

FOOD AND NUTRITIONAL

# Supply Chain Outlook 2023

MARCH - ISSUE 25



# ECONOMY

- STRONG FEBRUARY FOR THE US
- 2023 OUTLOOK

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## Pricing Trends Key

- Price Increase 
- Price Increase Due to Current Events 
- Price Stable 
- Price Decrease 

## Outlook 2023

As of early March, the inflation rate has fallen for seven consecutive months to a level of 6.4%, down from 9.1% at its peak. We expect this to continue as the Fed continues to hike interest rates in the first half to a level of perhaps 5.5% from 4.5-4.75% currently. Interest rates will not return to pre-pandemic levels. It now appears likely that any possible recession in 2023 will be minor and short in the U.S. and more serious in the EU as the Russia-Ukraine war drags on. It is unlikely that the war will end any time soon as more sophisticated weapons systems from the West make their way into Ukraine. Europe is lucky so far that the winter has been mild and energy supplies have been sufficient. Next winter could be a different story.

China's recovery will rebound as President Xi went overnight from "zero Covid" to "anything goes", but it may be choppy as citizens there self-restrict as waves of Covid add 37 million patients per day in a country with overwhelmed hospitals and crematoria. It is estimated that there may be as many as 1.7 million Chinese deaths by end-2023. This is a big wild card in 2023 as is China's consumption of crude oil, which could drive oil prices over \$100 per barrel from current levels of around \$80. China's currency depreciated 4% in February as the U.S. Dollar Index soared to a 7-week high. This is anticipated to be temporary as China's economy continues to recover.

The trajectory of U.S./China relations is very negative, especially now with the new "Balloongate" drama which caused Secretary of State Antony Blinken to postpone his visit to meet President Xi. This deterioration of such a strategic relationship for both sides is especially problematic for the vitamin markets which are so dependent on Chinese raw materials. China has actually backed off its support for Russia in recent weeks as the reality of economic recovery and deep demographic problems threaten China's position longer term. On the other hand, there is now concerns that China may be thinking about supplying lethal aid to Russia in an effort to keep the West bogged down more in Ukraine as China pursues a more aggressive stance in Asia.

## CHINESE VITAMIN PRODUCTION CONTINUES TO BE UNPREDICTABLE

Labor markets will remain somewhat tight as there are 2 jobs open for every potential worker. Many have opted out of the labor force during the pandemic. About 1.1 million jobs were added in Q4.

We anticipate some firming up of vitamin prices in the second half as inventory levels are depleted and Chinese production continues to be unpredictable as Covid sweeps across the country before receding in the second half. The lack of drugs to treat Covid as well as low levels of vaccination among the elderly continues to be a challenge. It is reported that vitamin C demand in China is soaring as consumers seek to boost their immune status. We may see some bottoming out in B-vitamin pricing in Q2 and increasing prices in the second half.

Other overriding issues to acknowledge as we move deeper into 2023:

- The U.S. debt ceiling has become a political football which could adversely affect the global economy as soon as July if no resolution is adopted.
- The Russia-Ukraine war threatens to drag on as a long slog not unlike what happened in the First World War. No easy resolution seems to be in sight.
- The Ukraine grain deal brokered by the U.N. and Turkey is set to expire on March 31 in the face of escalating hostilities in the region.
- Avian Flu strain H5N1 has decimated poultry stocks in the U.S. leading to high levels on inflation on chicken meat and eggs. So far there has been no reports of transmission to humans, but keep in mind that the Great Flu Epidemic of 1918-19 was a bird flu.

## Economic Update

The U.S. economy had a relatively strong month in February, with 4th Q GDP revised downward a bit to +2.7% following 3Q GDP revised upward to +3.2% after slightly negative quarters in Q1 & 2. U.S. GDP overall grew +2.1%.

Inflation, as measured by the CPI, slowed to 6.4%, in January, the seventh monthly decline in a row, and unemployment fell slightly to 3.4%, the lowest rate since May, 1969. 511,000 jobs were added in January and there are still two jobs available for every worker who wants one, but reportedly, it is getting easier to hire than it was in January. Wage growth slowed to

# ECONOMY

- US ECONOMY GDP UP
- CHINA GDP SLOWS

0.3% in January, which may give the Fed reason to slow their interest rate hikes a bit if this is sustainable. Wages grew 4.4% in 2022, about 2 points below inflation. In total, 4.5 MM jobs were added in 2022 following 2021's 6.7MM jobs. We are back to pre-pandemic levels for the most part.

