of nonfat dry milk, while higher-value MPC’s have protein levels that are much higher and are therefore a superior product.

MPC was not considered a significant trade issue during discussions on the Uruguay Round since the product was not commercially viable in international markets. MPC’s were therefore not subjected to the same import licensing rules as other dairy products (such as cheese, butter, nonfat dry milk, etc). Only after implementation of the new World Trade Organization (WTO) rules in 1995 did production of MPC become commercially viable. MPC imports into the U.S. surged in the latter half of the 1990’s at a time when domestic use of dry protein (nonfat dry milk) fell and government purchases of nonfat dry milk under the dairy price support program increased.

### **Reasons for Growth in MPC Imports**

The recent study by Bailey (2002c) examined the reasons for the strong growth in U.S. MPC imports. It was due to the interaction of the U.S. price support program for skim milk powder, and the fact that MPC imports were not subject to the TRQ system. As a result, imports of MPC increased in years when the world price of skim milk powder fell in relation to the U.S. support price. That created an incentive to import MPC’s for use in domestic U.S. cheese production and for other uses (higher-valued MPC imports are used in many food products). There was less of an incentive to import MPC’s when world prices strengthened.

The Bailey study also found that not all imports of MPC’s followed this logic. The U.S. still imported MPC in years when it would seem that the advantage to do so was not there. The author assumed that higher-valued MPC imports were less sensitive to the relative price between world and U.S. domestic prices. Thus one needs to separate MPC imports into two products: the lower-value imports (low protein content) which are sensitive to world prices, and the higher-value MPC imports (high protein content, above 40 percent) which are not.

### **Impacts on the U.S. Dairy Industry**

It is unclear what impact imports of MPC’s have had on the U.S. dairy industry. There has not been a definitive study that looked at the impact of MPC imports on U.S. milk allocation to alternative class uses, cheese production, and U.S. milk prices. Bailey’s study merely examined the impact of increasing MPC imports on the U.S. price support program. This study found that MPC imports substituted to some degree for domestic skim milk production and resulted in

an accumulation of skim milk powder under the U.S. dairy price support program.

### **Reasons Why It Is Not Produced in the U.S.**

Perhaps a better question to ask is why doesn't the U.S. produce MPC's, a product that is clearly in demand? The simple answer is that it conflicts with the U.S. price support program.

The U.S. price support program was first experimented with in the 1930s and became law in the early 1950s. It has very strong support among dairy interest groups in the U.S. It is also an affordable way for the U.S. government to support the manufacturing value of milk in federal milk marketing orders. Unfortunately, this program in combination with the WTO loopholes, has created a distortion in the global powder market. It created an artificial incentive to produce skim milk powder for the U.S. government. That is not the case for butter and cheese, which both have active commercial markets. Quite simply, the reason MPC's have not been made in the U.S. to date is because it has been more profitable to sell skim milk powder to the U.S. government.

There has been some thinking in the U.S. regarding ways to encourage domestic MPC production. Dairy Farmers of America, a U.S. dairy cooperative, will be producing MPC at one plant in the United States beginning in 2003. They will not be receiving any government subsidies to do this. They will likely focus on the higher-value MPC market, a market less sensitive to price swings in the global price of powder.

Another idea discussed is to provide a new U.S. subsidy to those plants that wish to produce MPC's. This idea has been proposed by The Alliance of Western Milk Producers, a trade association representing Western dairy producers. Their proposal states that it would be cheaper to provide this new subsidy than it would be for the U.S. government to purchase skim milk powder under the dairy price support program. Unfortunately, this would likely count as a trade distorting subsidy under the WTO.

### **■ Conclusions**

The WTO has created greater market access for other countries that want to export dairy products to the U.S. and Canada. For example, cheese imports to the U.S. have increased in recent years as quota levels increased and within quota tariffs fell. Dairy products, like all other agricultural products, are subject to increasing quotas and lower tariff rates under the WTO. The U.S., and perhaps Canada, has not yet found significant opportunities for exporting additional dairy products at world prices (the exception may be lactose, and butter and skim milk powder in some years). Most of the reason for this lack of

export growth is due to the fact that domestic prices in the U.S. and Canada are well above world market prices. In addition, both countries have highly developed economies with wealth that are attractive to other dairy exporting countries.