The cooling off of the labor market may be evidence that the Fed's tightening strategy is starting to have an effect on the economy. The Fed raised rates seven times in 2022, including a 50-basis point increase in December following four consecutive 75 basis point hikes to a target range of 4.25-4.50%. It also increased rates by 25 basis points in February and will probably also do so in March, reaching a target range of 5-5.25%. Their goal in 2023 could exceed the 4.6% top previously indicated, possibly as high as 5.6%.

Grocery prices increased 10.8% year-on-year in January and gasoline prices fell to an average of \$3.16/gallon, down from \$5.02/gallon in mid-June. Retail sales fell 1.1% in December during the typically strong holiday shopping season but rebounded strongly to +3% in January. The crude oil market price fell to ~\$80/barrel, where prices had rebounded to near \$120/bbl in the wake of OPEC+ production cuts and proposed new sanctions on Russian oil. Poor demand and a relatively mild winter in the Northern Hemisphere allowed this market to finish the year only about \$5/barrel more expensive than in early January 2022.

Natural gas prices are down 65% since mid-December and 85% off their peak in August thanks to a slowing economy, a mild winter and supplies from Norway, Algeria, Qatar and the U.S.

U.S. Healthcare spending increased 2.7% in 2021 to reach \$4.3 TR, about 18.3% of GDP. This follows 2020's hike of 10.3% due to Covid-19. This trend is helping the dietary supplement and functional food industries attract new consumers more than ever. Prevention of chronic disease and focus on healthy aging and immunity will continue to boost our fortunes in the years ahead.

U.S. Manufacturing PMI rose slightly to 48.4 in February from 46.9 in January, which raises questions as to whether or not a recession is in our immediate future.

The Conference Board's Consumer Confidence Index hit 109.5 in January and the University of Michigan Consumer Sentiment Index improved to 65.1 in February as consumers continue to spend down savings and dip into credit cards to facilitate spending. U.S. households now hold \$1.6 Tr in savings down from \$2.3 Tr in late 2021. Industrial production was down 0.7% in January and producer prices fell 0.5%.

The financial markets had been devastated in 2022 with all major averages under water, but there was some improvement to date:

YTD as of 3/3/23:

- S&P 500: +5.4%
- DJIA: +0.7%
- NASDAQ: +11.7%

## Global Markets

Global markets lost about \$30 TR in value and cryptocurrencies shed \$1.7 TR, about 60% down from their peak in November 2021. The U.S. Dollar has started to weaken but ends the year up about 8.4%. It is down a bit from its peak in mid-September, which may give other economies some breathing space. In the meantime, the latest forecasts from the Fed as well as some well-respected private economic consulting firms show U.S. GDP growing only 0.5-1.0% in 2023 and 2024.

## China

China's GDP rose only about 2.8% in 2022 due largely to President Xi's "zero-Covid" policy which effectively shut down the country. It was the second slowest rate of growth in sixty years. Economists predict 5.2% growth in 2023, but a lot depends on Covid's possible disruption of production and supply chains. China's currency had strengthened by 8% so since November but fell 4% in February due to the rapid recovery of the U.S. Dollar Index.

Chinese retail sales fell 1.8% in December while industrial production increased 1.3%. China's trade total hit a record of \$6.3TR in 2022. Their population fell by 850,000 and their birth rate also dropped, a harbinger of demographic shifts to come. China's labor force is shrinking, about 20% of its population is 60+ and there are 34 million more males than females thanks to their long-standing one child policy which they are now scrambling to reverse.

U.S. private label sales increased 11% in 2022 to \$229B as consumers became more stretched financially. National Brand sales increased 6.1% to \$981B.

The economy in Europe is now in recession despite GDP growth of 3.5% in 2022. Economists now expect only 0.7% growth in 2023, with energy supply becoming a major problem later in the year now that Russian gas and oil is effectively eliminated from their supply chain.

The Bank of England and European Central Bank each raised interest rates by 50 basis points in February and indicated that this will continue in March in an effort to stem inflationary pressure, now down a bit to 8.5% in January from its 10.6% peak in October. The euro has rebounded to \$1.10/\$ from below parity last summer.



# CURRENT EVENTS

- UKRAINE - RUSSIA TENSIONS INCREASE
- CHINA SCRAPS ALL COVID RESTRICTIONS

## Coronavirus

- February 2023, Statistics (Worldometer)): Total Cases – 674 MM (upward trend), Total Deaths – 6.9 MM (downward trend).
- The number of new Covid-19 cases is rising once again. The new omicron variant XBB.1.5 is the most transmissible ever and seems to be able to evade most vaccines and prior infection antibodies. There are now variants of that variant working its way through the population.
- In addition to Covid, the seasonal flu H3N2 is the worst in ten years. RSV infections, which affect mainly children and others with underdeveloped immune systems, seem to be waning. Drug shortages are becoming a major problem, especially for children. Everyday products like analgesics, antibiotics and other cold/flu products are hard to find.

## Chinese Re-Opening: COVID-19 Pandemic Lingers

- China has finally scrapped all Covid-related testing and other restrictions following strong protests from quarantined citizens and business leaders who found it impossible to function under Xi's "zero-Covid" policies.
- Factory shutdowns, logistical bottlenecks and port problems due to labor shortages will increase as the winter progresses. Emergency rooms and crematoria are already backed up, and the lack of transparency from the Chinese government is making the situation worse. The U.S., France, Israel and about a dozen other countries are implementing special testing requirements on visitors from China.

## Ukraine – Russia Tension

- Russia continues to experience difficulty generating battlefield momentum. Moscow's full-scale invasion on Feb. 24, 2022, soon stalled and then was pushed back by a Ukraine counteroffensive. Over the bitterly cold winter months, the fighting has largely been deadlocked. Bakhmut doesn't have any major strategic value, and analysts say its possible fall is unlikely to bring a turning point in the conflict. Ukrainian officials have previously raised the possibility of a tactical retreat.
- In recent days, Ukrainian units destroyed two key bridges just outside Bakhmut, including one linking it to the nearby hilltop town of Chasiv Yar along the last remaining Ukrainian resupply route, according to U.K. military intelligence officials and other Western analysts. Demolishing the bridges could be part of efforts to slow down the Russian offensive if Ukrainian forces start pulling back from the city.
- Bakhmut has taken on almost mythic importance to its defenders. It has become like Mariupol — the port city in the same province that Russia captured after an 82-day siege that eventually came down to a mammoth steel mill where determined Ukrainian fighters held out along with civilians.
- Moscow looked to cement its rule in the areas it has occupied and annexed. Russian Defense Minister Sergei Shoigu traveled to Mariupol and toured some of the city's rebuilt infrastructure, the Defense Ministry reported Monday.

## Trade

- The incredible strength of the U.S. Dollar had upended trade to a great extent, but the dollar had weakened significantly in recent months, but rebounded strongly in February. Earlier in the year the dollar hit a 32-year high against the yen and was trading near parity with the euro. European Union GDP is growing at 2.1% year-on-year and inflation hit 10.7% in October, falling to 8.5% in February. Their energy picture is more severe than in the U.S., although natural gas stockpiles are now at about 94%, with alternative suppliers of liquified natural gas (LNG) making up for Russian cutbacks.
- Ocean freight rates have fallen to close to pre-pandemic levels. The World Container Index is down 77% in 2022. The Danish shipping giant, Maersk, forecasts a 2-4% decline in shipping demand for 2023. The World Trade Organization projects only a 1% increase in goods shipments in 2023, down from 3.5% in 2022. According to a recent article in Food Business, supply chain executives do not see a return to normal conditions until late-2024 or 2025.
- China's abrupt elimination of Covid restrictions will continue to cause disruptions in factory output and logistics functioning. U.S. manufacturing orders are down 40% in the prior quarter and large employers such as FoxConn suddenly have new competition from other manufacturers in other countries, whereby they had almost a monopoly in producing Apple's iPhones up until now. Geopolitical tensions are causing companies outside China to reconfigure their supply chains.