Despite the agreement of tariffication (converting old quotas on dairy products to tariff rate quotas) among trading partners to the WTO, the food industry in North America has found creative ways to circumvent tariffs under the TRQ system. There is no doubt that lower-valued MPC imports and imports of dairy products that contain alternative combinations of dairy components represent a way for U.S. and Canadian food processors to circumvent the TRQ system, and thus improve profits. This type of circumvention will increase as long as domestic prices are well above international prices. And international prices will be well below Canadian and U.S. market prices as long as some countries continue to subsidize domestic production and exports. Despite significant progress over several decades, the average cost of production in both the U.S. and Canada is still above that of low-cost countries like Australia and New Zealand. In the short run, only better border enforcement and new tariffs in Canada and the U.S. will stem this trend.

The U.S. price support program and the Canadian quota system are at times at odds with the WTO and other trade agreements such as NAFTA. Both countries are unlikely to give up their domestic support policies, although they are required to restrict their use of trade distorting subsidies. In the U.S., the dairy price support program has resulted in a mountain of skim milk powder in government warehouses. Research has shown that MPC imports of lower-valued product have offset domestically produced skim solids, with the balance moving into the dairy price support program. In Canada, imports of dairy products with alternative levels of milk components (which are often outside the TRQ system) have offset domestically produced milkfat and skim solids. This has caused problems when prices are pooled under a quota system. The Canadian quota system has few options in dealing with surplus dairy products.

Clearly there are some problems with the WTO that the dairy industry in North American needs to deal with. It is recommended that the new WTO "Doha Round" should account for all trade in milkfat and nonfat solids and should move away from a product-based TRQ system. In other words, tariffs and quotas should be based on milk components, not tons of finished dairy products. The current system invites "cheating" by encouraging importers to trade in products with alternative levels of dairy components in an effort to thwart the TRQ system. This clearly goes against the spirit of the WTO. Allowing some imports of milkfat and nonfat solids at low tariff rates outside of the TRQ system will only result in a lack of confidence among dairy farmers in both Canada and the U.S.

Finally, both countries should focus on adjusting their support programs to deal with a new world order that will require lower levels of trade distorting subsidies. This requires a bold plan that would look beyond current border disputes and focus on the future. Of course this is easier to say than to do. For example, rather than punish North American food processors by restricting imports of higher-valued MPC's, perhaps a better way is to produce those products that the market wants and needs. Greater MPC production in the U.S. would find a home for surplus skim solids and reduce government purchases. The vast accumulation of skim milk powder under the U.S. dairy price support program is not a problem that will go away anytime soon. The U.S. also should investigate ways to modify this program to discourage production of surplus skim milk powder while encouraging the production of MPC's without subsidies. For Canada, adjusting to a new Doha Round may mean living within the confines of their domestic quota system, or perhaps investigating alternatives to the quota system.

## ■ References

- Agriculture and Agri-Food Canada. (2002) Canada Disappointed With WTO Dairy Decision." News Release, December 20. URL: <http://www.agr.gc.ca/cb/news/2002/n21220ae.html>
- Bailey, K.W. (2002)a Comparison of the U.S. and Canadian Dairy Industries. Staff Paper #349. Penn State University. April. URL: <http://dairyoutlook.aers.psu.edu/reports/Pub2002/staffpaper349.pdf>
- Bailey, K.W. (2002)b U.S. Market Structure: The Dairy Industry in the 21<sup>st</sup> Century. Paper presented at the 66<sup>th</sup> annual meeting of the International Association of Milk Control Agencies," Alberta, Canada. July 14-17. URL: <http://dairyoutlook.aers.psu.edu/reports/Pub2002/FutDairyUS.pdf>
- Bailey, K.W. (2002)c "Implications of Dairy Imports: The Case of Milk Protein Concentrates." *Agricultural and Resource Economics Review*. 31/2: 248-259.
- Le Roy, D.G. (2001) Trade Liberalization and the Canadian Dairy Sector. *Advances in Dairy Technology* Volume 13, page 327-336.
- Mussell, A., and L. Martin. (2000) Canadian Dairy Export Subsidies and the WTO Appellate Decision: Dairy Market Expansion in Limbo. A Special Report, George Morris Centre. February. URL: <http://www.georgemorris.org/documents/DairyExport.PDF>
- USDA, Foreign Agriculture Service. (2001). Fact Sheet: Dairy Export Incentive Program. January. URL: <http://www.fas.usda.gov/info/factsheets/deip.html>