## Demographics is Destiny: The Aging of the Global Population

- Global life expectancy has increased from 51 to 72 since 1960, but the ratio of children per woman has fallen from 5 to 2.4 in the same time frame. There are now 1.5 billion grandparents in the world, up from 500 million in 1960. China is projected to lose 5-10 million workers and gain a similar amount of retirees each year for the foreseeable future. The death rate exceeded the birth rate for the first time in sixty years. In 1978, China's median age was 20.1; it is now 37.9, close to the U.S. The UN now predicts China's population will fall to 1.31 billion by 2050, hurting its GDP severely. India, by comparison is larger and younger.
- The world population hit 8B in 2022. Since 1975, about one billion new people have been added every 11-12 years. It will take 15 more years to hit 9B and another 22 years to hit 10B.
- Globally, those over 65 years of age now outnumber those under 5. By 2065, they will outnumber those under 18. Birth rates, especially in developed countries, are falling and life expectancy, aside for distortions caused by pandemic deaths, are generally increasing.
- In the U.S., population growth was only 0.4% in 2022 up slightly from 0.2% in 2021. The population is now 333.3 MM and most of the gain was from immigration. Life expectancy fell to 76.4 years, the lowest level since 1996. Covid was the third leading cause of death in 2022. The fertility rate fell to 1.66 babies per woman, whereby 2.1 is the population replacement rate. Other developed countries, especially Italy and Japan have even worse numbers.
- The U.S. median age is now ~39, up from 28 in 1970. By 2040, those Americans over 65 will outnumber those under 18. Who will there be who can pay for all these retirees? All these factors make solving our border crisis in a sensible way more critical than ever, especially as the current workforce ages out and government retirement and healthcare programs like Social Security and Medicare/Medicaid teeter on the brink of bankruptcy.

FAT SOLUBLE

# VITAMINS

Trending Vitamins:

- FOLIC ACID
- CYANOCOBALAMIN
- VITAMIN C
- VITAMIN D

**Vitamin A:** Prices for Vitamin A have stabilized despite tightened supply due to European producer supply constraints. DSM shut down its Sisseln, Switzerland plant and Adisseo Bluestar has shuttered its French feed grade plant due to falling demand on the feed side. Producers had scheduled extended maintenance shutdowns this summer, in part to tighten the market.

**Vitamin D:** Prices on Vitamin D have remained stable to down in the face of capacity increases. Feed industry especially weak.

**Vitamin E:** Demand is stronger than supply across the market. Price is trending up due to energy and logistical issues stemming from the War in Ukraine. Signs of some weakening in China for the same reasons as with Vitamin A. Natural VE is extremely tight and expensive.

**Vitamin K:** Current pricing for vitamin K1 is stable. Most users prefer a 1% or 5% trituration. New uses in bone health and other condition-specific formulations, especially with vitamin K2, is making this formerly minor vitamin a more interesting story. Pricing and demand are stable. Vitamin

K3 remains tight and is the only Chinese vitamin to increase in price during 2022.

An already stressed global food supply chain could see further disruption because of Russia invading Ukraine.

#### Pricing Trends Key

Price Increase



Price Increase Due to Current Events



Price Stable



Price Decrease





# VITAMINS<sup>CONT.</sup>

Trending Vitamins:

- FOLIC ACID
- CYANOCOBALAMIN
- VITAMIN C
- VITAMIN D

Chinese vitamin exports fell 9.35% in 2022 due to Covid-related disruptions in production and logistics. Several plants operated through the Chinese New Year period leading to increased inventory levels and price weakness. There are signs of bottoming out in the very low price levels we have seen in recent months, so it might be time to secure longer positions in vitamins.

**Vitamin C:** Vitamin C prices are continuing to increase significantly due to tight supply and increased shipping costs. Demand has also spiked in China as consumers there look to improve their immune systems as Covid spreads. This is one product to watch closely in the coming weeks and months, especially as some capacities have been taken off-line, including DSM Jiangshan. Supply is currently adequate and several new entrants may start to pressure pricing as we enter 2023-2024. The current nameplate capacity for ascorbates in China is approaching 300,000 mt, about a 50% over-supply if all plants are producing all out. There will be some rationalization in this industry as profitability becomes more of an issue than market share.



## Vitamin B1 (Thiamine):

The B1 market has stabilized at a low price. All manufacturers are producing and several new entrants are coming. It should be

noted that thiamine demand may increase as a function of record high levels of flour production, most of which is fortified with B1, B2, B3 and folic acid. Flour production in 2022 hit 430.3 million hundredweights, up 2.2%.



## Vitamin B2 (Riboflavin):

Riboflavin USP and food grade pricing are firm, and supplies are adequate. Several new entrants have begun manufacturing and potential capacity increases can be expected by the majors.



## Vitamin B3 (Niacin/

**Niacinamide):** Pricing has stabilized in recent months even as pyridines have tightened up. Longer term, oversupply is developing.



## Vitamin B5 (Calcium

**Pantothenate):** Intermediate shortages have led to significant swings in price, but a wave of new entrants and cleaner production techniques may weaken prices, especially if the feed industry remains in the doldrums. Pricing has been dropping slightly from the high averages of this year.



## Vitamin B6 (Pyridoxine):

B6 pricing has been stable as supplies have improved and demand has decreased.



**Vitamin B7 (Biotin):** After reaching exceptionally high prices in 2020, B7 prices began to fall and have now stabilized at a low level.



## Vitamin B9 (Folic Acid):

The B9 market is displaying volatility; prices are currently on the rise due to raw material availability and logistics-related issues. Feed industry remains very weak. New entrants could weaken prices later this year.



## Vitamin B12 (Cyanocobalamin)

The B12 market is stable but prices are expected to rise due to increased raw materials costs.



### Pricing Trends Key

Price Increase

Price Increase Due to Current Events

Price Stable

Price Decrease

# MINERALS

- SOME MINERALS HAVE SEEN PRICE INCREASES
- PRODUCTION AND TRANSIT ISSUES ARE PART OF ESCALATION

## Trending Minerals

- Iron
- Magnesium Sulfate
- Magnesium Oxide
- Magnesium Citrate
- Zinc Gluconate
- Zinc Citrate
- Zinc Oxide

**Calcium Carbonate:** Visit the Granulations section on page 10 for more information about our directly compressible version of SuperTab® oyster shell calcium carbonate.

- SuperTab® Oyster Shell Granulation (OSG) 2000 AM
- SuperTab® Oyster Shell Granulation 2100 Malto
- SuperTab® Oyster Shell Granulation 2300 Acacia

### Pricing Trends Key

- Price Increase 
- Price Increase Due to Current Events 
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- Price Decrease 

**Copper:** Prices have stabilized but demand remains high.



**Iron:** Iron prices have stabilized after volatility and increases were experienced at the beginning of the year. Supply and lead times have normalized since early 2022 as well.



## Electrolytes

**Calcium:** Energy restrictions affected the production of Calcium in a negative way and market prices increased.



**Magnesium:** Magnesium market price and supply are stable.



**Potassium:** Potassium prices and availability are stable.



**Phosphorus:** Global demand and pricing continue to increase.



**Sodium:** Sodium prices are on the rise due to production and transit issues, limiting availability.



## Zinc

Production levels were low in Q4 2021, so supply decreased, and demand continues to rise.



**Zinc Gluconate:** The price of Zinc Gluconate is stable however, lead times are increasing.



**Zinc Oxide:** Prices for Zinc Oxide are on the rise and lead times can be longer than average.



**Zinc Sulfate:** Zinc Sulfate prices remain stable however, lead times are increasing.



**Zinc Ascorbate:** The price of Zinc Ascorbate is stable; however, lead times are longer than average.



**Zinc Citrate:** Prices are on the rise with longer lead times continuing.





# MINERALS<sup>CONT.</sup>

- SOME MINERALS HAVE SEEN PRICE INCREASES
- PRODUCTION AND TRANSIT ISSUES ARE PART OF ESCALATION

## Chelates

**Zinc Amino Acid Chelate:** Prices and lead times for zinc amino acid are increasing.



**Zinc Bisglycinate Chelate:** Prices for zinc bisglycinate are increasing and lead times are longer than average.



**Zinc Glycinate Chelate:** Zinc Glycinate is experiencing longer than average lead times, but prices remain stable.



**Copper Glycinate Chelate:** Copper Glycinate prices are stable and expected to remain so.



**Manganese Amino Acid Chelate:** Manganese Amino Acid shows an increase due to raw material availability and longer than average lead times.



## Trace Minerals

**Chromium:** Chromium prices remain stable but can be difficult to source due to long lead times.



**Molybdenum:** The molybdenum market is experiencing longer than normal lead times, but prices are remaining stable.



**Selenium:** Lead times have increased; however, prices are stable.



### Pricing Trends Key

Price Increase

Price Increase Due to Current Events

Price Stable

Price Decrease





# PREMIXES

- MANUFACTURERS ARE SWITCHING TO PREMIXES
- PANDEMIC HAS CHANGED THE WAY PROVIDERS OFFER SERVICES

## Custom Nutrient Premixes

More and more manufacturers are switching to vitamin and mineral premixes. Premixes consolidate multiple nutrients into a quality-assured, single-step ingredient and deliver economies of scale by simplifying ingredient procurement from a single source.



## TWG SuperBlend®

Our value-added SuperBlend® custom nutrient premixes deliver performance and stability in high temperature and shear processes in a variety of food and beverage products, including:

- Extruded bars
- Gummy supplements
- Breakfast cereals
- Ready to drink beverages
- Beverage mixes



# MICROENCAPSULATION

- AN EFFECTIVE METHOD OF MASKING UNWANTED FEATURES
- DELIVER A WIDE-RANGE OF FUNCTIONAL INGREDIENTS

## Microencapsulation Technology

Vitamins, minerals, and other nutrients possess unique characteristics that can affect the appearance, color, and odor of the final product. Microencapsulation is an effective method of masking unwanted sensory characteristics while maximizing nutrient function.

SuperCoat®, our most recent innovation using our proprietary SMART™ process, envelops particles at the microscopic level in a protective shell. This value-added coating technology delivers superior performance and stability of essential nutrients for a wide range of multi-functional ingredients.

### Trending Microencapsulated Nutrients:

- Vitamin C
- Vitamin B5 (Calcium Pantothenate)
- Vitamin B9 (Folic Acid)

With a diverse portfolio of products, TWG Health + Nutrition is one of only a select group of manufacturers with the technology and resources to deliver independent manufacturing of custom premixes, microencapsulated nutrients, and granulations.

Our comprehensive supply chain and extensive list of pre-qualified ingredients allows us to react quickly to changing market trends and help you keep up with consumer demand. We also understand that superior service is just as important as technology and expertise. That's why we provide you with prompt quotations, technical assistance, and support documentation to help you efficiently deliver your products on time. Contact us today to talk to one of our experts about your project needs or ask about any ingredients not listed here.





# GRANULATIONS

- DELIVER ESSENTIAL NUTRIENTS IN GRANULAR POWDERS IDEAL FOR HIGH SPEED TABLETING
- CAN BE INCORPORATED INTO DRUM-TO-HOPPER TABLET BLENDS



## Granulations

Rather than outsource granulations from a third-party manufacturer, TWG Health + Nutrition has committed to developing technologies and processes in-house to effectively and efficiently manufacture **SuperTab® direct compressible granulations**.

**SuperTab® granulations** deliver essential nutrients in uniform, free-flowing, granular powders ideal for high speed tableting processes. As usual TWG Health + Nutrition combines quality, innovation and superior knowledge to make sure your product is the best it can be. Ask about our granulation capabilities today!

## Trending Granulations:

- Glucosamine
- Chondroitin
- Vitamin C

## Oyster Shell Granulation

**SuperTab® Oyster Shell calcium carbonate is sourced from an above sea level deposit**, characterized as fossilized oyster shell beds. These oyster shell beds have been thoroughly vetted over the past ten years with testing of the material both analytically and physically to insure consistency and purity. TWG Health + Nutrition sources the high purity genuine shells exclusively from a domestic supplier.

Contact us today to get started on your next dietary supplement product containing calcium carbonate granulations. Insist on SuperTab® Oyster Shell authenticity in your formulation.



# blending performance & stability

For over 100 years TWG Health + Nutrition has  
utilized our extensive ingredient knowledge  
to consistently deliver quality- assured  
custom nutrient premixes,  
microencapsulations, and granulations.



Call us: **(800) 201-3096**

Visit us online: [twghealthandnutrition.com](http://twghealthandnutrition.com)

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